

NATION SHIELD

**President Khalifa:
Martyrs are source
of dignity, glory, and
beacon for generations**

**British Army's futuristic
AJAX vehicles**

**Commemoration Day Celebrations
at "Wahat Al Karama "**



Issue File

**"The House is United": Economic Development of UAE
is on upward path resulting in all round prosperity**



إدكس 2017 معرض ومؤتمر الدفاع الدولي

يعود معرض ومؤتمر الدفاع الدولي، الذي يعد أكبر معرض متخصص بالصناعات الدفاعية والأمنية في منطقة الشرق الأوسط وشمال أفريقيا، إلى العاصمة أبوظبي في شهر فبراير 2017.

التسجيل مفتوح الآن!

ويستقطب الحدث ما يزيد عن 1,200 عارض ومشاركة ما يزيد عن 101 ألف زائر، بالإضافة إلى الخبراء والمتخصصين وصناع القرار من المؤسسات الأمنية والدفاعية والحكومية من مختلف أنحاء العالم.

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Commemorating the Martyrs with an Oasis of Honour

The occasion of Martyrs Day will stay permanently inscribed in our conscience. On this day, we remember the sacrifices of the righteous martyrs of the nation, who defended the principles and values of the UAE and offered their souls to protect their country and exalt the truth. These sacrifices will remain as a proof that the UAE always stands by Arab people and supports their right to security, stability, development and prosperity. Moreover, the leadership and people of the UAE will always be loyal to the nation's martyrs who responded to the cry of their homeland and raised its flag soaring high at the fields of duty and truth.

Past experiences have proved that challenges and hardships only strengthen the unity, steadfastness and coherence of the Emiratis. In the stage of foundation of the union, the hearts and arms of all Emiratis met together and rallied about their leaders until they established the edifice of a unique, strong and coherent union. In recent years, with the escalation of challenges and dangers in the region, our Armed Forces answered the call of duty and our loyal people stood together behind our prudent leadership. They have provided the most fascinating examples of solidarity, coherence and steadfastness that foiled all attempts to disrupt the stability and prosperity of our nation.

The great attitudes of the parents, wives, children and relatives of our righteous martyrs have demonstrated their true patriotism and the firm solidarity and unity of our community. This is a source of pride for the nation. Our message to them today is that the United Arab Emirates, leadership and people, is as extremely proud of you as of its martyrs. You are an icon of the nobleness and patriotism of our people.

Wahat Al Karama, which means 'Oasis of Honour', embodies the deep-rooted value of loyalty in the UAE, the loyalty of everyone who served their nation at any of the fields of honour and glory. It is an appreciation and commemoration of the feats of martyrs, so that they will remain a source of inspiration for present and future generations.

This "WAHA" is a glorious record of patriotic stories of acts of valour and sacrifice in the history of the United Arab Emirates. It provides immortal models of the martyrs of our Armed Forces, who are a source of pride for us, as they embody our great values of patriotism, bravery, selflessness, loyalty and belonging.

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Editorial

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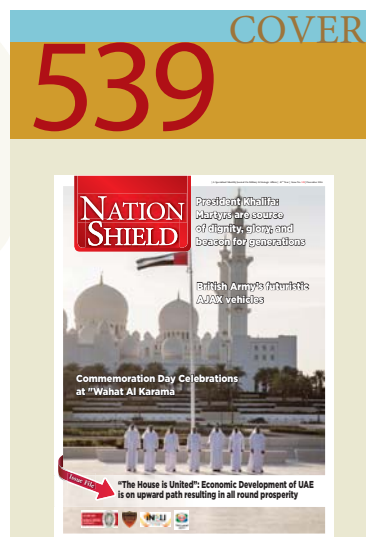
**“The House is United”
Economic Development of
UAE is on upward path**



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His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, and Their Highnesses the Supreme Council Members, attended the UAE Commemoration Day celebrations held at the Wahat Al-Karama, the memorial site created in Abu Dhabi to honour the UAE's martyrs.

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Commemoration Day...

President Khalifa:

Martyrs are source of dignity, glory, and beacon for generations

The anniversary of the nation's martyrs will remain present in the memory of generations, and immortal in the conscience of the UAE people, President His Highness Sheikh Khalifa bin Zayed Al Nahyan has said.

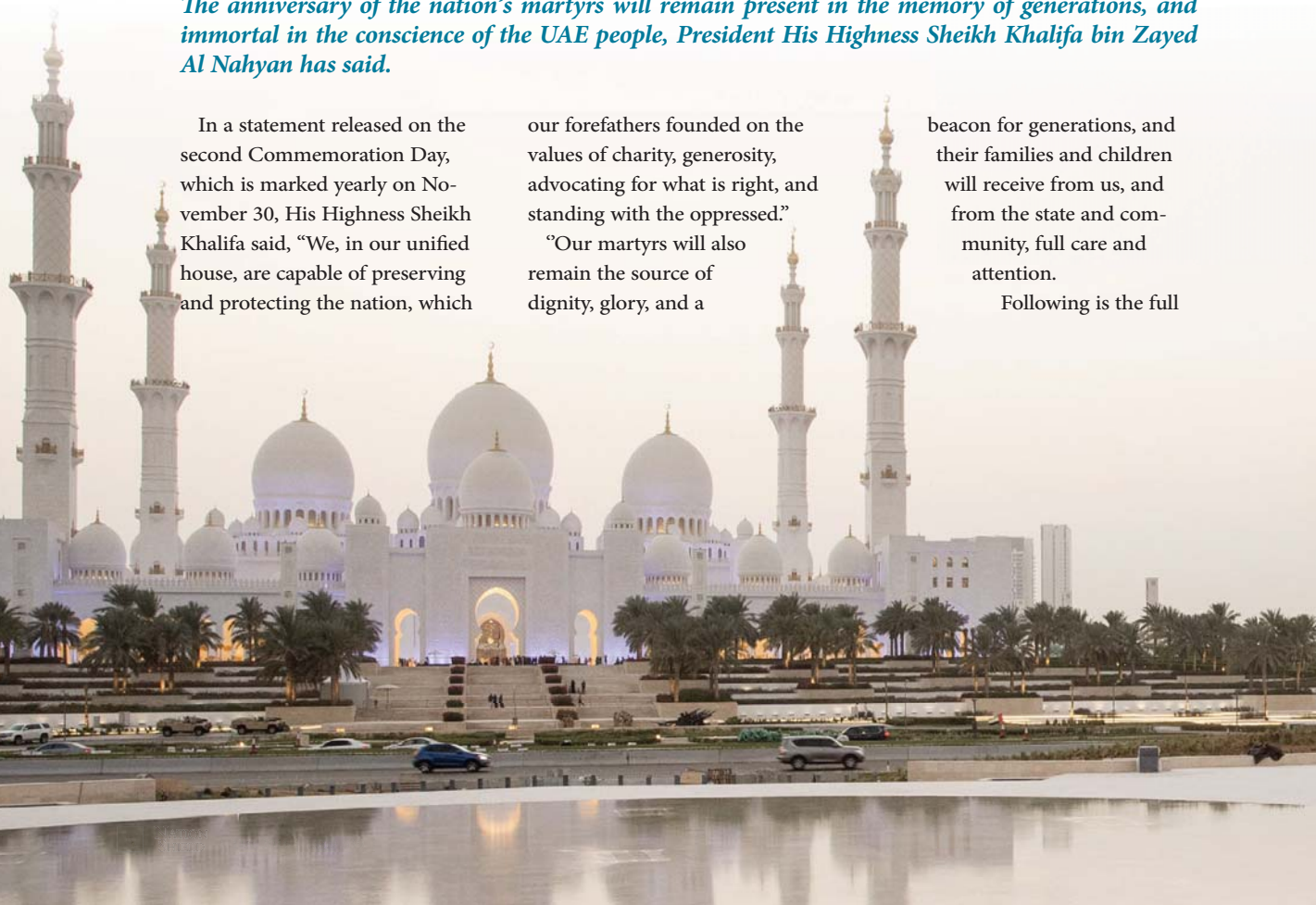
In a statement released on the second Commemoration Day, which is marked yearly on November 30, His Highness Sheikh Khalifa said, "We, in our unified house, are capable of preserving and protecting the nation, which

our forefathers founded on the values of charity, generosity, advocating for what is right, and standing with the oppressed."

"Our martyrs will also remain the source of dignity, glory, and a

beacon for generations, and their families and children will receive from us, and from the state and community, full care and attention.

Following is the full



text of the President's statement:

"On this glorious day, we treasure the values of sacrifice and love for the nation and we highly honour and pay profound gratitude and reverence to the heroes of national duty who wrote with their pure blood the epic of dignity and glory. We pray to Almighty Allah to shower mercy on their souls and extend deep thanks to their families.

We confirm that the nation will never forget those who offered their blood and lives in defence of the nation. Our martyrs will also remain the source of dignity, glory and a beacon for generations, and their families and children will receive from us, and from the state and community, full care and attention.

On and through the 30th of November, we affirm that the anniversary of our martyrs will remain alive and fresh in the memory of generations and immortal in the conscience of our people. We, in our united and unified house, are capable of preserv-

The nation will never forget those who offered their blood and lives in defence of the nation

ing and protecting the state, which our forefathers founded on the values of charity, giving, generosity, advocating for right and standing with the oppressed. The sacrifices of our martyrs will further solidify

our will, determination, strength, cohesion and solidarity.

On this day, we salute our proud people, our soldiers, officers and commanders of the UAE Armed Forces, who are stationed in the battlefields of honour and dignity in defence of the nation and state and for raising its national flag high.

We also salute Emirati men and women who are working in the fields of charity, security, performing their civilian and humanitarian duty inside and outside the UAE.

May Allah save and spare our nation from any evil and harm, and rest the souls of our martyrs in Paradise along with prophets, the righteous and good persons.♦



Commemoration Day...

Mohammed bin Rashid: Our heroes' sacrifices will forever be in our hearts and minds

The Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum, has released a statement expressing his tribute to those who have sacrificed their souls defending the nation, the Emirati martyrs, the bearers of the principles of virtue and dignity, who have pledged their lives defending the rights of their homeland and nation.

In a statement to Nation Shield magazine on the occasion of the UAE's second marking of Commemoration Day, which is held tomorrow, November 30th, His Highness Sheikh Mohammed bin Rashid said, "Today, we gather as leaders and peoples of the nation to salute our heroes, to honour their memory, and to also

remind everyone that their sacrifices will forever be remembered in our hearts and minds."

His Highness continued, "Our martyrs' loved ones are just as precious to us as our own, and their noble goals, for which they have sacrificed their lives, will be held as a badge of honour until the end of time."

"We all stand today, on this occasion, in reverence of those who have pledged their lives in support of the homeland and the nation."

He continued, "We, today, also greet and express appreciation, pride and gratitude to our valiant security and relief forces, and civil protection personnel, for all their efforts and vigilance in ensuring the security of the citizens, residents and visitors of this country."

"Today, we also rally around the families of our martyrs, embracing their sons and daughters, and comforting their parents and spouses. We reiterate our promise in continuing to care for them, and ensuring their comfort. We further ask God Almighty to compensate them for their loss and for their unlimited

patience," he told the magazine.

"Today, we also fondly and very proudly remember our people's embrace of their nation's martyrs and that of their families, a very powerful depiction of the strength of this nation and its national identity, as well as its unity and solidarity against adversity."

"I would like to thank my sons and daughters for commemorating this day in a way that befits the sacrifices of our heroes."

"I would like to also express my thanks and appreciation to the father of the martyrs, my brother, President His Highness Sheikh Khalifa bin Zayed Al Nahyan, for his continued efforts and his full embrace of our martyrs," he added.

In conclusion, the Ruler of Dubai said, "Also, to my brother, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, for his good graces towards his martyr siblings, and for his appreciation and personal attention, ensuring that their families and children are well looked after."



Mohamed bin Zayed: UAE Commemoration Day is a gesture of respect and appreciation

His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, has said that the UAE has forged its way into existence through meticulous planning, hard work and unceasing sacrifices, adding that marking Commemoration Day is a gesture of respect and appreciation for the families of the martyrs, and an expression of commitment that the UAE stands by its people at all costs.



In a speech to Dira'a Al Watan, The Nation Shield, magazine on the occasion of Commemoration Day, His Highness Sheikh Mohamed bin Zayed added that observing this day is a reflection of our leadership's deep appreciation of the sacrifices made by our martyrs, stressing that they died to defend the values, protect the homeland and to help a brother in need and to restore justice.

Following is the text of His Highness Sheikh Mohamed bin Zayed's statement: "The United Arab Emirates has forged its way into existence through meticulous planning, hard work and unceasing sacrifices. This is a nation that values the precious sacrifices of its people, this is a nation that bestows upon its martyrs the highest order of honour.

"Every year on, the 30th of November, the people of the United Arab Emirates solemnly observe the Commemoration Day. As we remember our martyrs today, we are reminded that as a nation we are united by our abiding love of our motherland as much as by our absolute commitment to our values of peace and tolerance. As we remember those who gave up their lives for the sake of our nation, we are also reminded that no sacrifice is too great and no price is too high in the service of our motherland.

"Let us seize this moment to celebrate the glory of our martyrs. Let us tell their stories and speak of their values. They died to defend our values and to protect our homeland. They died to help a brother in need and to restore justice. They died believing in the values that were instilled in all of us by our founding father, Sheikh Zayed bin Sultan Al Nahyan.

"When President His Highness Sheikh Khalifa bin Zayed Al Nahyan issued a decree to mark the 30th of November as "Commemoration Day", he was reflecting our pride in everything our martyrs stand for, he was reflecting our pride in their bravery and heroic sacrifice. He was also making it clear that as a nation, we do not forget nor betray our heroes who sacrificed their lives in battlefields of glory. Commemorating this day is also a reflection of our leadership's deep appreciation of the sacrifices of our martyrs; a leadership represented by President His Highness Sheikh Khalifa bin Zayed, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai, and their brothers, the Rulers of the Emirates.

"Observance of Commemoration Day by the people, the leadership and the government of the United Arab Emirates, is also a

gesture of respect and appreciation for the families of the martyrs, and an expression of commitment that the UAE stands by its people at all costs.

"I want to make it clearer than ever that we do not forget or betray the sacrifices of our martyrs and this day, the 30th of November, will be commemorated in the UAE every single year. It is a day for those who died for the sake of our motherland. It is a day for those who will always be a source of pride to the UAE. It's a day for our everlasting heroes."



**His Excellency Mohammed
Ahmed Al Bawardy,
Minister of State for Defense
Affairs**



Martyrs' Day is a candid incarnation that the UAE will always remember our soldiers, their sacrifices and pure blood that blessed soil of this land.

I would like to seize this opportunity to extend my deepest regards, appreciation and gratitude to the parents and relatives of the heroes, and highlight their pivotal role

in raising such honourable heroic models. They should know that we stand by them, heart and soul, and that our martyrs are not their sons only, but ours as well. We stand up as one family and the house is united in the face of challenges and in defense of our beloved nation, thanks to our wise leadership and our generous citizens.

**His Excellency Matar Salem Al Dhaheri,
Deputy Minister of Defense**



The royal decree of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Supreme Commander of the Armed Forces, (May God protect him) in August 2015 to set November 30 as Martyrs' Day to be celebrated on yearly basis reflects our wise leadership's interest in commemorating the memory of our hero martyrs in the hearts and minds of our beloved nation, so the forthcoming generations would be able to recall the heavy sacrifices of these faithful men and their allegiance and dedication to their wise leadership. This Day comes to crystallize the fact that the nation will always remember those, civilians or military, who fell in defence of their nation in the battle of pride and honour.

**Staff Lt Gen Jomaa Al Bawardy Al Flassy,
Advisor to His Highness the Deputy Supreme
Commander of the UAE Armed Forces**



This year's Martyrs' Day comes with a new face after becoming a national day celebrated by all categories of the UAE community. It has become a national event.

Our wise leadership never meant Martyrs' Day to be a transient event, but rather a national day to add to our history. It is a heart-throbbing memory, which helped cement our national unity and the relationship between our wise leadership and the people. The Martyrs' Memorial will definitely help immortalise the heavy price our hero martyrs have paid in defence of our nation.

His Excellency Staff Lieutenant General

Hamad Mohammed Thani Al Rumaithi,

Chief of Staff of the UAE Armed Forces



The history of our newly fledged nation is ripe with days of honour and pride on which national will and goes up high in the sky to tell the stories of courage and glory. Martyrs' Day, which falls on November 30, is one such day, if not the most important, because it symbolises the heavy sacrifices our dutiful men of the armed

forces have willingly offered in defence of the boundaries and achievements of the United Arab Emirates, the GCC countries and our Arab and Muslim nation against those bent on throwing our nations and communities into chaos.

Staff Lt Gen Eng. Essa Saif Bin Ablan Al Mazrou'iy,

Deputy Chief of Staff of the UAE Armed Forces



The pure blood of the UAE martyrs will not go in vain because it was spelt in search of truth and duty, and in defence of a just cause: stand by truth, defend legitimacy and respond to a sisterly distressed nation's call in time of absolute danger to its security, stability and integrity. It is on this glorious National Day that we recall with dignity, serenity and respect, the achievements of our dutiful martyrs whose sacrifices will remain immortal. These martyrs never hesitated for one second to respond to the call of duty by the nation and our wise leadership, thus highlighting the faithfulness of our people who stand by their leadership, whatever the circumstances. This explains the reason why the UAE is endowed with so much strength, unity, stamina and fortitude in the face of challenges.

Staff Maj Gen Saif Mosbeh Abdullah Al-Masafri,

Chief of Operations Department



Our valiant martyrs are in Paradise now. "They are jubilant because Allah has bestowed His bounty upon them." I imagine them looking upon us from their lofty palaces with pride, impressed by the official and public commemoration of them, their families and relatives. Our gracious Sheikhs, leaders and officials were all at the forefront of those who participated in the funeral of our heroes to their final resting place, and stood by the martyrs' families. The kindness of our esteemed sheikhs toward the children of martyrs has been impressive and indescribable.

Staff Maj Gen Pilot Ibrahim Nasser Al Alawi,

Commander, Air Force & Air Defence



The UAE martyrs have written down glorious lines of pride and honor in the history of our nation. It is a story which they inherited from their fathers and became an icon of sacrifice. Martyrs' Day, was decreed by President His Highness Shaikh Khalifa bin Zayed Al Nahyan, Supreme Commander of the Armed Forces, may God protect him, to be celebrated every year in recognition of the sacrifices made by the brave UAE citizens. On this day, we cannot but promise to follow in their steps. They have drawn with their pure blood a role model of patriotism and belonging. They are worthy of a high rank in paradise that can only be obtained by prophets and upright men.

Staff Maj Gen Pilot Ishaq Saleh Mohammed Al Balushi,

Head of the Supply Department



The sorrows of Martyrs' families have been alleviated by the sympathy they have received and the General Command's attention and care for them at various levels. The Martyrs' Day, which was decreed by President His Highness Shaikh Khalifa bin Zayed Al Nahyan, Supreme Commander of the Armed Forces, may God protect him, is the best example of the UAE's commemoration and recognition of our brave martyrs, and the UAE Armed Forces personnel in general, since they had joined the military to defend their homeland and raise its flag high.

Staff Maj Gen Salim Hilal Surour Al Qaabi,

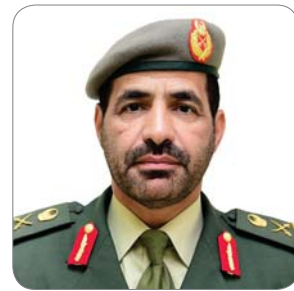
Assistant Chief of Staff



The heroic acts of the UAE soldiers in the battlefields have been a source of pride for all the Armed Forces personnel. Their utmost wish is to join their brothers in the frontline. The martyrdom of their colleagues has only made them more determined to continue defending our beloved country and its just cases. Here lies the greatness of martyrs, who turn into illuminating and inspiring beacons for future generations. The martyrdom of our sons on the land of sisterly Yemen was extraordinary. All Emiratis stood by the martyrs' families. The tents of condolence have turned into tents of pledge of allegiance to the homeland and its prudent leadership.

Staff Maj Gen Salim Said Ghafan Al Jabri,

Chief of Administration and Manpower



Today the UAE citizens are recording new epics of pride in every mission they are assigned for the sake of their country. The martyrdom of a number of our brave sons on the land of Yemen is the best evidence of this. The bravery and heroism of our soldiers have impressed the whole world. Allah, glory be to Him, has chosen for His Heaven. The whole world witnessed the rare brave reaction of martyrs' families when they knew of their martyrdom. Their words to the sheikhs and leaders of the nation who visited them were very touching and memorable: 'We all sacrifice ourselves for the sake of the nation.'

**Staff Maj Gen Ibrahim Salem Al
Musharrakh,**
Commander of Naval Forces



The most sublime forms of loyalty have been reflected in the attitudes of the parents of the martyrs. They have set the greatest example in patience and upholding national duty. Parents have affirmed that they are ready to offer more of their sons in the fields of heroism and honor. Even the children of martyrs, whose patriotism is flowing in their veins despite their tender age, appreciated the honor earned by their fathers and expressed their readiness to complete the mission and follow in their steps. The world was impressed by the attitude and awareness of these children and their belief in the need for sacrifice for the sake of the country's glory.

**Staff Major General Saleh Mohammed
Saleh Al Amiri,**
Commander of the UAE Ground Forces



The sacrifices of these martyrs have set an example of the belief of our Armed Forces' soldiers in the values of loyalty and obedience, their support for the values and principles consolidated by our wise leadership, and their love and defense of the homeland. They are a role model for their colleagues who are very eager to attain this great honor.

**Staff Maj Gen Pilot Sheikh Ahmed bin
Tahnoon Al Nahyan,**
**Chairman of the National and Reserve Service
Authority**



Today we celebrate anew Martyrs Day the memory of which went down in our history as an everlasting national event to remember those great men who sacrificed their lives in defense of truth and duty, and defended our homeland against evil-doers.

Martyrs Day has become a decisive event in the modern history of our nation and would not be immortal but for the sinless elite men who offered their lives as a sacrifice for their nation and national peace, security and stability. The event comes to recall the heroic acts of our great men in the battle of honour and pride.

**Staff Brigadier Dr. Mubarak Saeed Ghafan
Al Jaberi,**
Head of Communications and IT Department



The commemoration of the Martyrs' Day embodies the value of loyalty, which is an essential part of the UAE people's nature. It is a day for remembrance of the sublime value of martyrdom, as we recall the words of His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, may God protect him: "The martyr, you and your children are all a valuable part of us. If your fathers have shed their blood to defend the UAE and its just cases, you will always receive due care and appreciation from all Emiratis."



Commemoration Day Celebrations at Wahat

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, and Their Highnesses the Supreme Council Members, attended the UAE Commemoration Day celebrations held at the Wahat Al-Karama, the memorial site created in Abu Dhabi to honour the UAE's martyrs.

Their Highnesses Sheikh Mohammed bin Rashid, Sheikh Mohamed bin Zayed and other rulers of the emirates toured the memorial site Wahat Al Karama on Martyrs Day. At the site, Sheikh Khalifa bin Tahnoun bin Mohamed Al Nahyan, Director of the Martyrs' Families' Affairs Office at the Abu Dhabi Crown Prince's Court, told them about the features of the site.

He said the site includes the Memorial Plaza, a large open area of over 4,000 square metres, which will host the annual Commemoration Day ceremony.

A circular pool of water – 15mm deep – occupies the centre of the Memorial Plaza. The pool provides a unique reflection of the Sheikh Zayed Grand Mosque and also the memorial's panels.

The memorial comprises 31 aluminium-clad panels, each leaning on the other, representing the unity, solidarity and mutual support that binds together the leadership and citizens. The panels are engraved with poems written by the UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan. The long spine at the rear of the memorial is



Wahat Al Karama

engraved with the pledge of allegiance of the UAE Armed Forces.

Wahat Al Karama also includes the Pavilion of Honour. The pavilion's roof is made from eight large panels, seven of which represent the UAE's emirates and the eighth representing the nation's heroes. At the centre of the pavilion are seven massive glass panels, representing the seven emirates; on each is written the Armed Forces' pledge of allegiance. It has a grand stand, which can accommodate up to 1,200 people.

The leaders concluded their tour at

the Pavilion of Honour which contains the names of 196 fallen heroes displayed on an illuminated panel made from aluminium reclaimed from Armed Forces vehicle used by the nation's defenders in the battlefields of honour and duty.

The leaders expressed their pride in the martyrs who offered the ultimate sacrifice in defence of the nation, while affirming that the UAE, under the leadership of President His Highness Sheikh Khalifa bin Zayed Al Nahyan, will always remember the brave and heroic acts of the heroes who will go down in

the annals of the UAE's history as an inspiration for the generations for their loyalty, dedication and sacrifice.

They also hailed the families of the martyrs who offered and brought up these young, loyal and dedicated patriots. The honour of these families behind their children and their pride in them, the rulers affirmed, will always be a source of reverence and appreciation from the leadership and people of the UAE.

At the event, the national anthem was played and the artillery fired a 21-gun



salute. A number of the UAE Air Force aircrafts flew in a tribute to the martyrs. The Sheikhs in attendance laid the wreaths at the Memorial of Martyrs in recognition of their sacrifices and the UAE's national anthem was played.

The leaders also honoured 18 families of martyrs and presented the Martyr Medal in recognition of their sacrifices for the sake of the homeland.

"The history of nations and people witnesses moments of pride and great

milestones. Today is one of the most brilliant moments in the history of the UAE. Today, Emiratis pay tribute and express their appreciation towards those who presented sacrifices for the sake of their homeland," H.H. Sheikh Abdullah bin Zayed Al Nahyan, Minister of Foreign Affairs and International Co-operation, was quoted saying.

He further added, "Martyrs of the nation have written the story of the

country's pride. They translated courage, belonging and loyalty values in reality to defend the country's achievements. The martyrdom of Salem Suhail bin Khamis, the first martyr in the history of the UAE, is a symbol of national sacrifices and it is instilled in our souls. At the same time, our history has proven the Emiratis' willingness to defend their country with strength and heroism, pride and loyalty, as our forefathers fought against invaders and sacrificed their souls for the sake of this homeland. Homeland, for Emiratis, is the most precious thing in their social system.

"On this day every year, the UAE leadership and people recall the story of those elite youths who sacrificed their souls for the sake of their dear country. Their sacrifices are a source of pride for all of us. Their sacrifices have proven the national spirit of the UAE citizens; consequently they united behind the flag of the homeland and wise leadership."

Sheikh Abdullah concluded by saying, "Today, we have the right to be proud of the families of martyrs, not





only because they are the families of those great men, but also because they taught them the meaning of belonging; for that, we highly appreciate them.

“We celebrate their immortality, not their passing away, the acts of heroism which will be immortal in the memory of this great homeland.”

Drawing Strength

The UAE, under the leadership of President His Highness Sheikh Khalifa bin Zayed Al Nahyan, and the UAE people will always comfort and support families of the martyrs for the ultimate sacrifices their children offered in defence of the nation, affirmed His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces.

“In every moment we express pride and honour in our loyal heroes who created a new glory for the nation, we inspire and draw strength, determination and persistence from their brave acts which encourage us to proceed on the path of dignity and glory,” HH Sheikh Mohamed said this during his

meeting with families of the nation’s martyrs following the Commemoration Day celebrations at the Martyrs Memorial.

Sheikh Mohamed exchanged cordial talks with the families of martyrs and enquired about their conditions and wellbeing. He said he was extremely happy to meet them, expressing his

gratitude and thanks for their honourable stances and loyal patriotic feelings.

According to reports, the families of martyrs expressed their delight at meeting with Sheikh Mohamed and exchanged with him the feeling of pride and glory in the nation’s heroes who set examples of sacrifice, loyalty and dedication.



Milipol Qatar celebrates 20-Year

The Ministry of Interior of Qatar alone generated 11 contracts for an amount of QR 260,050 million

The Milipol Qatar 2016, the 11th edition of Doha's biannual event dedicated to homeland security in the Middle East, marked its 20-year anniversary.

The recently held event was opened by HE the Prime Minister and Interior Minister Sheikh Abdullah bin Nasser bin Khalifa Al-Thani, and graced by the visit of its patron His Highness Sheikh Tamim Bin Hamad Al-Thani, the Emir of the State of Qatar.

Organised by the Ministry of Interior of the State of Qatar in partnership with the French-based Comexposium Security, the 11th edition attracted 6,538 visitors from 103 countries, of which 35 countries were officially represented by 246 official delegates - an increase of more than 68 percent compared to the last edition.

Furthermore, the event's 230 exhibitors, representing 35 countries, included eight new country entrants, including Algeria, Belize, Cyprus, Jordan, Lithuania, Luxembourg, Pakistan and Uganda.

The Qatar contingent represented a large section of the exhibition floor with 54 companies exhibiting. Among international pavilions, the French pavilion showcased 23 French companies, while China, Germany, North America and the UK had a similar presentation.

"This year's event was again a very successful Milipol Qatar edition. Exhibitors and visitors alike expressed positive feedback following the 11th occurrence



The event was opened by HE the Prime Minister and Interior Minister Sheikh Abdullah bin Nasser bin Khalifa Al-Thani

and affirmed its position as the most influential trade exhibition dedicated to homeland security in the region," said Muriel Kafantaridis, Exhibition Director – Milipol Qatar 2016.

A key feature at Milipol Qatar 2016 was the introduction of a dedicated zone for Civil Defence, which saw a number of global and regional exhibitors showcasing products and developments within the sector.

The prime position zone was complemented by the Ministry of Interior of the State of Qatar's stand, which also allo-

cated a portion of its own stand to civil defence.

When Milipol Qatar returns in 2018, the show floor will incorporate the existing Civil Defence Exhibition & Conference. The two events have merged to become the region's homeland security and civil defence sectors leading event.

The new addition was also the event's inaugural seminar programme which sparked constructive discussions among leading industry personalities. The second and final day of the seminar focused on "Critical Infrastructure Protection –

Anniversary



Cyber Threat Intelligence”.

The show’s Main Official Sponsor was Abdullah Abdulghani & Bros. Co., while the event’s Diamond Sponsors were Qatar Petroleum, Saleh Al Hamad Al Mana Co., and Qatar Diar.

The Platinum Sponsor was Qatar Tourism Authority, Silver Sponsors included Watar Rail, Ineo Homeland Security, and Naffco, and the Bronze Sponsor was Nexter. In addition, the event’s Official Carrier was Qatar Airways, its Official Forwarder was Milaha, and its Official Hotel was Sheraton

Grand Doha Hotel. Other Official Sponsors included Ooredoo, Hemaya Security and Alhazm.

MoI Qatar’s 11 contracts worth QR 260.05mn

The Milipol Qatar committee announced the details of the 11 contracts signed by the Ministry of Interior of Qatar, worth a total of QR 260.050mn.

Airbus Defence & Space, De La Rue, GET Group, Safran Identity & Security, Abdullah Abdulghani & Bros, Saleh Hamad Al Mana and Gulf Business Machinas were among the exhibitors who won contracts.

Airbus Defence & Space bagged the contract worth QR 11.5mn for the maintenance, support and up gradation of the TETRA system and the De La Rue Int. LTD gained a contract worth QR 22.250mn for supplying travel documents printers.

The third contract was bagged by GET Group for the maintenance of residency printers and their consumables worth QR 10mn, while the fourth contract worth QR 7.8mn was gained by Safran Identity & Security for the renovation of the finger printing system and expansion of finger printing database devices.

The fifth contract was for Abdullah Abdul Ghani & Bros. Co. for the Supply of 120 Different Toyota Cars worth QR 25.4mn and the sixth contract was awarded to Saleh Hamad Al Mana Co. for the Supply of 30 Different Nissan Cars worth QR 6.7mn.

The seventh contract went to Gulf Business MaCHINAs (GBM) for the licenses for operating programmes and the development of the central systems of information systems of the Ministry of Interior worth QR 21.7mn, while the TELCO International gained the eighth contract worth QR 7.8mn for the maintenance and data collection for traffic

Radar Devices.

The ninth, tenth and eleventh contracts were awarded to Al Tanmiyah for the maintenance and data collection for traffic Radar Devices for QR 4.4mn, Sail Labs Technology of Austria for Comprehensive Media Monitoring Systems worth QR 2.5mn and Ares Beskitas of Turkey for the addition of equipment and weapons for boats worth 140 Million QAR respectively.

Highlights

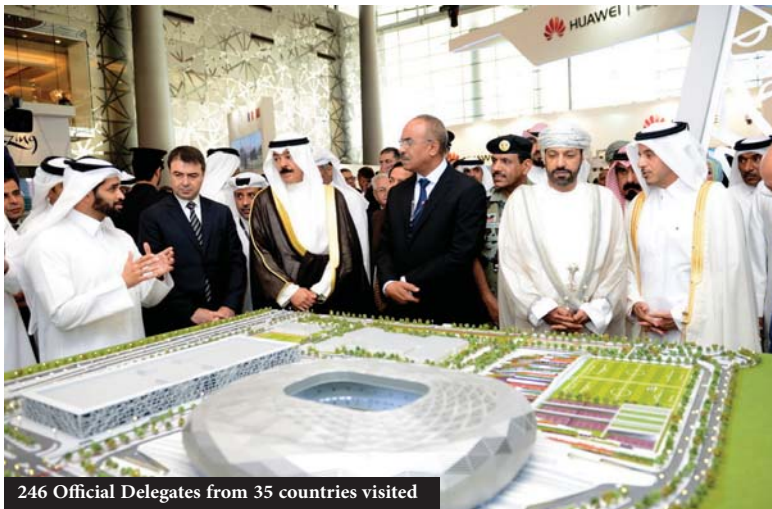
Among major exhibitors were 28 key international companies which showcased 42 innovative products, ranging from explosive detection and forensics to analysis software and surveillance equipment

Many new product launches gained significant interest during the three-day event, including the high caliber representation of all sectors of Homeland Security, from explosive detection and forensics to analysis software and surveillance equipment.

“Attracting thousands of industry experts and key figures in the world of Homeland Security, Milipol Qatar has become a must attend event in the calendar. During its 20 year-history, the exhibition has celebrated numerous product launches, and it was an honour this year to see so many new and innovative examples showcased on this prestigious stage,” Muriel Kafantaris, Exhibition Director, Milipol Network said.

Industrial Scientific launched a new standalone multi-gas area monitor designed for all-weather purposes that can be used in industrial workplaces and hazardous applications.

Experts in security solutions and crisis management, IREMOS, launched two products. The first from the French company IREMOS Communication, a collaborative platform allowing crisis response teams to access a common



246 Official Delegates from 35 countries visited

Key figures

Milipol Qatar 2016

- 230 exhibitors from 35 countries, including 8 new countries.
- 5 international pavilions: France, China, Germany, USA and the UK.
- 6,538 visitors from 103 countries
- 246 Official Delegates from 35 countries (+68% versus 2014 figures).
- 182 media representatives covered the event.
- 17 seminars featuring 18 international speakers and attracting more than 350 attendees.
- The Ministry of Interior of Qatar alone generated 11 contracts for an amount of QR 260,050 million.



6,538 visitors from 103 countries attended the event

French-based Cegelec Défense revealed the design of its Mobile Surgical Hospital ahead of its launch in January 2017



The prime position zone was complemented by the MOI of the State of Qatar's stand

logbook, situation reports, as well as all crisis documents and procedures, in real time, regardless of their location on any device. Its second launch is IREMOS Solution, designed to improve the preparation, management and coordination of different services and actors, internal and external, involved in the event of a terrorist attack.

Leader Healthcare unveiled its next generation integrated portable intensive care unit (ICU). Moves SLC combines an O2 concentrator, a unique O2 saving ventilator, a suction system, and a



Safran exhibited Morpho solutions



Ministry of Interior of the State of Qatar allocated a portion of its own stand to civil defence

complete vital signs monitoring module into a single, compact, portable system. It is said to reduce the weight and size of current transport systems by over 50 percent.

In the field of health and safety, South Korean-OTOS launched a new style of safety glasses, which it claims will protect eyes from flying objects in addition to hazardous ultra violet rays. The sports-style protective glasses provide shaded lenses for sun glare, a forehead cushion to increase anti-fog performance, as well as a side-arm inclination.

Distributor Qatar Development and Trading Co. (QDT) promoted two new

target products, with the first being a portable targeting system that can be used for indoor and outdoor shooting trainings. The Fulcrum Target System (FTS), which was developed by an ex-military personnel in 2007, can be programmed and triggered by multiple devices allowing target movements in different directions. The second product showcased was the TARGABOT Target System that can be programmed by computer and move up & down, 180° rotational or a combination of both functions, with built-in sequence patterns.

French-based Cegelec Défense re-

vealed the design of its Mobile Surgical Hospital (MSH) ahead of its launch in January 2017. This aims to mitigating the logistics, storage and transportation constraints through the use of expandable and modular shelters integrating critical medical functions to address the full spectrum of medical support requirements.

"Milipol Qatar 2016 is a strategic event for Thales Group, and now in its 11th edition, we were proud to participate in the event once again," said Christophe Lanovsky, Country Director of Thales in Qatar. "This year, we focused on showcasing a number of innovative solutions in the Security, Smart Cities, Cybersecurity and Infrastructure Protection markets."

Other major exhibitors who showcased recently launched products include Bertin Technologies, Hytera Communications Corporation Limited, Newcon Optik and Nucotech Company Limited.

The 12th edition of Milipol Qatar will be held in October 2018.

Reference Text/Photo:
www.milipolqatar.com

MUOS-5 Satellite Reaches Orbit

The US Navy's fifth Mobile User Objective System (MUOS) satellite built by Lockheed Martin recently reached operational orbit and has successfully deployed its arrays and antennas.

The MUOS team raised the MUOS-5 satellite to an operationally suitable orbit. The team also completed a series of deployments of the satellite's solar arrays and antennas.

Originally launched from Cape Canaveral Air Force Station on June 24, MUOS-5 experienced an anomaly with its orbit raising propulsion system on its way to geosynchronous orbit on June 29. Out of caution, the Navy and Lockheed Martin engineering team immediately placed the satellite in a safe mode in transfer orbit as they investigated and examined their options.

"In the end, the Navy and Lockheed Martin engineering team were able to isolate the issue and develop a work-



around using alternative propulsion," said Mark Woempner, director of Narrowband Communications Systems at Lockheed Martin. "Once we had a plan together, in early October we carefully re-started orbit raising maneuvers."

"The system will undergo on-orbit testing before final acceptance of the system by the Navy and offering it up for operational use," said Cmdr. Jason Pratt, MUOS Principal Assistant Program Manager. "The satellite and its

payloads will go through rigorous tests with our ground systems and terminals to make sure everything operates properly."

The MUOS system is designed to provide improved communications capabilities to users around the world, regardless of where they are in relation to a satellite. The MUOS constellation and associated ground network will provide 3G-like cellphone communications for the next decade and beyond.

Milrem's UV Can Reduce the Load of Soldiers

Milrem recently demonstrated a transport solution based on a tracked vehicle that will reduce the load of soldiers, and increase security. This activity was carried out at Silver Arrow, the large NATO Allied Forces exercise that is taking place in Latvia.

The unmanned vehicle THeMIS (Tracked Hybrid Modular Infantry System) developed by Milrem can carry a load of at least 750 kg. This carrying capacity makes the vehicle an ideal means of transport for soldiers patrolling on foot, as the vehicle can carry their backpacks, water supply, ammunition and other equipment.

The reduced load enables soldiers to focus 100 per cent on their

mission, and the improved manoeuvring ability increases their security. THeMIS moves at up to 24 km/h, which is sufficient to follow soldiers on foot and to perform some faster manoeuvres if needed.

"The defence forces of several countries have expressed interest towards the transport solution demonstrated. Solving

logistical problems is the first and simplest solution when bringing unmanned vehicles like this to the battleground," said Kuldar Väärsi, CEO, Milrem.

THeMIS is the world's first modular unmanned tracked vehicle driven by a hybrid engine. It consists of two identical track modules that contain all the electronics and mechanics for moving the vehicle.

Between the two modules, there is an empty platform that can be used, not only for transporting equipment, but also for carrying weapon systems, equipment for identifying improvised explosive devices (C-IED) or other systems. THeMIS can be used as a remotely controlled or an autonomous vehicle.



THeMIS at Silver Arrow

Nexter Showcases its Artillery Range at Indodefence

Nexter recently presented its range of artillery systems in Jakarta at the Indodefence exhibition.

At Nexter's stand, visitors were able to view the 105 LG1 light towed howitzer. Deployable by light vehicle, helicopter or even by parachute, the 105 LG1 is the world's lightest 105mm assault artillery gun, and is ideal for providing support-

ing fire for rapid reaction forces. The 105 LG1 is in service with the armed forces of Singapore, Thailand, Indonesia, Belgium, Canada and Colombia.

LG1 can fire 12 rounds per minute and can be brought into action in 30 seconds if an optional inertial navigation system is included that allows the gun to be brought into action faster

because it removes the need for a geographic team to calculate the location and surrounding terrain before LG1 can be used.

Furthermore, Nexter's flagship artillery product, the self-propelled CAE-SAR 155mm/52-calibre howitzer was also displayed at the stand. In use by the armed forces of France, Thailand, Indonesia and a Middle Eastern country, it is combat proven in the French army's missions in Afghanistan, Mali and Lebanon.

FINDART, Nexter's firing control system, and the range of artillery munitions produced by Nexter's ammunition business group, were also on display at the stand, alongside Nexter Robotics' NERVA range of mini surveillance and reconnaissance robots.



105 LG1 is a light 105mm assault artillery gun



Photo courtesy of Textron

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Kärcher Displays WOMA Ultra-High-Pressure Machines

Kärcher recently showcased its cleaning solutions fit for use in the oil and gas industry at the Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC). The spotlight was on their explosion-proof high-pressure cleaners and the WOMA ultra-high pressure (UHP) cleaners.

There are several WOMA UHP products developed and manufactured by Kärcher that have numerous applications and can tackle the upper, middle and downstream segments in the oil and gas industry. The machines are effective cleaners of heat exchangers, pipe and interior cleaning, and the cleaning of condensers, air coolers, washing away sludge, and even refurbishing oil tanks when there is a paint stripping task. The company displayed the WOMA UHP and high pressure

machines HD 10/16 and HDS 9/50 at the exhibition.

Richard Nouria, Managing Director, Kärcher Middle East, said, "Regular cleaning using the WOMA UHP machines prevents losses in costs, as dirty and blocked heat exchangers require high-energy to function efficiently. Maintaining these structures delivers high productivity and increased effi-

ciency at a constant process temperature. The use of the WOMA UHP and the explosion proof high pressure cleaners in pipe cleaning removes the built-up sulphite, salt, or limestone deposits."

Kärcher is one of the world's leading suppliers of cleaning technology to the private, commercial and industrial sectors. The Middle East subsidiary opened its doors in 1998 and is located in Dubai.



Kärcher cleaning solutions are fit for use in the oil and gas industry

Northrop Grumman to Develop Laser Beam Control System

Northrop Grumman Corporation will help the U.S. Air Force mature its plans to use directed energy systems for self-protection on current and future aircraft under a recent contract awarded by the Air Force Research Laboratory (AFRL).

The contract calls for Northrop Grumman to develop and produce the beam control portion of an airborne laser weapon demonstration system that AFRL is developing under its Self-Protect High Energy Laser Demonstrator (SHIELD) Advanced Technology Demonstration (ATD) program.

The laser weapon will be housed in a pod attached to a fighter-sized aircraft. The system will be tested on a tactical aircraft flying at speeds up to supersonic. AFRL expects to begin flight testing the integrated system by 2019.

"Our Northrop Grumman-led team is integrating an innovative beam director with proven beam control technologies to help the Air Force define and successfully demonstrate a laser weapon capability for current and next generation aircraft," said W. Mark Skinner, Vice President, Directed Energy, Northrop Grumman Aerospace Systems.

The beam control system characterises the flight environment for atmospheric disturbances that could distort the laser beam, acquires and tracks incoming targets, determines an aim point for the laser, then shapes and focuses the outgoing beam on the target, added Skinner.

Northrop Grumman is developing the SHIELD beam control system under a segment of the ATD program known as SHIELD Turret Research in Aero Effects,

or STRAFE.

AFRL will integrate STRAFE beam control system with a laser source, and power and cooling systems developed for the SHIELD ATD.



Solid-state laser at Directed Energy Production Facility

Rolls-Royce Takes a Step Forward in UltraFan Engine Design

Recently, Rolls-Royce ran the world's most powerful aerospace gearbox for the first time, marking a significant step in the development of its new UltraFan engine design.

The first run of the Rolls-Royce Power Gearbox (PGB), at the company's facility in Dahlewitz, Germany, marks the start of a series of tests which will see the gearbox reach up to 100,000 horsepower, the equivalent of more than 100 Formula 1 cars.

The power gearbox is a vital component of the UltraFan design as it

enables the engine design to offer efficient power over a wide range of take-off thrusts.

The first run took place on Rolls-Royce's Attitude Rig, which allows engineers to simulate the effects of the gearbox being on the wing of an aircraft that is climbing after take-off, coming in to land or banking while in flight. The initial run confirmed rig dynamics and oil system functionality at low pressures and speeds.

More advanced testing will take place during the rest of the year to provide additional data on low power high speed combinations at various

pitch and roll angles and at different simulated altitudes. High power testing will take place next year on the PGB Power Rig where the gearbox will reach full power.

UltraFan, available from 2025, will offer a 25 per cent fuel efficiency improvement over the first generation of Rolls-Royce Trent engine.

Rolls-Royce is working in partnership with Liebherr-Aerospace, through their Aerospace Transmission Technologies joint venture, to develop manufacturing capability and capacity for the new power gearbox.

China's CDB Leasing Places US\$1.26 Bn for CFM Engines

CDB Leasing has selected CFM LEAP-1A engines to power 100 per cent of its first batch of next generation single-aisle aircraft orders. The firm engine order is valued at US\$1.26 billion at list price and deliveries are scheduled between 2018 and 2021.

The President of CDB Leasing was quoted saying, "We believe our customers will benefit greatly from operating the highly efficient, reliable LEAP-1A engines. What we have seen of the engine's performance in commercial service so far has given us great confidence that it is the right engine for our new single aisle aircraft and will provide the operating economics our customers expect, that will substantially reduce emissions which is consistent with CDB Leasing's Green Growth core value."

While, Jean-Paul Ebanga, President and CEO of CFM International said, "CFM is committed to providing our



CFM LEAP-1A Engine

best support to our operators and leasing company customers, to support their goals of providing passengers with the highest quality air travel."

The LEAP-1A engine entered commercial service on August 2, 2016. A total of 10 aircraft have been delivered to date and the in-service fleet has logged nearly 3,000 flights to date. The

engine is delivering the promised 15 per cent improvement in fuel efficiency, along with an equivalent reduction in CO2 emissions; a 50 per cent margin to new emissions regulations; a dramatically lower noise signature; and CFM's industry-leading reliability and low overall operating costs.

Cyber security: Bridging the talent gap

A global survey by Raytheon on cyber security found a higher awareness of the issue among the UAE youth compared to other countries

By Sakha Pramod

Photo: Ahmad Al Blooshi

At a time when cyber-attacks are on the increase, about one million cyber security job openings went unfilled around the world last year, according to a recent report. In today's world cyber security is of paramount importance to the public and private sector. So, Raytheon commissioned a global survey "Securing Our Future: Closing the Cyber security Talent Gap," in partnership with the National Cyber Security Alliance. Nation Shield talked to Christopher J. Davis, President, Raytheon International, Inc, UAE and Shahzad Zafar, Director, Cyber Security, Raytheon International Inc. UAE about the survey and came up with some interesting findings. Excerpts:

Q: What was the objective of the survey?

Christopher J Davis: The primary purpose of the survey was to try to determine why there was a talent gap in cyber security professions. Raytheon as a company has for several years had a deep interest in this topic. In the last year and a half, Raytheon has been particularly interested in developing cyber security professionals and reducing the talent gap for young professionals here in the UAE.

Shahzad Zafar: The first edition of the survey was conducted about a year



R-L: Christopher J. Davis, President, Raytheon International, Inc, UAE and Shahzad Zafar, Director, Cyber Security

ago, and there were some interesting findings that came out. Since then, there have been several initiatives and corrective measures. So we wanted to conduct another survey this year to gauge the progress made from last year.

Q: What was the methodology used for the survey?

Christopher J Davis: The previous survey included some younger people about 16 years old or so. This survey focused on a slightly older audience who were in the process of deciding which field or career they should choose.

Shahzad Zafar: We primarily con-

ducted it in about 10 different countries across the US, Europe, the Middle East and Asia Pacific. Around 4,000 youth were interviewed or surveyed. Mostly about 15-20 percent of them were Emiratis in the UAE. The survey covered youth in high school or those who have joined college in the age group of 18-26.

Q: Which countries did the participants of the survey come from?

Christopher J Davis: In Europe the survey covered UK, Germany and Poland. In the Middle East we had included the UAE, Saudi Arabia, Qatar

and Jordan. In Asia Pacific, we had Japan and Singapore.

Q: What was level of cyber security awareness the participants had?

Christopher J Davis: It is very interesting. The previous survey showed a high level of awareness. The same trend we saw again during this survey, and according to the findings, over 73 percent of the Emiratis surveyed had been taught about the need for online cyber security awareness, compared to the 71 percent average in the Middle East and worldwide. They had either taken steps to ensure cyber security or were aware of the need for it. They were also aware of the potential for a career in cyber security. Specifically, the survey shows that 72 percent of Emiratis were given career guidance in the field of cyber-security, compared to the 56 percent average found in the Middle East and double the global average (34 percent)

Q: Were the youth interested in pursuing a career in cyber security?

Christopher J Davis: Absolutely. We had tremendous response to a four-day cyber-security awareness training workshops that we conducted for a week for Khalifa University students.

Raytheon as a company has for several years had a deep interest in cyber security

For example, when we held the workshop for the Khalifa University students, we had room for only 50 students but we had about 200 applicants.

Q: Can you give some specific numbers from the survey?

• **Christopher J Davis:** About 66 percent of youth in the UAE are more likely than a year ago to consider a career in cybersecurity. 61 percent of young adults in the UAE have been offered the skills that prepare them to pursue a career in cybersecurity. 70 percent of young Emirati adults reported reading or hearing a news account related to cyber-attacks, compared to 48 percent globally

Shahzad Zafar: If you look at global

figures, awareness of cyber security and career prospects in the area was only 34 percent compared to 72 percent in the UAE which is very impressive. That demonstrates the emphasis laid by the government, by academia and industry to bridge the cyber talent gap. In 2015 there was one million cyber security related jobs that went unfulfilled globally. That shows there are great career opportunities in the sector globally. The survey showed, however, that the UAE was a couple of steps ahead as far as awareness is concerned.

Q: Did you look into collaboration with educational institutions?

Shahzad Zafar: It wasn't specific to educational institutions. We had two entities that helped us with this survey. One was National Cyber Security Alliance and the other Zogby Analytics which actually conducted the survey on our behalf. It was not particularly focused on a university but rather on youth and millennials across the globe that represented the age group criteria.

Q: How can the talent gap be filled?

Shahzad Zafar: That is reflected in the survey as well. Though 73 percent of the participants say they are aware of the issue, 48 percent of Emirati youth also say they need additional training to come into the workforce where they could make the internet safer and secure. Such demand for additional training was also evident in the global survey findings. 84 percent of those surveyed in the UAE are aware of the typical job responsibilities of cybersecurity professionals, compared to the 45 percent average worldwide.

More needs to be done internationally to provide youth with the training they need to enable them to take up a cyber security related job in the public or private sector.



Christopher J. Davis, President, Raytheon International, Inc, UAE and Shahzad Zafar, Director, Cyber Security talk to Nation Shield



Khalifa University students display their Cyber Academy certificates

Q: What were the other findings from the survey?

Shahzad Zafar: According to the survey about 58 percent said they would like to enhance their communication skills. It also showed that there is not one answer across the region. In Saudi Arabia, 70 percent of the youth said they are more interested in data analysis and in Qatar 61 percent said they are more interested in problem solving. Globally, 56 percent say they are more interested in problem solving.

Q: Do you think collaboration between public and private sector is the key?

Christopher J Davis: I would say it is a joint public and private sector responsibility. So it will always be a joint collaborative public private sector campaign. Both industry and governments across the world could do a better job of ensuring that young people who are about to enter the job market understand what challenges and opportunities cyber security offers and where they can go for the right education. When we held the UAE Security Forum on 'Bridging the Global Talent Gap', we worked with a think tank

More needs to be done internationally to provide youth with the training they need to enable them to take up a cyber security related job

that is focused on the Middle East. Government entities, educational institutions like Khalifa University and NYU Abu Dhabi, telecom providers and industry were represented in the seminar. So that was a really interesting collaborative effort that went across public and private sectors.

Shahzad Zafar: At the forum, we also had academia that has done this successfully in the US. We also had National Science Foundation from the US. We brought in people who had done this in the US government,

to have a dialogue on what we collectively needed to do to help bridge the cyber talent gap. There is a final report that came out of the seminar with some concrete recommendations.

Q: Do you have any training programs for the UAE youth?

Shahzad Zafar: We have launched our global Cyber Academy with that initiative. We have conducted training here for our customers in the past. We are looking forward to identifying opportunities where we can continue to integrate these specialized training classes with other academic institutions.

Q: Do you offer internship facilities for students?

Christopher J Davis: We have developed one program with one of our entities in Cambridge, Massachusetts. We had a UAE student who had done that and had a tremendous time. Internships are very important and we have to carefully structure them. We are planning to renew this particular internship, build on its success, and find other opportunities.

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Strata Makes its Mark

The company has a longstanding relationship with Airbus and Saab

Strata Manufacturing PJSC (Strata), the advanced composite aerostructures manufacturing facility wholly owned by Mubadala Development Company, recently celebrated the successful completion of the First Article Inspection (FAI) of Aileron and Flap Track Fairing (FTF) shipsets for the Airbus A330neo.

In 2015, Strata was awarded the sole supplier contract to provide ailerons to Airbus for the A330 and A330neo. The contract named Strata as the single source supplier of ailerons to Airbus for its A330 family of aircraft. The successful delivery of the first Aileron and FTF for the A330neo were completed ahead of schedule.

Ismail Ali Abdulla, Deputy CEO, Strata Manufacturing said, “This year has proven to be significant for Strata. Following the additional deals announced at the Farnborough International Airshow, we are delighted to announce the delivery of the shipsets to Airbus. We continue to focus on growing our customers confidence in Strata’s capability to strengthen our position in the global aerospace industry - continuously delivering high-quality components in challenging timeframes.”

The Strata Aileron programme accounted for 26 per cent of the company’s total revenue by the end of the second quarter this year, which reached US\$52.2 million compared to US\$39.2 million during the second quarter last year.

Long-term Partnership with Saab

Furthermore, Strata recently delivered its first shipset of A350 – 1000 Flap Support Fairings (FSFs), from its contract with



Strata was awarded the sole supplier contract to provide ailerons to Airbus for the A330 and A330neo

Saab, to Airbus.

The first shipset was delivered through Saab business unit Saab Aerostructures to Airbus, following the Strata- Saab announcement made in June last year during the Paris airshow, further demonstrating Strata’s capabilities in the composite manufacturing industry.

Badr Al Olama, CEO of Strata, said, “The delivery of the latest shipsets reinforces our commitment to developing a manufacturing hub in Abu Dhabi for the global aerospace industry. We are proud to work in collaboration with our strategic partners to deliver high quality products to Airbus. The ongoing strengthening of our global partnership ecosystem continues to demonstrate the growing role of Strata as a reliable supplier in the aerospace supply chain.”

“In line with Abu Dhabi Economic Vision 2030 to build a sustainable knowledge-based economy, we are committed to the development of talented nationals in the aerospace industry. We seek to empower our employees through a robust training and development program to ensure that Strata develops a globally-competitive Emirati workforce for the

aerospace industry,” he added.

“With the first delivery of the A350-1000 Flap Support Fairings, our cooperation reached a very important milestone. We are pleased to have Strata as a partner to Saab on this work package and they have proven their good capabilities and skilled workforce with this achievement. This is however only the first delivery in many to come and we look forward to continue this cooperation on the A350-1000 program”, said Lars Jensen, Vice President and Managing Director of Saab Aerostructures.

Strata has emerged as a core economic pillar supporting the national ambition to establish Abu Dhabi as a global aerospace hub. In recent years, the company has expanded its portfolio of products and capabilities to drive its competitive position and the development of its global value chain to serve the worldwide aerospace community.

Established in 2009, with production beginning in 2010, Strata has partnerships with the world’s leading aircraft manufacturers, Airbus and Boeing, as well as tier one suppliers like Alenia Aermacchi, FACC AG, SAAB and S.A.B.C.A.

PC-24 Flies High at NBAA-BACE 2016

Pilatus received a lot of interest for the prototype

The second Pilatus PC-24 prototype was displayed at this year's NBAA's Business Aviation Convention & Exhibition (NBAA-BACE) in Orlando. The aircraft was presented to the audience at the exhibition's outdoor stand.

It took a break from its test flight programme to join the latest PC-12 NG on display at the Pilatus stand. The latest version of the PC-12 NG, sold 1400 times the world over since it was first launched.

Furthermore, NBAA-BACE 2016 provided a platform for Pilatus to show off the new PC-24 interior design, which is now ready for the start of series production. Designworks, a BMW Group company, joined forces with Pilatus to come up with six stylish colour concepts for the PC-24. Each one is named after well-known ski resorts such as St. Moritz, Zermatt and Aspen. A walk-in 1:1 model of the PC-24 featuring the "Vail" cabin design was also on display for the entire duration of the show.

The PC-24 development programme has been making rapid progress and according to reports, Pilatus is expecting its new business jet to exceed previously published performance data.

Both PC-24 prototypes are currently completing a rigorous programme of test flights. Various key performance tests have already been concluded with success. The second prototype has been based in the US in recent months where it has undergone hot and cold weather trials plus tests on the avionics and autopilot. Meanwhile, the first prototype,

P01, has been undergoing further aerodynamic testing in Europe. Another important milestone was achieved with the aerodynamic design freeze in October 2016.

Oscar J. Schwenk, Chairman of the Board of Directors of Pilatus said, "Our two PC-24 prototypes have completed a combined total of over 1,000 hours and almost 600 flights. The data collected so far indicates that our Super Versatile Jet is likely to perform even better than previously announced. All I can say for the time being is that the PC-24 will undoubtedly be two things: unique and outstanding – as you have come to expect from Pilatus! Updated performance data will be published at next year's European Business Aviation Convention & Exhibition (EBACE 2017) in Geneva."

Round-the-Clock Support

Significant progress has also been achieved in training and customer support. Pilatus develops all its pilot and maintenance training units, including

a PC-24 full-motion level D simulator, in partnership with FlightSafety International.

Pilatus is currently also in the process of setting up a worldwide PC-24 support network in order to provide the sort of first-class "round-the-clock" service, from the moment the first delivery goes ahead.

Pilatus also developed the new CrystalCare Support Programme, the business aviation industry's most comprehensive coverage for scheduled and unscheduled maintenance. The programme offers additional peace of mind by completely eliminating the uncertainty of maintenance cost variations.

The third and final prototype, the first series aircraft, will join the test flight programme beginning of 2017. Certification is planned for the third quarter of 2017 and initial deliveries will go ahead thereafter to Planesense, provider of fractional ownership programmes in the US, for example, and to the Royal Flying Doctor Service of Australia.



PC-24 prototypes are currently completing a rigorous program of test flights

New Russian Buk-M3 SAM enters service

Advanced Buk-M3 introduces containerised missiles

Russia has received its first Buk-M3 medium range surface-to-air missile (SAM) systems, a modernised version of the Buk-M2 system, defence minister Sergei Shoigu has announced.

The Buk-M3 medium-range surface-to-air missile system features advanced electronic components and a deadly new missile. It outperforms the old S-300P long-range air defense system.

The new Buk-M3 system was also shown on Russian television for the first time on 23 October by TV Zvezda.

Design

Development of the Buk M3 began back in 1990, although the process was plagued with delays. It will be replacing the older Buk M1 systems.

The Buk-M3 system boasts a new digital computer, high-speed data exchange system and a tele-thermal imaging target designator instead of the tele-optical trackers used in previous models.

A battery of Buk-M3 missiles can track and engage up to 36 targets simultaneously, while its advanced 9R31M missile is capable of knocking down all existing flying objects, including highly manoeuvrable ones, even during active electronic jamming. The Buk-M3 can also engage sea and land targets, due to its vertical launch capability.

This air defense system can engage tactical and strategic aircraft, helicopters, short-range ballistic missiles, cruise missiles, air-launched missiles, anti-radiation missiles, guided bombs and other aerodynamic vehicles. This air defense system can operate in heavy enemy jamming conditions.

The 9M317M missile and launch canis-



ter used by the Buk-M3 is believed to be the same as that found in the new naval 3S90M version of the Buk.

Armament and radar system

A Buk-M3 missile battery consists of two TELAR 9A317M (Transporter Erector LAuncher and Radar) and one TEL 9A316M (Transporter Erector Launcher) vehicle.

The Buk M3 uses a new 9M317M missile, which was first publicly revealed in 2006.

A Buk M3 TELAR vehicle is fitted with radar, missile erector and launcher, and friend or foe identification system. It is operated by a crew of 4. The Buk-M3 9A317M TELAR vehicle carries six containerised 9M317M missiles.

The new missile has a range of up to 70 km. Maximum altitude is 35 km. Minimum range of fire is 2.5 km and minimum

altitude is around 15 meters. The missile is fitted with high-explosive fragmentation warhead. In case of emergency missiles can be launched against contrast surface targets, such as ships.

Missiles of the Buk M3 are stored in and launched from containers. It is worth noting that the Buk was the last Soviet/Russian mobile air defense system, that had its missiles stored openly, rather than in containers.

Buk TELARS, and its radar is paired with an integrated identification friend-or-foe system. Radar of the Buk M3 searches for targets, tracks them and guides missiles on them. The system has a third generation phased array fire control radar.

The new missile/container layout allows for a similar upgrade in capacity for the new 9A316M transporter erector launcher (TEL), which carries 12 missiles over the 8 normally carried by older Buk TELs.



9M317 surface-to-air missile on the quadruple launcher



Inside the TEL of a Buk SAM system

Also there is a TEL vehicle that lacks radar, but carries 2 pods with a total of 12 missiles. It acquires firing data from the Buk M3 TELAR vehicle, or command post vehicle. Essentially this unique launcher vehicle acts as a force multiplier. Similar concept was used on the older Buk systems. However these use reloading vehicles, that can launch missiles themselves, rather than separate TELs.

The TELAR of the Buk M3 was based on a GM-569 special tracked chassis. This vehicle is powered by a diesel engine.

Normally the Buk M3 TELAR operates

as part of an air defence unit. A battery of Buk M3 TELARs and TELs is controlled by an automated control system. There is also a command post vehicle, detection and target designation radar, and reloading vehicles. A battery of the Buk M3 can engage up to 36 air targets simultaneously. However if required each TELAR vehicle can operate autonomously.

Reloading vehicle of the Buk M3 will be based on a BAZ 8x8 wheeled chassis. This vehicle has good cross-country mobility. It is fitted with a crane and carries 4 pods with a total of 24 missiles. Modular ar-

rangement of the missiles allowed to speed up reloading.

Mobility

The Buk-M3 missile system is mounted on an tracked armoured chassis GM-569A as the Buk-M2. The Buk-M3 armoured vehicle is motorised with a V-46 multifuel diesel engine developing 710 hp at the maximum speed of 2,000 rpm. The hydro-mechanical transmission has a two-flow differential arrangement and includes a 4-speed planetary gearbox, an all-gear planetary reverse with a gear ratio of a unit, an integrated torque converter with a lockup friction clutch, summing rows, an input matching reduction unit comprising a bevel and a cylindrical pair of gears, control system pumps and a hydrostatic steering gear. The control of the hydro-mechanical transmission is electro-hydraulic.

The cooling system of the engine and transmission system is of an ejection type and uses the traction engine exhaust energy. The power required for the cooling system does not exceed 15 hp. The cooling system includes an ejector and a package of liquid-air radiators of the engine cooling and lubrication systems, the transmission oil system and the suspension shock absorber cooling system.

The suspension either side consists of six dual road wheels with the drive sprocket at the rear, idler at the front and four track-return rollers which support the inside of the double-pin track only. The vehicle can run at a maximum speed of 70 Km/h with a maximum road range of 500 km. The crew of 4 is located at the front of the vehicle. The crew enters and leave the vehicle via two large hatches located at the front of the armoured chassis. The vehicle is protected against firing of small arms and shell splinters.

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Oshkosh Defense brings new capabilities to the mission

Integrates Advanced Weapons, C4ISR Suites into JLTV ,M-ATV



M-ATV Family of Vehicles

The JLTV Family of Vehicles was designed from the ground up to provide new levels of protected mobility in the light vehicle class, while supporting advanced networking, C4ISR suites and increased fire power.

The JLTV General Purpose variant on display at AUSA 2016 was equipped with an EOS R-400S-MK2 remote weapon system integrated with Orbital ATK's M230 LF 30 mm lightweight automatic chain gun to demonstrate the vehicle's ability to support increased lethality including a medium caliber weapon system.

"Our JLTV and M-ATV platforms are engineered with industry leading suspension and protection systems, as well as the ability to support a spectrum of C4ISR suites, mission kits and weapon systems required for the modern battlefield," said John Bryant,

senior vice president of Oshkosh Corporation and president of Oshkosh Defense.

"These vehicles represent a technological leap forward in off-road mobility, protection, lethality and communications, which is opening the door for such vehicles to play more significant role in a variety of ground operations."

EOS R-400S-MK2

The R400S-Mk2 continues the EOS commitment to refine and improve its remote weapon system product range. The Mk 2 remains a single weapon station specifically developed to provide 30 mm firepower in a high precision weapon system weighing less than 400 kg. It retains its R400 heritage to operate a variety of other weapons including machine gun and automatic grenade launcher.

The first round hit probability is provided through an enhanced integrated

ballistic solution which analyses weapon and ammunition data; range and ambient environment in addition to vehicle attitude and dynamics. Performance can be further enhanced with optional video track of targets and multi-axis stabilisation.

The Mk2 is 'plug-and-play' compatible with other EOS weapon systems. Below-armour control systems linked to above-armour mounting and cabling are compatible with other family members. The advanced technology of the R400S-Mk2 combined with the lightweight 30mm ATK M230 LF cannon provides light vehicles with unprecedented access to firepower normally reserved for much heavier (armoured) vehicles. The Mk2 has a variant optimised for tracked vehicles which minimises high frequency road and vehicle vibration from degrading the video image displayed to the operator. Precise mobile engagements up

to 2 km with 30 mm lethality are now a reality. The Mk2 provides a reliable, flexible and powerful weapon station for a broad range of fighting vehicles (wheeled or tracked).

M230LF Chain Gun®

This Highly Reliable System can be easily integrated. The 30mm M230LF is a more capable version of the 30mm cannon featured on the Apache helicopter and is a member of the Chain Gun® family of externally powered, combat-reliable conventional automatic weapons.

The JLTV is available in 2-door and 4-door models in the following configurations - JLTV Utility, JLTV General Purpose, JLTV Close Combat Weapons Carrier, JLTV Heavy Guns Carrier.

M-ATV Family

The battle-proven M-ATV Family of Vehicles offers the best combination of protection and off-road mobility in the

MRAP class of vehicles.

High performance. High protection. Flexible for the mission: Oshkosh® M-ATV variants are built with a durable off-road drivetrain for cross-country operation through mud, sand, snow and deep water, in temperatures ranging from -32°C (-26°F) to 54°C (130°F). Designed to ascend 60% grades and traverse 30% side slopes, the M-ATV Family of Vehicles dominates the most challenging terrain with an average 400mm (16 inches) of ground clearance and nearly 500km (310 miles) of cruising range. The M-ATV platform features an array of vehicle configurations appropriate for a wide range of mission requirements, force structures and threats. Whether a fleet has narrowly defined operational requirements or expansive tactical demands, forces can be equipped with the right M-ATV variants to meet those specific needs while benefitting from a common platform and components

The Oshkosh Defense® MRAP All-

Terrain Vehicle (M-ATV) Assault variant is the highly protected, configurable design for unparalleled operational performance. Its extended crew capsule provides ample squad seating, as well as rear wall and roof hatches for swift deployment on the battlefield. Integrated, adaptable C4ISR systems give personnel the technical edge through every operation. The TAK-4® independent suspension system allows the M-ATV Assault to travel across challenging terrain, while the Core1080™ crew protection system provides enhanced safety for the entire squad.

The latest M-ATV Assault variant is outfitted with a Moog Reconfigurable Integrated-weapons Platform (RIwP) to demonstrate expanded overmatch and lethality for all battlefield conditions. The RIwP contains a Javelin missile, a M249 machine gun, an Orbital ATK M230 LF 30 mm lightweight automatic chain gun, and a DRS Long Range AIM target acquisition sensor suite.

M-ATVs are offered in standard and extended wheel base models with five variants to meet mission requirements for Armed Forces around the world. The M-ATV variants include M-ATV Special Forces, M-ATV Assault, M-ATV Engineer, M-ATV Command and M-ATV Utility

“Looking ahead, future battlefields will generate an unpredictable combination of terrain, tactics and threats,” said Bryant. “Our JLTV and M-ATV platforms can be configured with the protection and mission equipment to support both defensive and offensive operations outside-the-wire” •



The Oshkosh JLTV is equipped with the EOS R-400S-MK2 remote weapons system and the Orbital ATK M230 LF 30 mm gun

Lockheed Martin's MHTK

A big future for a small missile

The battle space is ever-changing. Combatant commanders experience threats, such as dangerous rockets, artillery and mortar (RAM) targets are increasingly common - fast, inexpensive and small, all coming in at close ranges and in large numbers.

In fact, during recent conflicts, these threats, costing less than your average smart phone, caused massive asset damage and accounted for the second highest number of ground casualties.

Needless to say, air and missile defense is a tough challenge and the unique nature of rockets, artillery and mortar (RAM) threats makes the defense landscape exceptionally complex for commanders.

Missile threats around the world are growing quickly. In fact, according to the Missile Defense Agency, there has been an increase of over 1,200 additional ballistic missiles over the past five years and the total number of ballistic missiles outside the United States, the North Atlantic Treaty Organization (NATO), Russia, and China has risen over 5,900.

There is no doubt that threats around the world are growing quickly. Technology is advancing fast and adversaries are acquiring more missiles, with better range, agility, accuracy and lethality.

To protect soldiers, citizens and infrastructure — governments need highly advanced missile defense systems that can overmatch the evolving threats.



Miniature Hit-to-Kill (MHTK) interceptor missile is a threat to any threat!

Big ideas, small solutions

Lockheed Martin engineers have developed a small solution to address this global problem. Using outside industry technologies, they have infused game-changing capabilities in the Miniature Hit-to-Kill (MHTK).

Passion for protecting the warfighters, civilians and critical assets drives their innovation. The MHTK is the future of air and missile defense and Lockheed Martin has built it to give commanders a decisive edge on the battlefield.

To date there is no defense system available to completely defeat mortars. When RAM attacks occur, ground forces have one option - take cover. As the second leading cause of deaths on the battlefield having a solution to rocket, artillery and mortar threats will be game-changing to commanders in the field.

The MHTK interceptor is a lightweight cost-effective solution. It is less than two and a half feet in length, over one and a half inches in diameter and weighs about five pounds at launch.

The level of miniaturisation being

achieved with our missile is unheard of. Our engineers modelled technology know-how from the packaging and big data industries to design a small interceptor with the same Hit-to-Kill technology as our larger missiles. MHTK provides overwhelming lethality and reliability in a compact transportable design.

With technically advanced components, the MHTK is designed to intercept short-range threats. Unlike traditional interceptors which rely on large fragmentation warhead technology - creating dangerous blast fragmentation debris - the MHTK uses concentrated levels of kinetic energy applied with high accuracy, known as Hit-to-Kill technology, to eliminate RAM threats.

Successful second flight test

Lockheed Martin's Miniature Hit-to-Kill (MHTK) interceptor was successfully launched in an engineering demonstration at White Sands Missile Range, New Mexico, during the summer of 2016. The demonstration was part of the US Army's Aviation and



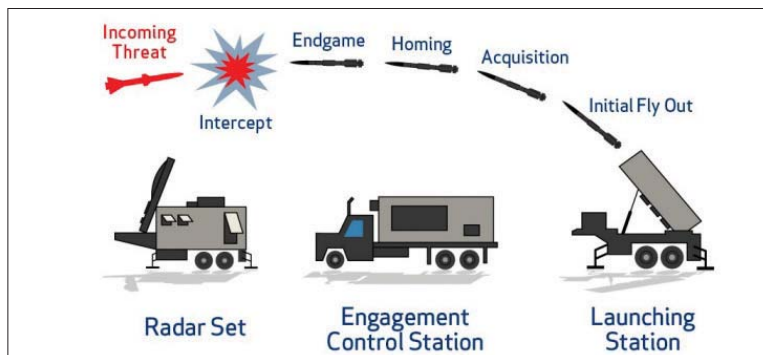
EAPS successfully conducted the first guided flight test to characterize the seeker, guidance, navigation and control systems of its MHTK Interceptor

Missile Research Development and Engineering Center's (AMRDEC) Extended Area Protection and Survivability (EAPS) programme.

The flight demonstrated the agility and aerodynamic capability of the MHTK missile, which is designed to defeat rocket, artillery and mortar (RAM) targets at ranges greatly exceeding those of current and interim systems. This test advances the program, increasing the level of MHTK maturity.

The MHTK interceptor is less than 2.5 feet (72 cm) in length and weighs about 5 pounds (2.2 kg) at launch. It is designed to be small in size while retaining the range and lethality desired in a counter-RAM solution, with the reliability of other Lockheed Martin Hit-to-Kill interceptors.

The MHTK uses Hit-to-Kill technology, which destroys threats through kinetic energy in body-to-body contact. Hit-to-Kill technology delivers all



Above is a visual example of the sequence that takes place when an interceptor is deployed to eliminate a threat

of the available interceptor energy, but removes the risk of collateral damage seen in traditional blast-fragmentation interceptors.

The MHTK interceptor complements other Lockheed Martin Hit-to-Kill missile interceptors by delivering close-range lethality with proven success for a true layered Hit-to-Kill defense.

As a world leader in systems integration and development of air and missile defense systems and technologies, Lockheed Martin delivers high-quality missile defense solutions that protect citizens, critical assets and deployed forces from current and future threats. The company's experience spans missile design and production, infrared seekers, command and control/battle management, and communications, precision pointing and tracking optics, radar and signal processing, as well as threat-representative targets for missile defense tests.

How it is different

Older or less advanced missile defense systems do not have the sensing or agility components required to intercept a threat head-on, and instead rely on proximity fragmentation. In this approach, an interceptor gets close to its target and then detonates itself in

an effort to disable or deflect the threat off course. This older technology is not as accurate and can result in dangerous debris. So as threats around the globe escalate, more and more governments are turning to Hit-to-Kill technology to protect their soldiers and citizens.

Stopping a bullet with a bullet

"Hit-to-Kill" (HTK) refers to destroying a threat with body-to-body impact by the interceptor missile. The impact takes place with a large amount of kinetic energy that completely destroys threats containing weapons of mass destruction, keeping them away from protected areas when it matters most.

HTK technology is a defining advantage of Lockheed Martin missile defense systems. Previous air and missile defense interceptors did not have the sensing or agility components required for HTK, and instead relied on fragmentation warhead technology. This method attempts to disable or deflect the threat off course - this is not as accurate and can result in dangerous debris falling close to the protected area. Several Lockheed Martin interceptors can also achieve HTK at higher altitudes and ranges, which is important when defending against weapons of mass destruction.

Patria – high-tech expertise in defence, security and aviation technology

At IDEX 2017 in February Patria will launch Nemo Container

Patria is a trusted provider of defence, security and aviation life-cycle support services and technology solutions. Patria's most significant export products include the armoured modular vehicle, Patria AMV and Patria Nemo mortar system, which have both been selected by international customers, including a prominent Middle East country. At IDEX 2017 in February Patria will launch Nemo Container, the world's first 120mm mortar system integrated with a container.

Patria is an internationally operating defence, security, and aviation group providing customers with competitive solutions based on strong expertise and collaboration with trusted partners. Patria's strength is based on its excellent products complying with NATO standards.

Patria AMV and Patria Nemo – at the core of modern defence

Patria AMV, the market leader among 8x8 armoured wheeled vehicles, is Patria's key export product. Patria AMV is currently contracted by seven customer countries, among others by the Finnish, Polish and Swedish Defence Forces, and it has been fielded in ISAF operations since the year 2007. AMV products are under continuous development and are fitted with the latest technology. Patria AMV's structural solutions enable high payload capacity, high level of protection and integration of heavy weapon systems.

Patria also produces advanced mortar systems. The core product is Patria Nemo, a 120 mm remote controlled mortar turret, providing indirect and direct fire as well as MRSI (Multiple Rounds Simultaneous Impact) and direct lay capabilities. As a modern and compact system, Patria Nemo can easily be mounted onto various

armoured vehicles, both wheeled (6x6, 8x8) as well as tracked ones. Due to its low weight, Patria Nemo is also adaptable to lightweight, high-speed vessels and can be effectively used for harbour patrolling and protection, coastal guarding and infantry landing operations.

Patria Nemo can also be equipped with the Fire Control System - Command Post (FCS-CP) solution, which is designed to support and coordinate indirect fire for one or several Patria Nemo Mortar Units enabling the Units to be operated as a group.

Patria Nemo gunner-commander training simulator provides a realistic, virtual training environment for all kinds of fire missions that can be performed with Patria Nemo mortar system.

Introducing Patria Nemo Container at IDEX 2017

To be introduced to the public for the





Patria Nemo Training Simulator



AMV Part Task Trainer networked with Patria Nemo Training Simulator

first time in February 2017, the Nemo Container will be the first container solution to mount a large-calibre weapon. While smaller-calibre, container-mounted weapons have been available, no Nemo-like mortar system, capable of both direct and indirect fire, has been on the market until now.

The development of a new type of weapon system was possible thanks to deep knowledge and long-term experience of mortar systems at Patria. This container-mounted 120mm Nemo mortar system is also an excellent example of how Patria's product development meets customer needs. During the development process,

Patria's experts were in touch with the Middle East Navy to ensure that the finished product took maximum account of customer needs.

The key benefit of the Patria Nemo Container is its easy mobility, which is unique to mortar systems of this calibre. It is capable of flexible transfer from one location to another using suitable equipment.

The Nemo Container is delivered with everything that a mortar unit needs: protection for the crew, the weapon and space for ammunition.

System integration know-how

Today's defence systems are large entities

that are comprised of several subsystems. Patria's solid system integration know-how ensures that the entire system functions faultlessly. Areas of special expertise are intelligence, surveillance and command and control systems, as well as their integration, software and life-cycle support. Patria's system integration know-how has been developed for decades to meet the needs of the increasingly complex systems used by customers.

Data transfer and its reliability form an important part of defence systems. Patria has solid expertise in secure wireless data transfer solutions. The operating environment of modern defence systems is no longer limited to land, sea and air – cyber threats must also be taken into account. This serves to enhance the importance of information system and network protection. Patria has actively strengthened its expertise and service and product range in these areas.

A firm footing in aviation

With a firm footing in aviation, Patria is one of the leading European providers of aviation life-cycle support services. Current operations focus on the life-cycle support of F-18 Hornet jet fighters, Hawk training jets, and NH90 transport helicopters.

In military pilot training, Patria has reached excellent results in the elementary pilot training under contract for the Finnish Air Force (phase I - II training for conscripts, cadets and flight instructors).

Patria also operates in the civilian sector specializing in professional pilot training. Patria Pilot training offers airlines a competence based MPL (Multi-crew Pilot Licence) training programme teaching pilots comprehensive skills to operate Airbus fleet even under the most demanding weather conditions, safely and with the best efficiency. Patria Pilot Training is a leading Flight Training Organisation (FTO) in Northern Europe.

P&WC's PurePower PW800

Revolutionising Long Range Business Jet Engines

Pratt & Whitney Canada's (P&WC's) has unveiled the next generation of long and ultra-long range business jet engines, in the form of the PurePower PW800 engine.

This is the only engine in its class that's fully ready to enter service and help operators achieve their business goals. P&WC is a subsidiary of United Technologies Corporation.

Scott McElvaine, Senior Director, Marketing & Customer Service, PurePower PW800 engines said, "The PurePower PW800 has demonstrated that it's technology-ready through thousands of hours of rigorous ground and flight testing, during which it has surpassed expectations time and again. But that's not all: we're also ready to offer customers outstanding service and support."

Engine maintenance training for the engine has begun, and P&WC's industry-leading global support network, including its parts distribution centres, is ready and able to deliver skilled, dedicated assistance to operators around the world.

Customers can also enrol in the ESP PurePower PW800 engine service plan. This support solution is tailored to owners' and operators' specific needs. It ensures their peace of mind by pairing the engine's unmatched performance with the most comprehensive suite of technical, maintenance and support offerings available. As the only original equipment manufacturer (OEM)-backed service plan for PurePower PW800 engines, the plan is the only choice that offers the reassurance of a predictable and



PurePower PW800 plan provides comprehensive coverage for heavy and line maintenance

prevention-based maintenance environment that optimises aircraft productivity and performance.

The ESP PurePower PW800 plan provides comprehensive coverage for heavy and line maintenance, combining numerous all-inclusive services, from engine wash, borescope inspections and troubleshooting support to immediate access to technical experts available 24/7 to keep the aircraft flying. P&WC's fast, thorough and seamless service experience maximises the availability of customers' aircraft through the world's largest network of return to service experts.

Innovative technological solutions make it possible to coordinate the engine's maintenance requirements with those of the aircraft, resulting in increased aircraft availability. Access to self-learning fault isolation technology (Casebank Spotlight) accelerates troubleshooting by detecting problems before they become problems. And P&WC continues to work closely

with customers to incorporate more key features that matter to them, so they can spend more time flying and no time worrying.

Since its certification in February 2015, the PurePower PW800 has been setting new standards for the long- and ultra-long-range business jet markets thanks to its durable, rigorously tested core technology. The engine has already completed more than 9,000 hours of evaluation tests and over 12,000 cycles. This includes more than 510 flights and over 4,000 engine flight test hours combined on P&WC's advanced Boeing 747SP flying test bed and Gulfstream's G500 flight test aircraft. In total, the advanced common core technology, leveraged in 15 different PurePower engine applications, has amassed over 45,000 testing and operating hours.

Ease of Maintenance

The PurePower PW800 engine has been thoughtfully designed with the



PurePower PW800 engine is also ahead of the game when it comes to environmental regulations

The engine offers low emissions with an advanced combustor, among other features

convenience, comfort and satisfaction of owners, operators, pilots and passengers in mind. It is optimised to provide a benchmark passenger experience, with the low-noise design and low vibration levels ensuring an exceptionally quiet cabin.

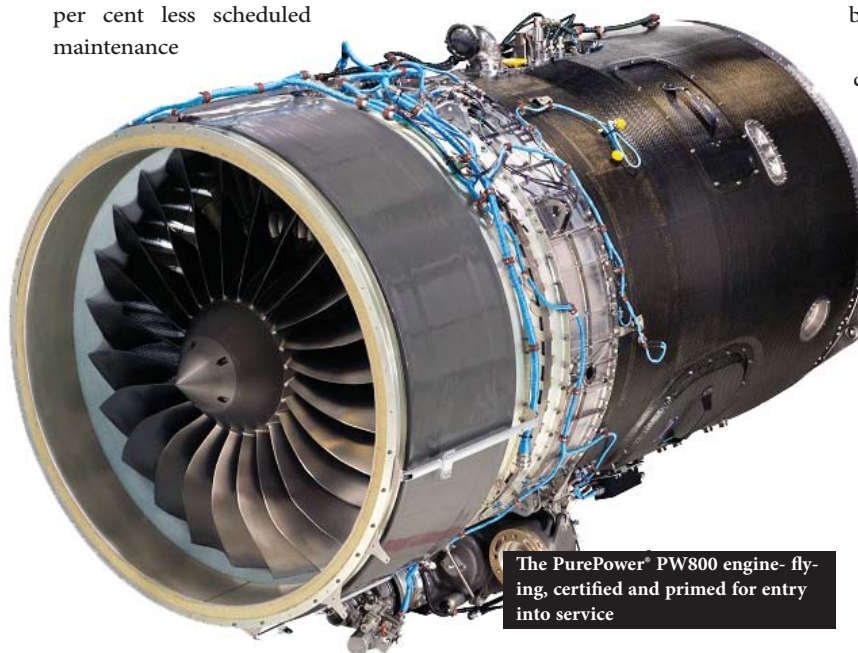
It has been designed to offer best-in-class availability and ease of maintenance. With a predicted 99.99 per cent dispatch reliability, the robust powerplant design will provide increased peace of mind for customers that no other engine in the corporate market can match. It will require 40 per cent less scheduled maintenance

(on wing) and 20 per cent fewer inspections than other engines in its class. The time on wing is also superior to any other engine of its kind, with the first shop visit targeted at 10,000 hours or beyond.

The PurePower PW800 engine is also ahead of the game when it comes to environmental regulations. It over-delivers on reducing the engine's environmental footprint, not just meeting or exceeding today's environmental requirements but anticipated future standards as well. From low emissions

vanced combustor, to minimising materials of concern in design and manufacturing, every element is paving the way for a more sustainable aviation world. It delivers benchmark fuel efficiency, improving on the previous generation of engines in the same thrust class by over 10 per cent. It clears International Civil Aviation Organization (ICAO) community noise certification standards by double digits, making it easily the quietest engine in its class. And it slashes harmful emissions, clearing anticipated future CAEP/8 nitrous oxide standards by a double-digit margin.

"With the PurePower PW800, customers get much more than just proven technology that raises the bar for performance and operating economics. They get an outstanding flying experience and comprehensive customer support that no one else can match. At every step of its development, the PurePower PW800 has lead the way - it was the first in its class to be certified, the first to fly on a daily basis and today it's the first to be ready for entry into service," added McElvaine.



The PurePower® PW800 engine- flying, certified and primed for entry into service



Embraer's ISR trio

Meet Embraer's ISR aircraft

Embraer, outshines competition with its state-of-the-art ISR aircraft

Embraer Defense & Security offers complete airborne solutions for Intelligence, Surveillance and Reconnaissance (ISR), using Embraer's commercial and executive platforms.

Embraer's state-of-the-art family of Intelligence, Surveillance and Reconnaissance (ISR) aircraft deliver the best solution on the market for meeting mission needs.

In this article, Nation Shield presents:

- EMB 145 AEW&C
- EMB 145 MULTI INTEL
- EMB 145 MARITIME PATROL

PLATFORM

From successful commercial aircraft to cost-effective defense systems, the transformation of the ERJ 145 platform into a military aircraft equipped with sensors capable of detecting and interpreting "targets" (aircraft, missiles, boats, vehicles, ground facilities, all types of electromagnetic radiation and natural resources) required sizable investments and sophisticated technology, much of which affected the basic aircraft itself.

This is where Embraer's technology and expertise come into play.

The perfect combination of modern equipment, advanced technology and low downtime, together with a high degree of readiness — the direct result of

a platform intended for the competitive regional market — has improved operating economics through a reduction in inspection frequencies and ground times, enabling these aircraft to fly over 3,000 FH annually.

It is a simple formula: intelligence, plus surveillance, plus reconnaissance equals situational awareness. Integrating it on one platform is fundamental to mission success.

Affordable, reliable, efficient and innovative — the EMB 145 is designed specifically for the demanding intelligence, surveillance and reconnaissance mission requirements in today's information warfare environment.



The core of the EMB 145 AEW&C is a compact, state-of-the-art mission system

EMB 145 AEW&C

According to Embraer, the EMB 145 AEW&C is the most advanced and affordable Airborne Early Warning and Control aircraft available on the market.

It is the perfect blend of Embraer's proven, reliable and cost-effective ERJ 145 platform with a unique, high-performance, multi-mode active phased-array AEW radar, a powerful command and control system and a comprehensive set of support systems like ESM, self-protection and communications, including data-links.

The EMB 145 AEW&C is currently in operation with the Brazilian Air Force, carrying out aerial surveillance, mission coordination, aircraft vectoring and other missions in the Amazon basin. It is one of the mainstays of the SIVAM programme, one of the most ambitious and successful vigilance programmes recently developed worldwide.

The EMB 145 AEW&C has also been

delivered to Greece, where it provides the Hellenic Air Force with early warning and control capabilities compatible with the NATO environment, and to Mexico, to be used in its border surveillance program.

The core of the EMB 145 AEW&C is a compact, state-of-the-art mission system. Built by Ericsson Microwave, the ERIEYE AEW system has intelligent sensor technology and a user-friendly command and control system, capable of quickly acquiring accurate and comprehensive information.

Latest developments in sensors and systems

The outstanding radar system can detect and track both sea and airborne targets, over land and water, all with an impressive instrumented range.

An electronically scanned radar beam overcomes the limitations of rotating antennas through faster beam-pointing to

the target or area, a characteristic only possible with active phased array technology. This gives the radar the ability to adapt the transmission waveform according to target dynamics and background clutter. The result is exceptional performance to simultaneously track multiple air and sea targets while protecting the radar from single failure with graceful degradation capability.

• Airborne Early Warning

The primary mission of an AEW platform is to detect, track and identify targets in its patrol area and forward these data so as to give friendly forces an accurate and comprehensive operational picture. The EMB 145 AEW&C performs these tasks with excellent results. With an instrumented range of 450 km, the AEW radar will detect and track targets long before they may become a threat. The IFF interrogator, associated with supporting C2 databases, provides fast

and reliable target identification. Finally, the advanced data-links allow all these vital data to be disseminated in a timely manner throughout the battle space to all units that need them. In the end, decision makers have the information they need at the time they need it.

• Airspace Management

By combining the various vigilance modes of the AEW radar with the IFF interrogator, suitable C2 databases and adequate communication resources, the EMB-145 AEW&C can in fact perform all relevant ATC tasks. Flight plans can be stored, edited and downloaded via data-link as required. Corridors and special interest areas — including intrusion alarms — can be set in the Situation Display to allow mission crew members to perform airspace management with high efficiency and low workload.

• Fighter Allocation And Intercept Control

The C2 system onboard the EMB 145 AEW&C features all the resources necessary to allow the mission crew to per-

form weapons control tasks. A comprehensive set of data bases provides the relevant data about air bases and fighters. Air-to-air data-links ensure that the controllers always have the real-time status of each fighter in a patrol. Crucial information such as fighter's remaining fuel and stores are available at a finger's touch. Decision support tools offer valuable suggestions, such as the best selection of interceptor for a given target, as well as the intercept procedure itself, chosen from a variety of intercept patterns.

• Signals Intelligence

The EMB 145 AEW&C incorporates an advanced Electronic Warfare System. Passive ELINT and COMINT systems allow full exploitation of the electromagnetic spectrum of tactical interest. Both technical and tactical presentations are available, thus giving the system operator all the resources and tools to identify and locate emitters of interest.

• Surveillance and Control Of Borders, Economic Zones And

Sea

The high probability of detection, low false alarm rate and multi-mode capability of the Erieye radar ensures that nothing passes unperceived, either in the air or on the sea. Smugglers, unauthorized fishers or any potentially hostile air or sea vehicles won't be given a chance of doing any harm where an EMB-145 AEW&C is on duty.

EMB 145 MULTI INTEL

The EMB 145 MULTI INTEL is an advanced Remote Sensing / Airborne Ground Surveillance and Intelligence aircraft capable of providing real-time imagery and signals intelligence over ground objectives. It is equipped with an extensive sensor suite ranging from high-performance synthetic aperture radar to electro-optical sensors, in addition to communications and electronic exploitation systems capable of gathering complete intelligence information.

Today, three EMB 145 MULTI INTEL are being deployed day in and day out, to survey the largest rainforest in the world, the Amazon basin. They are part



The C2 system onboard the EMB 145 AEW&C features all the resources necessary to allow the mission crew to perform weapons control tasks



The EMB MULTI INTEL incorporates a highly flexible Tactical Communication and Data-link system

The EMB 145 AEW&C incorporates an advanced Electronic Warfare System

of the most sophisticated ISR program in the world, the SIVAM, Amazon Surveillance Program.

Aircraft are fully operational, performing civilian and military missions in the Amazon basin such as:

- Remote Sensing (SAR, EO, IR)
- Ground Surveillance (MTI and SAR Spot mode)
- SIGINT
- Near Real Time Dissemination

Latest developments in sensors and systems

For IMINT (Imagery Intelligence) missions the aircraft is equipped with RF, E/O and IR sensors. The synthetic aperture radar is a day and night, all-weather multi-mode sensor. In the Map mode, the dual band SAR is capable of producing 3 D maps and the full polarimetric capability provides imagery with analysts multiple responses from the same scene.

Equipped with high-sensitivity SIGINT systems, the EMB 145 MULTI INTEL is also capable of monitoring and locating electromagnetic signal sources at very long distances.

The EMB 145 MULTI INTEL was designed for maximum versatility by allowing the integration of any type of

sensor to satisfy the most demanding ground surveillance or remote sensing requirements around the globe.

IMINT missions are performed with three different sensors: Electronic - SAR (Synthetic Aperture Radar), ElectroOptical - MSS (Multispectral Scanner) and IR - FLIR (Forward Looking Infra Red) System, which may or may not be used simultaneously.

Equipped with sensors that allow mission execution in all weather, night and day, the EMB 145 MULTI INTEL permits the data collection for IMINT (Imagery Intelligence), COMINT (Communication Intelligence) and ELINT (Electronic Intelligence), providing a complete picture of the area of interest.

The EMB 145 MULTI INTEL provides the surveillance management system data integration and fusion in real-time.

The Tactical Communication System

The EMB MULTI INTEL incorporates a highly flexible Tactical Communication and Data-link system with a large growth capability. It can easily be integrated to any dedicated Air Defense Command System. The acquired imagery can be transmitted in real-time with the wide-band data-link system via

point-to-point data link or via satellite.

The tactical communication system with ECCM capacities and secure data features covers a wide range of frequency, from HF up to L Band, to support the links 11,14, 16 and 22.

The data-link system, integrated with the Surveillance Management System, allows the transmission/reception of the sensor data, situational awareness, SMS commands and free texts among others.

Vital communication links are secure and stand robust against even the most sophisticated jamming equipment:

EMB 145 MARITIME PATROL

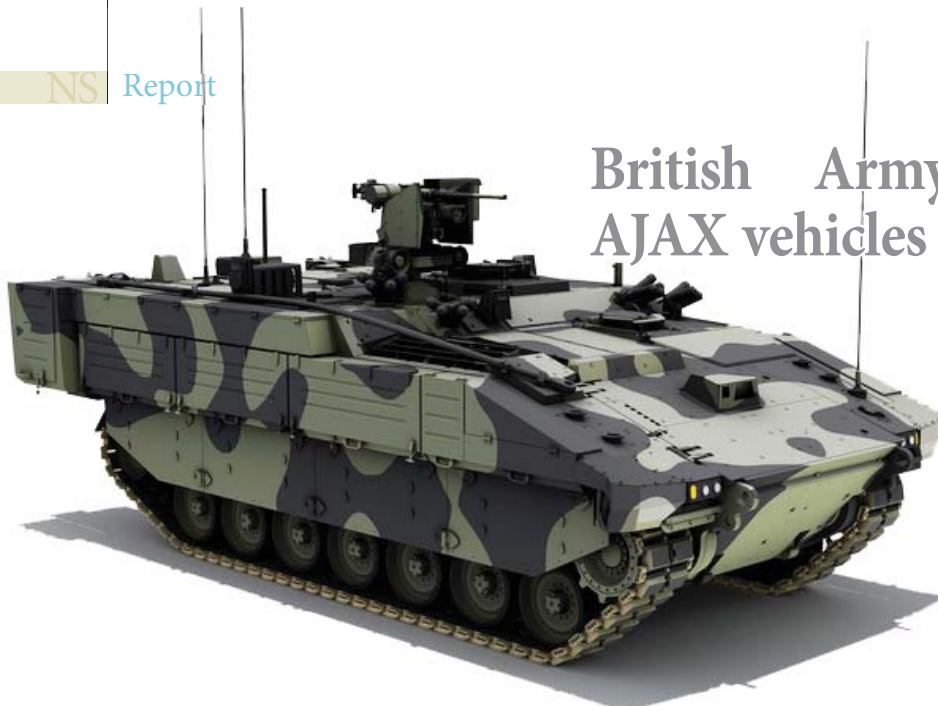
The MP platforms can fly in high speeds and altitudes during surveillance and patrol missions, which allow the reduction of the reaction time, when necessary. The MP platforms can also fly in low altitude, within the operational limits, in order to comply with SaR missions. The MP platforms, besides the sensors and mission systems, can be integrated with real time, wide band tactical communication system and BLOS (beyond line of sight) and/or LOS (within line of sight) data links•

Reference Text/Photo:

www.wikipedia.org,

www.embraer.com

British Army's futuristic AJAX vehicles



AJAX, the British Army's new Armoured Fighting Vehicle, marks a new milestone

Nation Shield looks into why the UK-designed AJAX vehicles are tougher, more agile and smarter than any other.

The AJAX programme includes six variants: AJAX, ARES, APOLLO, ATHENA, ATLAS and ARGUS. Each AJAX variant will be a highly agile, tracked, medium-weight armoured fighting vehicle, providing British troops with state-of-the-art best-in-class protection.

General Dynamics Land Systems-UK has successfully completed an additional live firing test for AJAX, which took place throughout July and August. It involved both the turreted AJAX variant and the ARES variant and focused on generating specific data and evidence to support manned firing trials planned for early next year.

The turreted AJAX firing trials were conducted by a joint General Dynamics Land Systems-UK and Lockheed Martin UK team, with support from CTA International. The trials were observed by the UK Ministry of Defence.

Chief of Materiel (Land) at the MOD's

Defence Equipment and Support organisation Lieutenant General Paul Jaques attended the live firing trials in August, and said that the completion of these live firing trials marked an important milestone towards fulfilment of the AJAX programme.

"This national project will equip our troops with a fleet of world-class armoured

vehicles, which will form a central component of the UK's new Strike Brigades," he added.

Other trials planned for AJAX prototypes in the coming months include automotive, cold chamber, power systems and Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capabilities.



Each AJAX platform variant has extensive capabilities

The range of AJAX variants will allow the British Army to conduct sustained, expeditionary, full-spectrum and network-enabled operations with a reduced logistics footprint. They will operate in combined-arms and multinational situations across a wide-range of future operating environments. The first British Army squadron will be equipped by mid-2019 to allow conversion to begin with a brigade ready to deploy from the end of 2020.

Platform

AJAX vehicles are developed upon a highly-adaptable and capable Common Base Platform, maximising commonality in mobility, electronic architecture and survivability that ensures the British Army has a family of world-class platforms.

Each AJAX platform variant has extensive capabilities, including acoustic detectors, a laser warning system, a local situational awareness system, an electronic counter-measure system, a route marking system, an advanced electronic architecture and a high performance power pack.

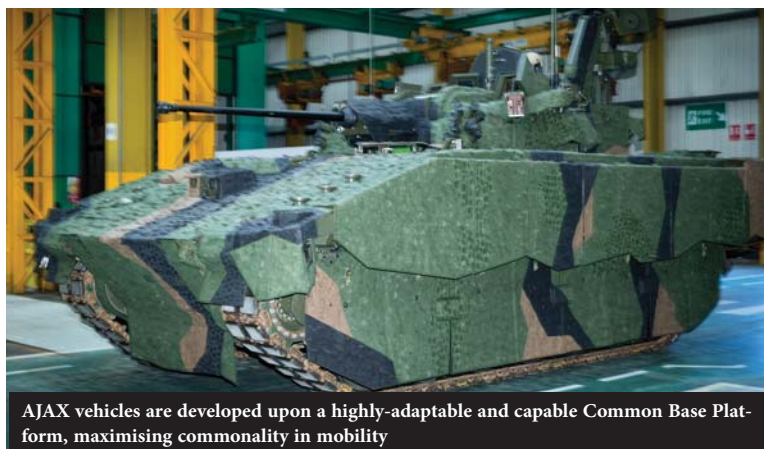
The AJAX family of vehicles has growth inherently built in. With an upper design limit of 42 tonnes of driveline capability, scalable and open electronic architecture and a modular armour system, it has enormous potential to combat future threats and incorporate new technology throughout the lifespan of the platform.

As a result, AJAX provides the kind of growth capability that the user will need to face the uncertain challenges of Future Force 2020 and beyond. AJAX will replace the less capable CVR(T), providing broad utility throughout the balanced Army 2020 force across all operations.

The AJAX programme was originally known as the SCOUT Specialist Vehicle (SV) programme.

The AJAX Variant

AJAX will be the medium weight core of the British Army's deployable Intelligence,



AJAX vehicles are developed upon a highly-adaptable and capable Common Base Platform, maximising commonality in mobility

Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability. It enables the soldier to be at the point of collection of accurate all-weather commander information within a network-enabled digitised platform.

It provides commanders with a survivable and capable Ground Mounted Manned Reconnaissance (GMMR) platform, which gives them the flexibility to perform a range of roles across the spectrum of conflict.

The primary role of AJAX is to provide accurate and timely information to support decision making at all levels. It integrates a range of leading edge technologies to provide an optimised survivable, lethal and agile ISTAR platform.

The panoramic Primary Sight provides advanced all-weather imaging technology capability, which allows the AJAX variant to find, engage and target at far greater ranges than the current UK Ministry of Defence core legacy platforms.

Progress So Far

In December 2012, the programme passed its first major design point, the Preliminary Design Review (PDR).

The Common Base Platform Critical Design Review (CDR) was completed in late 2013, while a year later the overall PMRS variant CDR for the PMRS variant was completed.

First pre-production prototype, a PMRS

variant was unveiled at DVD 2014. A rolling programme of CDRs for all variants took place throughout 2014 and 2015.

The orders started rolling in - on 3 September 2014, General Dynamics UK was awarded £3.5 billion to deliver 589 SCOUT SV platforms to the British Army. Less than a year later, General Dynamics UK was awarded a £390 million extended in-service support contract for the AJAX fleet

In July 2015, the Company announced that it will open a new Armoured Fighting Vehicle Assembly, Integration and Testing (AIT) facility in South Wales.

On 15 September 2015, the SCOUT SV programme was renamed AJAX, unveiling the first turreted AJAX prototype at DSEI.

What Next For AJAX?

Further AJAX pre-production prototypes to be rolled-out through 2016. Completion of UK Ministry of Defence Armoured Fighting Vehicle trials for all seven prototypes is to be completed through 2015-2018. 589 AJAX platforms and to be delivered to the British Army through 2017-2024, along with the provision of in-service support and training.

The training establishment and first squadron will be equipped by mid-2019 to allow conversion to begin with a brigade ready to deploy from the end of 2020.

The irreplaceable Chinook

Whatever the mission, the multi-task, twin-rotor CH-47 Chinook answers the call

Dark green CH-47 Chinook helicopters lift off one by one from Royal Air Force Odiham, an airfield an hour south-west of London, and disappear over the horizon. Next stop is a training mission, ship deployment or relief effort. Built by Boeing, the British-based tandem rotorcraft, that has answered the call of the United Kingdom military needs and humanitarian efforts for 35 years, are in great demand these days globally.

Two helicopters typically are all that is needed when transporting troops, delivering cargo or evacuating wounded from a battlefield, according to the pilots and crew who fly them. The CH 47 Chinook has rushed to

battle in the Falkland Islands and in Afghanistan. It has rescued residents in peril when flooding has submerged large sections of the English countryside. It continues to dazzle spectators with its acrobatic nimbleness at European air shows.

Developed more than a half-century ago and first used in combat by American troops during the Vietnam War, the medium-to-heavy-lift helicopter has been a resilient aviation presence for European region. The Chinook has welcomed continual technology upgrades to stay relevant where other aircraft of its generation have put in their service time and been retired. The RAF remains so reliant on the Chinook, in fact, it took delivery in December of the last of 14 new helicopters—the latest Mk6 model with a

new, machined monolithic airframe, UK-specific avionics and mission systems, aircraft defensive systems, and interoperable communication and navigation equipment.

These newest Chinooks have increased the UK fleet to 60—a total exceeded only by the United States Army and Japanese military.

Odiham (pronounced Odee-um) is surrounded by lush rolling hills, historic villages and the occasional castle ruin. In operation as a military airfield since before World War II, it houses three Chinook squadrons and up to 86 four-person flight crews. One of the 27 Squadron helicopters carries the yellow and green logo of a fierce-looking elephant, nicknamed Nellie. The squadron's association with the elephant dates to its first aircraft type,



“The Chinook has welcomed continual technology upgrades to stay relevant and ahead of its peers”

the Martinsyde G100. This airplane, used during World War I, drew comparisons to the animal because it was so big. Names of the squadron's first commander, current commander and a former squadron crewman recently lost in Afghanistan also are painted across the Chinook fuselage. A large number of Odiham men and women have been deployed to Afghanistan on multiple occasions. Their helicopters, which can carry 55 troops, 10 tons of freight or up to three tanks of extra fuel, are outfitted in protective armor up to head level, a necessity when operating in combat.

Grindal has been sent to Afghanistan six times. The RAF pilot once flew his Chinook to three medical evacuations over 90 minutes. He has taken enemy fire, but thanks to the sturdy Chinook, he survived. This past December, Flight Lt. Chris W. Dodd and his 27 Squadron Chinook crew were on emergency standby duty at Odiham when they were summoned to northern England to help deal with massive flooding in Yorkshire and Lancashire. Dodd was readily familiar with the response zone—he grew up in the area and relatives still live there. Dodd and the others ferried the local police commissioner to assess damage



Army CH-47 can carry 55 troops, 10 tons of freight or up to three tanks of extra fuel



Chinooks are serviced after every 200 hours of flight because of the operational stress encountered

from above. Using one or more of the three trademark hooks on the belly of a Chinook, they brought in external loads of pumping equipment and generators. They repaired a building. They lowered 400 tons (360 metric tons) of sand in two days to quell the rushing waters. The Chinook helped stabilize a region that Dodd called home. For

the pilot, the job was personal and satisfying. While the Chinook has kept the same general exterior, the Mk6 version of the helicopter's new glass cockpit, or all-digital flight system, with four display screens, allows pilots to call up and display instrumentation and resources such as a moving GPS map and an infrared camera all at



Chinooks typically fly with two pilots and two crew members

once, and multitask. They have digital tablets to further address flight issues and connect with crew members in the back of the helicopter.

A pilot now can plot a sortie on a computer in a flight planning room, transfer it to a memory card, walk it to the helicopter and load it. Everything is more efficient. Accurate readings have replaced estimates. Pilots previously had to unfold a paper map when changing mission parameters. With a change, you could be writing it up at the last minute or changing it while in airspace. Weighing 13 tons (nearly 12 metric tons) before fuel or cargo is added, the helicopter provides its own stirring acrobatics, leaving civilians awestruck at public demonstrations. To keep them flying, Boeing has 120 employees who work at Odiham alongside RAF personnel, among them mechanics and test pilots. Boeing keeps its own hangar and stations people in each of the other maintenance facilities. Chinooks are delivered by ship from Boeing's helicopter production factory in Philadelphia

and brought to the Odiham hangars for extra systems installation unique to the RAF before entering service.

"There's a lot of passion for the Chinook in the UK," said Robert Grant, Boeing operations manager at Odiham. Chinooks are serviced after every 200 hours of flight because of the operational stress encountered, especially in harsh environments. A close watch is kept for structural fractures caused by high vibration or surface corrosion created by saltwater or desert sand. The Chinook can withstand a lot, though, according to RAF maintenance crews. Odiham has a work bay devoted to blade maintenance. Another bay is set aside for Chinook panel repair.

Chinooks typically fly with two pilots and two crew members. Each is outfitted in body armor and has a personal weapon. The helicopter can be armed with mini-guns and machine guns. The pilot has several radio channels available to speak to air traffic control, a military controller, ground troops and other aircraft. Levers and

buttons deal with everything from night lighting to the cargo hoists. The Chinook actually requires a key to operate. Each engine on the Chinook starts up separately and moves from ground to flight power. Functional checks are performed before liftoff, making sure everything is working properly.

Nearly 850 Chinooks are in use today in 19 countries. The double-rotor helicopter keeps evolving and won't easily give in to time. New engines, blades and lift capabilities are in development. The U.S. Army publicly has stated it wants new helicopters through 2065. Dabundo, the Chinook program manager, expects production of the storied aircraft to extend well into the 2070s. Those who operate and maintain it at RAF Odiham share a similar vision.

Reference Text/Photos:

www.boeing.com

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Telephonics AN/UPX-44A attained AIMS certification

It is the first IFF interrogator to pass the stringent test of the new “B” level certification

Telephonics Corporation, a wholly owned subsidiary of Griffon Corporation announced that their AN/UPX-44A All-Mode Identification Friend or Foe (IFF) interrogator has attained AIMS DoD 03-1000B certification on the Japan Air Defense Ground Environment (JADGE) program.



Telephonics, with its partners, International Aviation Technical Services, Inc. (IATS) and Toshiba Corporation, worked closely with the Japan Air Self Defense Force (JASDF) and the U.S. DoD AIMS program office during the certification process.

The AN/UPX-44A is the first IFF interrogator to achieve the more stringent test requirements of the new “B” level AIMS certification. The first AN/UPX-44A IFF production system has been delivered to and will enable JASDF to identify military and civilian aircraft, verify forces as friendly and determine their bearing and range.

“Telephonics is extremely pleased to have achieved this significant milestone with our JADGE program partners, said Kevin McSweeney, President of Telephonics. “We look forward to our continued collaboration with IATS and Toshiba over the life of the JADGE program and to providing the next generation of IFF technology.”

Telephonics has delivered over 250 AN/UPX-44A IFF interrogators to U.S. and international customers in multiple operating environments, including airborne, shipboard and ground.

“The interrogators are deployed in fixed- and rotary-wing aircraft, shipboard, ground-based and mobile radar installation sites and comply with international specifications.”

Identification Friend or Foe (IFF) Interrogators

Designed for command and control, the AN/UPX-44, -505 and -506 monopulse and AIMS Certified, All-Mode IFF interrogators enable air traffic controllers and air defenders to identify military and civilian aircraft, verify forces as friendly and determine their bearing and range. The interrogators are deployed in fixed- and rotary-wing aircraft, shipboard, ground-based and mobile radar installation sites.

All three systems comply with U.S. and international specifications that define interrogator modes, performance, control, reporting and interface.” To easily introduce performance upgrades, the system uses common module hardware and software for the detection, interrogation, identification tracking and data extraction of small targets in severe environments.

Technical & Product Support Services

Telephonics recognizes the critical importance of timely and dependable support and is committed to providing the necessary support and services required to meet customers’ needs and have earned a reputation for high-quality products that are in service decades beyond their initial fielding. To ensure the maximum lifecycle support of the products, Telephonics offers a broad range of flexible services.

Telephonics works in close partnership with customers to help achieve the lowest possible cost of ownership over the life of the equipment. From providing a single spare part to complete Original Equipment Manufacturer (OEM) management of logistics support, the company tailors and customizes support products that deliver value while meeting the most demanding requirements.

People connectivity: The key for increased security

With LTE, a 4G standard, Thales ushers in a quantum shift in connectivity and security



The strategic paradigm in which we have found ourselves over the past fifteen years is characterized, in particular, by three basic trends. These trends are going to become more pronounced, and each is capable of bringing about substantial destabilization, both at the level of certain states as well as on a regional or global scale.

The first trend is mass terrorism. The attacks of 11 September 2001 are the most striking example. Suicide attacks, car bombings, attacks with automatic firearms in crowded public places (shopping centers, train stations, etc.) have become the preferred tools for terrorists to disrupt life in a number of countries, not only in the Middle East, but also in Europe and the Americas.

The second, more recent trend is directly correlated with the first. It concerns the massive influx of illegal migrants at the borders, migrants who are fleeing states that have been weakened by these terrorist attacks or the civil wars that often come after them. This ever-increasing exodus of people is likely to dramatically affect regional balances, provoking disorder anew and bringing about a terrible vicious circle.

The third trend, shared by the previous two, is the "theater of operations" where these tragic events take place: borders first, then urban centers. These are the objectives of both terrorists and refugees. The former hopes to spread chaos, the latter to rebuild their lives. Now, we know that by 2050, two-thirds of the world's population will be urban, living in cities that are increasingly populated, large and complex. Being able to

maintain order and security in these urban areas is thus a priority for all states. Within this framework, new tools must be used in order to meet future challenges.

Connecting police officers for a smart city that is safe

Police officers, the central link of security operations, will be the primary recipients of these new solutions, which will seek to increase the connectivity of law enforcement agencies. Although these agencies already seem to have made use of a diverse network of high-performing tools (radios, computer terminals, etc.), they have only begun to connect all the systems that help maintain security. For the moment, the vast majority of police forces still operate using systems of communication that function on TETRA (Terrestrial Trunked Radio) standards

that are essentially geared for voice and text transmission. They still do not have access to high-speed links. Yet the connected police officer of tomorrow will need such an asset to exchange photos and videos. This is Thales' goal.

The group has already shown the substantial advantages that are offered by the availability of a video monitoring system that can cover an entire urban area. As part of the Ciudad Segura project, Thales deployed more than 14,000 video surveillance cameras in Mexico City. From the time these tools were installed, response time, in the case, for example, of a medical emergency, fell by six times, from twelve minutes to two. Saving time here is a question of saving lives. This is only a beginning. The connectivity system that will allow police officers to be truly connected has yet to be deployed. But the lion's share of the work is already done, since most large cities are already equipped with high-speed communications networks. A network of extremely dense and high-performing communication channels indeed exists, with more than 1.3 billion 4G users worldwide, a figure growing exponentially, and the interconnection of objects via the internet (Web 3.0). Nevertheless, police forces are not yet able to connect to these channels at will. It is essential that they be able to do so. Civil networks, however, are not designed for such critical use. If an attack or serious accident were to take place today, first responders would be faced with a network overloaded with calls if they tried to use it. It is thus necessary to create functionalities that enable them to take control of the network. This is what Thales proposes with LTE, a 4G standard that will make it possible for police officers and emergency services to connect in any circumstance to the local network in order to make use of its full potential.

This is similar, to a certain extent,

The use of LTE will permit all equipped organizations to communicate in real time on a shared network

with what happens today in the most modern armies, where people and devices cooperate closely on a digital battlefield. Thanks to this system, law enforcement agencies will thus be able to work in synergy and in real time. They will be able to make group calls, connect to their command center and send photos and video live by means of new application software functionalities. The operational benefits that are possible will be immense.

The use of LTE will permit all equipped organizations (police, firefighters, paramedics, hospitals, etc.) to communicate in real time on a shared network in a multilateral framework, enabling an op-

timized understanding of a crisis situation. Information sharing will be much more effective via real-time transmission of images. These images will take the place of voice or text exchanges between those deployed on the ground and command centers, which will make it possible for decision makers to see events unfolding in real time. This will enable a substantial reduction of what in military terms is called the OODA loop. Body cameras enabling law enforcement officers to transmit what they see live will reinforce the discretion of those deployed, as they will no longer need to resort to their radios to give a report. The use of body cameras transmitting what is happening in a given area live will also enable the gathering and legal validation of evidence, with visuals being authenticated by means of geolocation and timestamps.

LTE will also permit increased efficiency in the framework of traditional missions, such as identity checks and traffic stops. If police officers can connect to the city's infrastructure (video surveillance cameras, etc.), databases will allow them to gather information remotely, in order to validate, for example, the identity of a suspect, making the procedure much quicker and the risks



LTE, is a 4G standard that will make it possible for police officers and emergency services to connect in any circumstance to the local network



LTE can function in remote regions, by means of ad hoc connectivity in areas where connectivity is limited or absent

of error much lower. If law enforcement agencies connect to all of the networks of a smart city, it will be possible to provide greater security to this city, people and infrastructure, all while simultaneously strengthening the security conditions of police officers.

LTE, a standard at the service of a supplementary range of tools

These officers will of course have to implement a range of tools linked to LTE in order to effectively carry out the missions that high-speed connections make possible. Wearing helmets equipped with cameras that can capture images both day and night, police officers will also be equipped with augmented reality glasses. These will make it possible for officers to visualize the images received by their thermal imaging cameras via a smartphone that centralizes and dispatches all of the available functionalities via LTE. Police officers will also be equipped with smartwatches, on which the geolocation of colleagues as well as other information will be displayed, freeing them from having to consult their smartphones and thus keeping their hands free to do their job. Equipped with sensors monitoring

their physiological functions, (heart rate, body position (on the ground or standing), stress level, etc.), police officers will be able to work directly with their command centers and their colleagues in real time and in more secure conditions.

The data transmitted by this very modular equipment will be correlated with the data from other officers, the information provided by the city's surveillance network and the information contained in databases. After being processed remotely in data centers, only the most relevant information will be extracted, so as to send only the most essential elements to those deployed on the ground and to decision makers. This rapid analysis of elements will make it possible to take decisions quicker.

All this data, naturally, will require first-rate cyber security measures. It is essential the images sent by an officer on the ground not be intercepted or altered. This is equally true for the information sent from command centers and for the databases consulted. The implementation of firewalls, as well as the ability to remotely neutralize smartwatches and smartphones in the event of theft, is thus anticipated, in order to make 4G avail-

able that is both resilient and protected from cyber-attacks. Thales, where cyber security is a core business, will fulfil this operational need.

A system essential for the securing a smart city, LTE can provide the same advantages outside of urban areas. The system can function in remote regions, by means of ad hoc connectivity in areas where connectivity is limited or absent. This can be done either by using the infrastructure of the networks already deployed by mobile telephony operators, onto which systems enabling the securing of the link can be added, or by means of 4G communication bubbles, possibly connected to the network via satellite link. Operations such as border controls will be able to benefit from the same assets in terms of intelligence, the verification of information, real-time cooperation and synergy between command and those on the ground. Whether it is in the center of a high-tech city or in a remote area, the connectivity of people is the key for increased security. LTE is one of its instruments.♦

Reference Text/Photos:
www.thalesgroup.com

Work on the European MALE RPAS Commences

The air system will be used for armed ISTAR missions

The contract for the Definition Study of the European MALE RPAS (Medium Altitude Long Endurance Remotely Piloted Aircraft System) Programme, assigned to Airbus, Dassault Aviation and Leonardo-Finmeccanica was recently launched by a kick-off meeting chaired by the Organisation for Joint Armament Cooperation (OCCAR) with the attendance of participating states France, Germany, Italy and Spain.

MALE RPAS will be a new generation remotely piloted air system for armed Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) missions. Air traffic integration and certification for European densely populated environment are part of the key distinctive objectives of the programme.

The two-year definition study started from September 2016 and will be jointly executed by Airbus Defence and Space, Dassault Aviation and Leonardo-Finmeccanica Aircraft Division with an equal work allocation. The three companies are co-contractors to perform the definition study. Following the study, the start of the development phase is planned for 2018, with a prototype first flight in early 2023 and a first delivery of the system in the 2025 timeframe.

Operational requirements of the nations will be defined in close cooperation with the Armed Forces.

“Successfully teaming European nations, industries and defense min-

istries to improve sovereignty and independence is an outstanding mission, and marks a new milestone in this innovative partnership” said Dirk Hoke, Chief Executive Officer of Airbus Defence and Space.

“This cooperative programme will contribute to European Industry leadership and autonomy in the strategic field of surveillance drones and will provide Armed Forces with high performance and sovereign operational systems” added Eric Trappier, Dassault Aviation Chairman and Chief Executive Officer.

“The European Male RPAS programme is a unique opportunity to promote the development of high technologies expertise, capabilities and jobs, of fundamental importance within Europe. Technological and operational sovereignty will be delivered to Nations, relying on the experience of decades of European cooperation in military programmes,” said Filippo

Bagnato, Leonardo-Finmeccanica Aircraft Division Managing Director.

Fostering Development

Previously known as MALE 2020 Project, the European MALE RPAS Project foresees the development of an European Unmanned Aerial System for long-range missions at medium flight altitudes (MALE). Besides being an answer to the European armed forces’ requirements, it will take into account the need to optimise budgetary resources through pooling of research and development funding. With a European development, critical requirements around the certification of drones and sovereignty of operations by Armed Forces are inherently built into the programme from the onset. The European MALE RPAS is orientated to foster the development of high technologies and will contribute to sustaining key competencies and jobs within Europe.



MALE RPAS- a new generation remotely piloted air system for armed Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) missions

Safran has major expansion plans in UAE

The French major is all set to play a major role in industrial diversification in the UAE

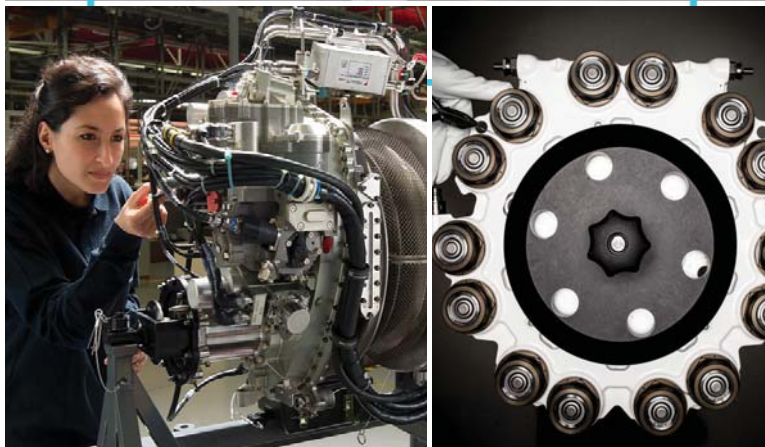
Safran is a leading international high-technology group with three core businesses: Aerospace (propulsion and equipment), Defense and Security. Operating worldwide, the Group has more than 70,000 employees and generated sales of 17.4 billion Euros in 2015. Working alone or in partnership, Safran is a world leader in its core markets. The Group has invested around 12% of its revenues in Research & Development to meet the requirements of changing markets, and had nearly 910 patents in 2015.

Safran's broad international footprint enables it to build business and industrial partnerships with the world's leading prime contractors and operators, to respond quickly and locally to customer needs, and continuously strengthen the competitive edge.

The world's oldest aircraft engine manufacturer, Safran, registered in France, has gradually been built by consolidating prestigious aerospace, defense and security companies. With a presence spanning the globe, Safran is committed to providing responsive local solutions and winning new markets.

Safran has therefore a large presence in the Middle East, especially in Abu Dhabi, UAE. The company sees great potential to further expand its industrial footprint in the country.

Safran applies an ambitious quality policy to ensure total customer satisfaction by delivering outstanding products and services. Reflecting this policy, Safran is recognized as a partner of choice by all customers.



The world's oldest aircraft engine manufacturer, Safran, has gradually been built by consolidating prestigious aerospace, defense and security companies

Engines and equipment for air and space

Safran designs, develops and produces a wide range of engines and propulsion systems, plus associated support services, through its companies and partnerships, by calling on the Group's excellent manpower, high-value-added technologies and world-class production facilities. Safran engines cover all market segments, from commercial aircraft engines for mainline and regional airplanes, to business jet powerplants and engines for military transport, training,

combat, surveillance and in-flight refueling missions.

The Safran strategy is built around a shared vision with customers and partners. Back in 1974, Snecma (which is now Safran Aircraft Engines) and General Electric (GE) created a 50/50 joint company, CFM International, to develop a revolutionary commercial aircraft engine. This French-American partnership proved to be a textbook case in cross-border collaboration, giving rise to the CFM56, the world's best-selling aircraft engine, powerplant of the

best-selling Boeing 737 and Airbus A320 single-aisle jet families.

The CFM success story at a glance: more than 30,000 engines produced to date, over 1,600 engines produced annually, a CFM56-powered aircraft takes off somewhere in the world every 2 seconds - and these aircraft carry over 3 billion passengers a year! This success will keep on booming with the continuity of the current partnership through the new LEAP engine which answers to the airlines requirements. Safran has indeed developed a new eco-friendly engine for which more than 12,500 units are already on order, along with the respect to the environment. From Y2020, Safran will produce annually 2,000 LEAP engines, thanks to its appropriate industrial investments. In addition within the environmental frame, Safran has also developed the Electric Green Taxiing System which will allow aircraft to taxi independently without using jet engines.

Safran Helicopter Engines

Since its foundation in 1938, Safran Helicopter Engines has produced over 72,000 turbines and remains the world leader in this activity. With the broadest range of turboshafts, providing from 500 to 3,000 shaft horsepower, Safran Helicopter Engines ambition based on its four values - safety, reliability, innovation, proximity - is to be the first-choice manufacturer for the entire helicopter industry and, thus, to sustain this market growth.

Electronics and Defense

Operating in the optronics, inertial guidance, electronics and safety-critical software markets, Safran Electronics & Defense offers Armed Forces a complete range of tactical drones, optronics and inertial navigation systems and optical systems and equipment for use in the air, on land and at sea.

Safran offers innovative systems and equipment for armies, navies and air forces from around the world. In a market like GCC and the Middle East, where the domi-

nant players are from the US, Safran has the great advantage to offer ITAR free products (International Traffic in Arms Regulations). Safran does not have consequently to go through US rules under ITAR to deliver the equipment for the utmost benefit of the countries to meet their urgent requirements facing terrorism and security threats.

Rocket propulsion has been a core strategic objective at Safran for decades. UAE has invested in a big way in space sciences and hence offers a great business opportunity for Safran. Through their existing assets such as Ariane 5 launcher and its successor Ariane 6 to come, and Safran's contribution in key technologies such as cryogenic propulsion, solid propulsion, inertial reference unit, Safran can position itself and take a more active part in the new UAE space market. Moreover, the recent ASL (Airbus Safran Launcher) joint venture will leverage accordingly.

A global player in security solutions

Safran Identity & Security offers state-of-the-art solutions to meet the evolving security requirements of individuals, businesses and governments, based on multi-biometric technologies, smart cards and secure identification and travel documents. Safran ranks no 1 worldwide in biometric ID documents, automated fingerprint recognition system (AFIS), computed tomography and explosive detection systems and a key focus of the GCC countries is to manage the border interfaces and offer a global security network in these domains. With its regional office located in Abu Dhabi, the UAE is the main source for Safran products and services in all of GCC countries.

Safran have developed some joint ventures, in security, military and civilian domains. In internal security, Safran have developed EIMASS, a joint venture between Safran and Abu Dhabi Police in line with the ongoing Abu Dhabi vision Plan 2030 which aims and contributes to the diversification of the economy.



Patrick Natali, Safran's General Delegate

Middle East says: The Middle East undoubtedly remains a booming market for Safran, based on its OEM and Tier-1 supplier assets. The Middle East has always been a strategic military partner for Safran through the support of various platforms such as Mirage 2000, Leclerc char and rotary wings aircraft. Moreover, the recent sales of Rafale, NH90 and EC725 helicopters, plus other defense products for which Safran is a major partner, confirm the mutual trust between the Middle East Air Forces and the French manufacturers.

"Safran's future plans consequently are to improve, strengthen and develop its current industrial footprint in the UAE. The current UAE industrial diversification process under development and implementation will benefit from Safran's contribution in its core business and domains of excellence. Our goal is indeed to clearly understand the UAE requirements to accompany them in their ambitious goal and provide them with the utmost competitive and reliable products through durable and sustainable partnerships to develop and implement industrial projects. Safran was and remains very sensitive about the UAE economy diversification plan with aims to reduce the oil revenues dependency. Our credibility and the relations of trust we have developed here allow us to positively foresee the economic and industrial future of the UAE".

Austal Middle East growing with the UAE

Scale Models of iconic vessels including the Littoral Combat Ship to be showcased at NAVDEX 2017

Anniversary of the foundation of the United Arab Emirates (UAE), Austal Chief Executive Officer David Singleton has reconfirmed Austal's commitment to the UAE and highlighted the company's recent growth

"Austal is proud to be a part of the UAE's continuing growth and success and on behalf of our local management team and Australian operations, I offer our warmest congratulations to His Highness Sheikh Khalifa bin Zayed Al Nahyan on the nations' 45th anniversary," Singleton remarked.

Austal, the Australian shipbuilder and global defence prime contractor delivering naval vessel programs such as the Littoral Combat Ship in the United States and the Cape Class Patrol Boat in Australia, continues to expand in the Middle East with a new office in Abu Dhabi supporting a growing number of customers and vessels operating in the region.

David Singleton also highlighted the strong sense of partnership and effective working relationships Austal enjoys with the UAE, demonstrated by the recent visit to Austal's West Australian shipyard and Northern Territory service centre by delegations from both the Critical Infrastructure and Coastal Protection Authority (CICPA) and Abu Dhabi Ship Building (ADSB).

Austal Middle East provides local sales and service support through an experienced team that includes an ex-Royal Australian Navy (RAN) Commanding



Austal Middle East's new office in Abu Dhabi, UAE offers strategic advantages in developing new business throughout the Middle East. Photo Austal



Austal has expanded the Cape Class Patrol Boat platform with new variants including maritime security and anti-mine warfare

Officer and an expert technical crew based in Muscat, Oman.

In 2016, Austal Middle East has welcomed the forward deployment of Expeditionary Fast Transport (EPF) USNS Choctaw County (T-EPF-2) to the US 5th Fleet in Bahrain and is proactively

promoting the unique capabilities of the vessel, as its presence and supporting role in the region grow. The US Navy's planned attendance with the Choctaw County at NAVDEX 2017 in Abu Dhabi from 19-23 February will provide an excellent opportunity for Austal Middle



Austral delivered 8 Cape Class Patrol Boats to the Australian Border Force and is now completing construction of two additional Capes for the Royal Australian Navy



The High Speed Support Vessel is based on the proven Expeditionary Fast Transport -EPF platform – 2 x 72 metre vessels were delivered to the Navy of Oman

East to leverage the vessel's presence and introduce the class leading theatre support capability to navies from around the world.

Austral's proven EPF platform is redefining naval capability around the world, through various military and humanitarian missions and US Navy support operations with United States Military Sealift Command (USMSC). Austral has now delivered 7 of the 12 EPF vessels contracted to the US Navy, designed and engineered in Australia and constructed by Austral USA. The success of the 103 metre high-speed aluminium catamaran – and the new 72 metre High Speed Support Vessels (HSSV's) recently delivered to the Royal Navy of Oman (RNO) – has

positioned Austral as the clear industry leader for fast, cost effective theatre-support capability.

More efficient than traditional military transport modes (such as C-130 aircraft) when moving large numbers of troops, vehicles, equipment and cargo, Austral's theatre support vessels (EPF and HSSV) are delivering great value to operators. With a shallow draft of less than 4 metres, large cargo deck, medium lift aviation deck, high-speed and capacity for up to the 300 troops and vehicles, the EPF and HSSV designs offer greater flexibility and functionality than traditional naval ships.

Following the official launch at Euronaval 2016 in Paris in October, Aus-

tal Middle East is promoting the 'NEW CAPEability' of two additional variants of Austral's benchmark 58 metre Cape Class Patrol Boat (CCPB) platform to GCC countries. New maritime security (Naval) and anti-mine warfare (Subsea) variants are now available, joining the existing border protection (Patrol) variant, operating in Australian waters since 2013.

Austral designed and constructed the CCPB for the Australian Border Force (ABF) and delivered 8 vessels over 2013-15 and is currently completing construction on an additional two Capes for the Royal Australian Navy (RAN), on schedule for delivery in the first half of 2017. The sleek looking, fast and flexible Capes now offer greater, OPV mission capability from new designs that include additional weapon systems, a UAV flight deck and/or UUV and USV launch and hydrography capability.

In 2016, Austral Middle East was also pleased to promote the successful operation of two 45 metre crew transfer vessels designed and constructed by Austral, operated by Abu Dhabi Petroleum Ports Operating Company (IRSHAD). Exhibiting at Seatrade Maritime Middle East (SMME 2016) in October, Austral Middle East proudly displayed scale models of the IRSHAD vessel and other recent deliveries to an enthusiastic audience gathered in Dubai.

As the calendar year draws to a close, Austral Middle East is preparing for NAVDEX 2017 in Abu Dhabi and looks forward to welcoming many existing and new customers onto the Austral stand which will feature scale models of Austral's iconic vessels including the Littoral Combat Ship, Expeditionary Fast Transport, Cape Class Patrol Boat and High Speed Support Vessel.

[Reference text/photo](#)
[Paul Sparke, Austral](#)

Electronic Warfare GCC attracts top experts

The conference provided a thorough analysis of the current and likely future threats to the Electronic Spectrum

Exploring the need for a persistent ISTAR environment and to debate the future innovation of electronic warfare in the Middle East, the Electronic Warfare (EW) GCC conference was held in Abu Dhabi during October 25-26. EW is seen as one of the integral elements in the formation of ISTAR. The role of EW in a wider STAR capability is where relevant information is collected, integrated and processed in order to meet the intelligence needs of senior military commanders. As ISTAR is defined as a system of systems, EW GCC 2016 took a deeper look at EW interoperability and how it must integrate and combine with other sensors to conduct mission support to the intelligence, surveillance, target acquisition and reconnaissance components of ISTAR.

ISTAR capabilities are being called for right across the air, ground and maritime area of responsibility. Electronic Warfare GCC 2016 provided a thorough analysis of the current and likely future threats to the Electronic Spectrum, with a focus on the concepts and operating environments which will help to shape GCC thinking on Electronic Warfare in wider ISTAR setting.

This series of Conferences hosted by the UAE EW Command has grown out of the initial Defense Sensors Technology event in 2010, through Electronic Warfare for the Gulf Cooperative Council members in 2011, 2013, and 2014. According to senior officers, the



conference, attended by over 300 delegates from 30 different countries, was the most important EW event in the region. Three valuable and well attended Workshops by Rockwell Collins, Leonardo and CSIR took place on the day preceding the Conference.

Participating in the conference, Air Marshal Philip Osborn RAF, Chief of Defense Intelligence for the UK, underlined the close links between the two countries and said: "To understand, manage and control the electromagnetic environment is a vital role in warfare at all levels of intensity. The outcome of future operations will be decided by the protagonist who does this to decisive advantage." CDI's message was echoed immediately by Mike Small, BAE System's Cyber Defense Capabilities Subject Matter Expert, who immediately picked up on the importance of EW-Cyber Convergence. David Stupples, Professor of Electronic Warfare Systems Research at the City University of London, where he is Director of Cyber

Security Sciences, spoke on 'A future Perspective of Information Warfare'. A third presentation by Commander Dave Hewitt, Officer Commanding the Joint EW Operational Support Centre (JEWOSC) in UK drew on his extensive experience as a deep EW specialist. The Electromagnetic Operating Environment (EME) has exploded with the information age, military capability developments and environmental domains, leaving it 'Complex, Congested and Contested', he said.

Lt Col Mohamed Alzaabi who had been trained in the US brought a fresh perspective with his presentation on Electronic Warfare in the fight against terrorism. "We confront a not unsophisticated foe, with Insurgents/Terrorists adept at harnessing all three elements of EW (ESupport, EAttack & EProtection) and integrating Electromagnetic and Cyberspace operations using emerging technology," he told the conference. His detailed presentation illustrated taking the fight to the enemy



EW conference was attended by over 300 delegates from 30 different countries

with EW providing Deny, Disrupt, Destroy, Degrade, and Deceive, while Cyber aims at breaking one or more of the information properties, Confidentiality, Integrity and Availability.

Colonel Mohamad al Bataineh, Director, Electronic Warfare for the Royal Jordanian Air Force, briefed on the C3 and EW capabilities of the RJAF and their application in the Combined Joint Task Force for Operation Inherent Resolve (OIR) against Daesh. This recognized the limitation of air power, the importance of information sharing, avoidance of collateral damage, need for organic CSAR and Inflight refueling and the value of UAVs. Above all it is non-conventional warfare and needs non-conventional tactics, he pointed out Michael Pefley, Director of Business Development, Northrop Grumman, spoke on "Open Architecture Leading to Mission Success." He emphasized that EW and ISTAR must work together. Jean-Michel Eustache, SIGEN Program Director for Thales, highlighted ISR/EW challenges and linked the EW elements of EP, EA and ES to SIGINT (Signal Intelligence) for Operational Efficiency.

Graziano Lubello, NCW and Cyber

Heterogeneous open source data is now essential to new generation ISTAR centers

EW Senior Expert for Electronica, introduced delegates to CEW&I, Cyber EW & Intelligence, a Conceptual, Operational and Technical Step Forward. In a practical example, he described how the US Airforce ISR group in Florida, using data gathered from Social Media, within 24 hours destroyed an ISIS HQ in Iraq. Such heterogeneous open source data is now essential to new generation ISTAR centers in providing an even more complete and updated cyber 'Common Operational Picture/Situational Awareness', he said.

Anton Van der Merwe on behalf of Scientific Research Partner CSIR, made a presentation on Innovations in Operational Test and Evaluation explaining

how the increased complexity of threats requires sophisticated Networked, Multi-spectral training with the Convergence of EW and Cyber. Wimpie J Van den Berg representing GEW Technologies gave a stimulating closing presentation on Metadata – the DNA of a Signal in COMINT.

Coming from the not for profit Secure World Foundation, Brian Weeden, their Technical Director, highlighted the importance of Space in national security and military operations, as well as their vulnerabilities.

Conclusion

Clearly, appreciation of Cyber is growing rapidly and several Speakers provoked discussion on the convergence of Electronic Warfare and Cyber. The effects are similar, and some of the enablers such as technology and an intelligence-led approach are the same in both domains. Benefits to defense in promoting convergence can be seen in the use of existing structures and processes within EW to mobilize cyber more rapidly, as well as bridging the agreed shortage of cyber skills by re-brigading some of the operations and intelligence skills which exist in EW.



AW101 Merlin Mk4 Completes Maiden Flight

The aircraft will deliver enhanced capability for the Royal Navy's Commando Helicopter Force

Leonardo-Finmeccanica recently announced that the first AgustaWestland AW101 Merlin Mk4 successfully completed its maiden flight on 24th October 2016 at its Yeovil facility in southwest England.

The company is upgrading 25 Royal Navy Merlin Mk3/3A aircraft to Merlin Mk4/4A standard as part of the Merlin Life Sustainment Programme (MLSP) contract. The MLSP contract is valued at £330 million and was awarded in January 2014 by the UK Ministry of Defence (MoD).

Deliveries of aircraft will start in 2017 and continue through to 2020 with the work being performed at Leonardo's Yeovil facility.

The AW101 Merlin Mk4/4A aircraft

are optimised for ship operations and includes automatic main rotor blade folding and tail fold. The aircraft are also fitted with the same cockpit as the Royal Navy's Merlin Mk2 aircraft, giving the Merlin fleet a common cockpit featuring five 10" x 8" integrated display units, two touch screen units for controlling the aircraft's systems and mission equipment, as well as two cursor control devices for cursor control of the tactical displays. The AW101 Merlin Mk4 will deliver enhanced capability for the Royal Navy's Commando Helicopter Force. The Merlin Mk4 and Mk4A aircraft will be supported through the existing Integrated Merlin Operational Support (IMOS) contract, which has been in place since 2006 with Leonardo as prime contractor.

Royal Navy Captain Kieran O'Brien,

the Defence Equipment & Support (DE&S) Merlin Helicopter Project Team Leader, said, "This is a great day and a most significant achievement in the Merlin Life Sustainment Programme. The conversion of the Mk3/3A Merlin to Mk4/4A has been a real success story so far against demanding timelines and this first flight is excellent news for our Royal Navy 'Junglie' customers. The work that goes into preparing for the first flight of a new mark of aircraft is never trivial and this milestone is only made possible due to an excellent team effort led by DE&S and Leonardo Helicopters. We still have a lot of work to do but when the programme is complete the Commando Helicopter Force (CHF) will have a very capable Commando Helicopter aircraft ready to fully operate in its maritime environment".

“Strategic Issues: Coordinating National Power”

Today our region is facing multiple strategic challenges. To act effectively against such challenges our strategic leaders must have not only an understanding of the tools of national power and how to implement strategies and policies, but they also must be capable of coordinating government activities to bring national power to bear in the most effective way. Even when the use of power at the national level is fairly well understood, the ability to coordinate all efforts to ensure success at the strategic level remains a challenge. So an understanding of effective methods of coordinating national effort deserves study. Most fundamentally, states have three ways of coordinating their efforts: using organizations, through processes, and by the leadership of individuals.

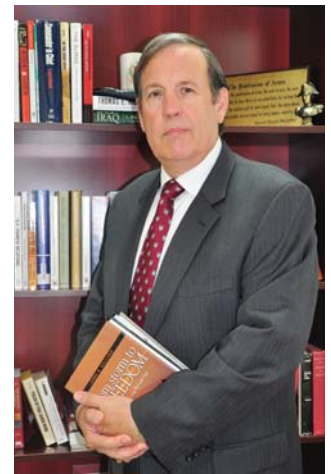
Organizations. Every functioning state has some organizations that help the national leader manage the affairs of the state. Parliaments, ministries and courts all help manage domestic affairs; but normally states have to create organizations to help manage foreign affairs and state policy directed internationally. In the UAE we have the Supreme Council for National Security to develop policy and coordinate implementation of our foreign affairs activity; we also have the National Crisis and Emergency Management Authority (NCEMA) to help focus ministerial cooperation efforts in response to disasters and other crises.

Processes. Organizations are useful forums to discuss policy development and also provide recognized avenues to communicate recommendations, but to truly be effective, governments also need to develop processes that allow for improvement and refinement of strategies and policies. Such processes can be well defined (such as annual budget revises) or more ad-hoc (such as those developed in response to unexpected situations), but the most effective governments ensure that every process is reviewed for effectiveness and refined to ensure that their future use will be more efficient. The best governments also ensure that their processes include lessons-learned reviews, metrics to gauge progress and frequent use of red teams and “out of the box” thinking to minimize surprise and help anticipate emerging challenges.

Leadership. Regardless of organization or process, leadership is key (particularly at the strategic level.) Strategic leaders must be creative problem-solvers who are innovative yet levelheaded, in order to effectuate inevitable changes. Strategic leaders must also effectively communicate a vision to inspire action by communicating their ideas effectively to everyone concerned, thus creating a commonly held understanding of the future goal. Strategic leaders also must act; they need both organizational ability and decision-making skills to align people and structures and then translate strategy into action. The best strategic leaders prepare for the future and consider both long-term goals as well the culture and context of the organization while remaining adaptable, so the coordination of national power can flex as required. Strategic leaders cannot do everything themselves; the challenge of strategic leadership is not only producing an optimum strategy and a clear vision but also creating a strategic team and developing the people required to adapt in execution and coordinate effects as conditions require.

With ongoing crises in Iraq and Syria as well as in Yemen, regional states must be capable of coordinating their efforts even when faced with potentially conflicting requirements that could pull them in different directions. In today’s complex and uncertain world, our national objectives will require constant attention. So effective coordination of national power must not be rigid or doctrinaire. UAE Vision 2021 calls for the nation to “harness the full potential of its national human capital by maximizing the participation of Emiratis and nurturing home-grown public and private sector leaders.” With a proud history of strategic visionary leaders, the UAE should can be confident in its future, but those in the know understand that any success will built on effective use of organizations and processes and by the actions of our strategic leaders, who will still need all of our support as they navigate the ambiguous world of tomorrow•

Strategic Perspectives



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The 45th National Day

“The House is United” : Economic Development

On its forty-fifth National Day, the United Arab Emirates (UAE) demonstrates that its unique federal experience is inspiring for countries in the region and the world at large. It has been able to establish as a developed economy, through comprehensive growth strategies that invest in human resources to achieve knowledge-based sustainable development.

This federal experience has become a symbol of the success of the people who rallied around their leadership, and were able in a few years to build a modern state that presents itself as a “united house” with all the elements of development, welfare and prosperity. In this issue, Nation Shield addresses the developmental achievements of the UAE during 2016 at all levels.

The UAE celebrates its 45th National Day on December 2, 2016. Its federal structure has been globally accepted as a successful model. It has been able to face various challenges and to move forward with confidence and stability in the process of growth and development, which is confirmed by the advanced rankings in



of UAE is on upward path

various international indicators and reports. During 2016, the UAE had many achievements at various levels and in different areas, most notably at the human resources level, where the Emirati citizen receives the utmost attention of the prudent leadership, led by His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Supreme Commander of the Armed Forces, may God protect him.

Human Investment .. The UAE Citizen is the Icon of Development

The United Arab Emirates considers citizens its real wealth. Investing in them is the best investment, since they represent its future. During 2016, the UAE



The United Arab Emirates considers citizens its real wealth and investing in them as the best investment

has continued its policy of investing in the empowerment of citizens, considering them the true wealth of the nation. This translated into many initiatives that were to the advantage of all citizens and segments of the UAE society. These initiatives are not limited to state-of-the-art government services in the areas of health, education and housing only, but they also include the development of empowerment policies for citizens, by opening horizons of creativity and innovation for all of them. His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, may Allah protect him, launched in October 2016 the "National Agenda for Youth", which reflects the extraordinary attention paid by the United Arab Emirates to young citizens, who are the real bet for the future. Efforts to empower



Emirati women and enhance their role in comprehensive and sustainable development is also an ongoing process. This has been clearly expressed by Her Highness Sheikhha Fatima Bint Mubarak, Chairperson of General Women's Union, Supreme President of the Family Development Foundation, President of the Supreme Council for Motherhood and Childhood, "the Mother of the UAE". In a statement made to mark the UAE Women Day, H.H. Sheikhha Fatima urged the General Women's Union and the women's institutions and authorities across the country to participate in this historic event to encourage Emirati women in recognition of their great role and success in various fields of work, as well as their relentless pursuit to achieve significant innovations and achievements that contribute to the growth of the nation.

Sheikha Fatima affirmed that UAE

women have achieved great successes in various fields, particularly in science, thanks to the unlimited support given by President His Highness Sheikh Khalifa bin Zayed Al Nahyan, as well as by the Vice President and Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, and Their Highnesses the Supreme Council Members and Rulers of the Emirates.

Sheikha Fatima said that the UAE's women have become the focus of admiration and appreciation after occupying 66 percent of jobs in the country, confirming their prominent role in the march of progress in the country.

Quality of Life is the target of the ambitious budget

The federal budget of the United Arab Emirates for the period (2017-2021) reflects the prudent leadership's attention to the investment in the Emirati citizen. In October 2016, the Cabinet adopted the general federal budget for 2017- 2021, with total of Dh 248 billion over five years, and a budget of Dh 48.7 billion for 2017, in addition to the revenues of independent entities and financial investments.

Sheikh Mohammad asserted that the federal government, led by the UAE President His Highness Sheikh Khalifa Bin Zayed Al Nahyan, continues to achieve the happiness of its people and to ensure security and a decent life for them.

"Utilizing the financial resources to achieve the highest degree of prosperity and welfare of the citizens and residents is a priority, underlining education, health and community welfare as key pillars for the development of the society," said Sheikh Mohammad.

Sheikh Mohammad said: "We aim to provide all the means and capabilities to meet the requirements of the future Government vision, and make it one of the best governments in the world in various sectors, through the optimal use of resources to enhance the services provided



to citizens and residents.”

The UAE is the first Arab country to prepare a periodic budget for five years, in line with the directives of Sheikh Mohammad to prepare a proposal budget with plans for every five years to improve the level of social services, and upgrade the smart services of the government. This also aims at increasing customer satisfaction about the federal government’s efforts to enhance the welfare, prosperity, happiness and security of community members.

Government Performance Excels Aspirations

The UAE wise leadership is aware that the government’s outstanding performance is the mainstay of development and progress in all fields. In this context and under the directives of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the State, may God protect him, and in implementation of the vision of His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President and Prime Minister and Ruler of Dubai, Federal Decree No. (28) of 2016 was issued to form the Ministry of Cabinet Affairs and the Future to monitor the government performance for all federal government entities by a UAE government performance management system, and develop clear framework for performance to achieve UAE Vision 2021. Be-



sides, the Ministry of Tolerance and Ministry of happiness have been created. This confirms the insight and prudent directives of the wise leadership in directing the financial resources to achieve the highest degree of prosperity and happiness for the citizens and residents of the UAE.

His Highness Sheikh Mohammed bin Zayed Al Nahyan stressed that “development is a comprehensive and continuous process which always requires renewed visions that are capable of overcoming challenges. Therefore, we are keen that the Executive Council of the Abu Dhabi should be a symbol of Government Excellence.”

An Active Diplomacy That Translates the Principles of UAE

Since the inception of the UAE in 1971,

its foreign policy has been based on clear principles, most notably in this regard the establishment of international relations on the basis of mutual respect and common interests of all countries in the world. In this regard, reference can be made to the following accomplishments:

1. The promotion of the UAE’s partnership with regional and international powers: The visit by His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, to Germany in May 2016 was a quantum leap in the course of relations between the two countries. It boosted mutual interests. Also His Highness’s visit to India in February 2016 helped to strengthen the relations and partnership with India in all



fields. Moreover, the tour by HH Sheikh Abdullah bin Zayed Al Nahyan, Minister of Foreign Affairs and International Cooperation, in Latin American countries, in February 2016, was an important milestone in the UAE's relations with these countries.

2. The UAE reinforces its image as a model of tolerance and coexistence on a global scale: The official visit by His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, in September 2016, to the Vatican to meet Pope Francis, Pope of the Catholic Church, the Pope, has entrenched the Shining record of the UAE as one of the leading countries supporting tolerance between different peoples and religions. The UAE community embraces more than 200 nationalities that enjoy a life of dignity and equality.

3. The growing international confidence in the UAE, as a force of security and stability in its regional and international surroundings.

Post-Oil Strategy to Build a Sustainable Economy

The UAE realized the importance of diversifying sources of income, as an essential strategic choice. As a translation



of these visions and orientations, Sheikh Mohammed bin Rashid, Vice President and Ruler of Dubai, directed the launch of the Ministerial Extended Retreat to develop a new strategy. The strategy aims to add new economic sectors, develop the efficiency and productivity of existing sectors, and prepare generations that can lead a sustainable and balanced national economy.

A Continuous Leading Position on the Humanitarian and Development Levels

The UAE maintained its ranking as the world's top development aid donor for the second consecutive year with Dh18.36 billion worth of development assistance in 2014, according to the final report released by the Development As-

sistance Committee at the Organization for Economic Cooperation and Development (OECD). The UAE's first rank as the world's top development assistance donor is yet another evidence of the country's commitment to its global humanitarian mission.

The UAE has been keen, in its foreign policy, to advance its humanitarian approach since it was laid down by the late Sheikh Zayed bin Sultan Al Nahyan, may God rest his soul, and followed by His Highness Sheikh Khalifa bin Zayed Al Nahyan, may God protect him.

Promotion of Happiness Indicators

The UAE maintained its progress on satisfaction and happiness indicators is-



sued by specialized international bodies, notably:

* The UAE once again leads the region in the World Happiness Report, a landmark survey of the state of global happiness. The report, prepared by the Sustainable Development Solutions Network (SDSN) and the Earth Institute at Columbia University, ranks countries based on happiness levels using factors such as per capita gross domestic product (GDP) and healthy years of life expectancy.

* The UAE ranked first among Arab countries in the provision of welfare to its citizens.

* For the fifth year in a row, the UAE has topped the "favorite countries to live in" among Arab youth.

* The UAE ranked top of the order of the Middle East and North Africa on the global prosperity index in 2016, issued by the London-based Legatum Institute.

The Reinforcement of the UAE Position on the Map of Developed Countries

In 2016, the UAE managed to reinforce its position on the indicators and assessments made by international bodies concerned with the measurement of aspects of development in countries and communities. The following are the most prominent of these indicators:

* The UAE ranked first globally on the Index of Confidence in the Government internationally and held first place on the indicator of confidence in the strength of the economy.

* The UAE ranked first at the regional level, and eighth at the global level, on the index of diversification of foreign direct investment by Commodity Exporting Countries, issued by the "FDA" Foundation.

* The UAE ranked first regionally, and twelfth globally, according to the annual book issued by the International Institute for Management Development.

* The World Development Report for 2016, issued by the World Bank, ranked the United Arab Emirates at the forefront of the Middle East countries converting to digital economy.

* The United Arab Emirates has maintained its advanced position in the field of the rule of law and abidance by the regulations that organize the relationship between litigants, and settle disputes fairly.

* the UAE was ranked first globally in the absence of the impact of crime and violence at work index according to «Global Competitiveness Report» for 2016/2017, issued by the «World Economic Forum».

* The UAE ranked first globally on six out of 114 indicators, according to the Arab Knowledge Economy Report 2015 – 2016, which was launched from the "Orient Planet Research" in March 2016.



Middle East military braces up for Electronic Warfare

Italy-based Elettronica introduces four innovative projects to the Middle East

Elettronica (ELT), an Italian company headquartered in Rome, provides state of the art of security and intelligence capabilities to the Middle East.

With a presence in Germany, UAE, USA, India and Singapore, Elettronica has over 60 years of experience and engineering excellence in the EW (Electronic Warfare) domain.

Its technical solutions cover the whole spectrum of EW sensors and technologies, from core solutions in the radar band, such as signal intelligence, electronic support and electronic attack thanks to compact, integrated systems and networks, to new developments in the infra-red (IR) and communication bands.

Elettronica is considered as one of the most important European players in the homeland security field providing unique solutions for law enforcement, land security and monitoring operations. It delivers successful security solutions to governmental, military, intelligence and law enforcement agencies in Germany, Europe and Middle Eastern countries.

Eurofighter project

Set up through a European multinational agreement, the EF 2000 project involves the United Kingdom, Germany, Italy and Spain in the production of a multi-role, highly maneuverable aircraft designed as a fighter system with very advanced performances.

Three aerospace companies are involved in the development of the aircraft, namely Alenia Aeronautica (Italy), EADS (Germany/Spain) and Selex Galileo (United Kingdom).

The “Typhoon” Eurofighter came into service early in 2003. The production envisaged for these countries is 620 aircraft: 232 for the United Kingdom, 180 for Germany, 121 for Italy and 87 for Spain.

Currently, orders have already been placed for the first 384 aircraft for the four countries. Joined by exports, the orders also include 18 aircraft exported to Austria while 72 are being in the final negotiation stage with a Middle East country.

Mirage

The programme began in 1999 to respond to a request by a Middle Eastern country for extensive modernisation and expansion of its fleet of Mirage aircraft produced by Dassault Aviation.

The new configuration of the Dassault Mirage 2000 interceptor aircraft, now named Mirage 2000-9, includes the almost total replacement of the EW component with a new suite presenting extremely advanced characteristics that place it in the forefront as regards operative performances for apparatus installed in combat platforms.

The system configuration covered by the contract named IMEWS (Integrated Multimission Electronic Warfare System) comprises several sub-systems, all significantly integrated and cooperative between each other and with the M-2000 platform. It can operate in very intense and multi-threat situations.

The individual apparatus making up the suite includes: RWR, ESM, an ECM complex operating under high band and low band, a sophisticated central unit integrating the various apparatus that also manages electro-magnetic compatibility.

The functions provided to the pilot, based on the integration and cooperation

of different components, in as much offer superior performances to those offered by individual apparatus. These functions include:

- Radar Warning, for rapid identification, classification and presentation of threats
- ESM with a digital receiver for complete tactical situation awareness, including fast geographical location of the broadcasters
- Elint for acquisition of tactical or strategic data
- ECM, equipped with digital radio frequency memories, for coherent and effective contrast of modern threats.

All apparatus use harmonized libraries which are validated by a specific ground control centre, ensuring analysis of data recorded on-board. The IMEWS suite has undergone extensive tests with the aircraft manufacturer and the final client - the latter involved test flights in real operating conditions with numerous



combat aircraft and surface threat units.

ELT was involved in the programme from the outset, having won - in cooperation with Thales - the contract for the modernisation of the 30 Mirage jets already in the Middle East and for the supply of 33 other RF-EW Suites for the new aircraft supplied by Dassault.

ELT is Prime-Contractor for the programme, while technical-programming coordination is managed by Thales.

Baynunah programme

The Baynunah programme was launched in 2004 and is the main naval programme involving the GCC countries.

The programme envisages the production of 6 new-generation Multi-Purpose Missile Corvettes as the mainstay of the extensive process of renewal and upgrading of the navy.

Over and above its military importance, the programme also has strategic relevance from an industrial point of view as a demonstration of the production capacity acquired in naval spheres by local companies.

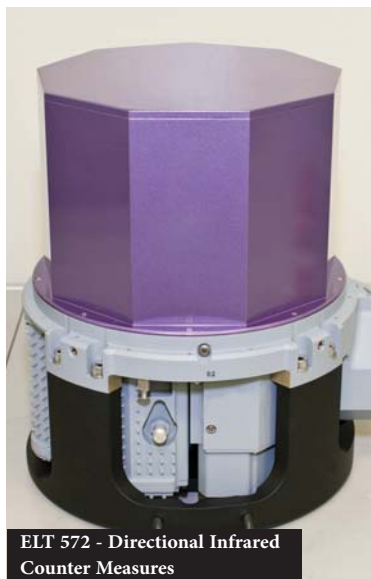
The entire programme was entrusted to Abu Dhabi Ship Building (ADSB), the most important shipyards in the United Arab Emirates, with the role as prime contractor.

The programme in overall terms has a broad international scope since it involves the main European defence industries and, to a lesser extent, those in North America (USA and Canada).

Designed as Multi-Purpose vessels, the



Baynunah programme was launched in 2004



ELT 572 - Directional Infrared Counter Measures



The new configuration of the Dassault Mirage 2000 interceptor aircraft, is named Mirage 2000-9

Baynunah corvettes combine compact dimensions, agility and extremely impressive equipment comparable to ships of a higher class.

Thanks to such impressive versatility, the Baynunah can cover operative roles from coastal surveillance and patrols, to escort of High-Value Targets and even interdiction and anti-surface warfare operations.

As regards counter-action, the Baynunah are fitted with ESM/ELINT SEAL supplied by Elettronica S.p.A., a NLWS310 laser warning system by Saab Avionics and a COMINT supplied by DRS. Active counter-measures are entrusted to a DLS MASS supplied by Rheinmetall Waffe Munition.

Elettronica S.p.A. has been involved in the programme from the outset, after being awarded the supply of the main system within the scope of SEAL counter-measures, the latest-generation ESM / ELINT system.

SEAL is an integrated system comprising two sub-systems capable of independent operations: a latest-generation Panoramico Receiver and a Superhet Receiver with Digital Receiver. Coopera-

tion between the two sub-systems means that SEAL offers excellent performances at the top of the market.

REFIT programme

The programme lies within the scope of the general process of modernisation and upgrading of the navy of a Middle East country, which has already started and peaks with the Baynunah programme.

ELT involvement in the REFIT programme is ideally an extension of the Baynunah programme. However, it is governed by a direct contract for the supply of 4 SEAL systems and the supply of support and services integrating the two programmes.

The main elements of the programme are:

- “Turnkey” supply of the SEAL systems, which implies a significant extension of the role of ELT recognised by the navy, from supplier to system integrator.
- Applications of the SEAL systems particularly include:
 - 4 SEAL systems will be used in naval applications with patrol boats (FPB44) and missile corvettes (CM65) already

owned by the Navy in replacement of the ESM systems currently installed.

- 2 SEAL systems will be installed in specific Shelters supplied by ELT that can also operate in a completely autonomous mode, on the ground or on-board ships capable of such installations.

The SEAL integrated system consists of two subsystems that can operate as independent equipments: a Panoramico Receiver of the latest generation and a Superhet Receiver incorporating a 4GHz instantaneous band digital receiver.

The close cooperation of both subsystems endows the SEAL system with excellent top-of-the-market performances.

Moreover, the SEAL system has been designed to ensure top level reliability and maintainability, meeting the most advanced requirements in terms of graceful degradation and fault tolerance.

Its integration with different combat systems, similarly to the Baynunah Programme, allows the SEAL system to fully exploit its unique features, enabling it to operate as either an integrated system or as a autonomous equipment; in the latter case it still retains full control of the various active countermeasures.



HODHOD

HODHOD

is a programme for the modernisation of old ELINT sensors and the supply of new sensors.

During the Gulf War, ELT supplied the Middle East with two ELINT ELT/888 Shelterised Sensors based on the technology of the early 1980s.

At the end of the war, in 1996, ELT won a contract to retrofit the two sensors already supplied, and to supply a further four units. The supply was completed in 2001.

The sensors supplied (and the retrofit of the first two) were equipped with the latest calculation systems avail-

able at the time, a Monopulse goniometer and operative frequency extension in the K band.

The features of the Sensors

The HODHOD sensor version is ELT/888(V)2, whose operative task is to acquire, analyse and record data from adversary RADAR systems.

The sensors include a “deinterleaving” algorithm to ensure reliable automatic analysis of the intercepted broadcasts. The Intrapulse and Interpulse analysis functions (both computer aided) are extremely powerful.

The features of the HODHOD Sensor

Network

All sensors are equipped with a data/voice link in two formats:

- Fibre optic used when the sensor operated in the immediate vicinity of an access node
- Microwave with directional antennas (used for point-to-point connections between sensors and/or for connections to the nearest node of the fibre optic network).

The supply also included a remote control centre (RCCC) installed in a Bunker; the fibre optic network ensures remote control of all sensors (by remote operators).

RCCC has a supervisor that receives operative orders from a higher authority and “translates” them into technical tasks that are in turn assigned to the various sensors.

The supervisor has SW tools to generate triangulations, tracking of mobile broadcasts and EOB creation and also has digital maps to display all activities of the network.



The “Typhoon” Eurofighter came into service early in 2003

Demanding combat conditions require

H225M: Combat Proven Multi-Role Helicopter sets a new standard



Airbus Helicopters H225M, the latest member of Airbus Helicopters' military Super Puma/Cougar family, is designed for the most demanding missions.

The H225M's reliability has been demonstrated in combat conditions and crisis areas, including Lebanon, Afghanistan, Chad, Ivory Coast, Central African Republic, Somalia and Mali, while also supporting NATO-led operations in Libya. France, Brazil, Mexico, Malaysia, Indonesia, and Thailand also rely upon the H225M to support their most demanding missions.

The H225M excels in a full range of military missions such as special operations, combat search and rescue, tactical transport, casualty / medical evacuation as well as in public service missions such as search and rescue, firefighting, coast guard and exclusive economic zone (EEZ) protection.

Previously named the EC725, Airbus Helicopters H225M operates both from ships and from land, even in icing conditions. It has an all-weather capability supported by state-of-the-art night vision compatibility.

The helicopter's 700 nautical mile range is extended with air-to-air refuelling,

which can be performed while in forward flight and during hover.

Powered by two latest-generation engines, the H225M's five-blade rotor provides an exceptionally low vibration level, and the modular design of rotor mechanical assemblies allows for easier maintenance.

H225M's New Customer

"We are greatly honoured that Singapore has selected the H225M as its next-generation Medium Lift Helicopter," said Guillaume Faury, CEO of Airbus Helicopters, after the recent signing of a contract with the Singapore Ministry of Defence for the

reliability and durability



acquisition of the H225M - Medium Lift Helicopters.

“The Super Puma has served Singapore well for the last 30 years. The addition of the H225M to the RSAF fleet will bring a step change in capabilities thanks to a proven, versatile and extremely modern platform, that is able to cope with the most challenging missions.”

Furthermore, more than 500 units have been delivered worldwide. Singapore is the latest nation to order the H225M, after France, Brazil, Mexico, Malaysia, Indonesia, Thailand, and Kuwait.

Mission capabilities

Special Ops, Combat SAR and Personal Recovery missions require performance, precise navigation and survivability, for which the H225M has proved its reliability.

The French Forces are successfully operating the H225M in the harshest environments.

The aircraft is ready to operate in all environments, including in fully iced conditions or in sandy or maritime environments. It has outstanding range; 700 NM without refuelling, air-to-air refuelling capability, Hover In-Flight Refuelling (HIFR), Cabin versatility and easy and fast recovery systems.

Plus, a plug and play weapon system allows it to turn a regular aircraft into a light attack helicopter.

The H225M has been designed to comply with the latest CS 29 amendments.

Thanks to the dual-channel FADEC, the TURBOMECA MAKILA 2A1 turboshaft engines deliver more power. The 5-blade Spheriflex rotor provides an exceptionally low vibration level, and the modular design of the mechanical assemblies allows for easier maintenance. The First Limit Indicator displays the available power in any condition and the power margin in All Engines Operatives (AEO) and One Engine Inoperative (OEI) situ-



Airbus Helicopters' all-weather H225 is up to job, capable of handling all types of search and rescue duties



The H225's versatility and load-carrying capacity enables the helicopter to support fire ground units by delivering water with high precision

ations.

The H225M is equipped with state-of-the-art avionics and integrated communication systems. The systems reduce crew workload while enhancing mission capability for more safety. At a glance, pilots have all navigation and piloting data.

Enhancing safety

The H225M is equipped with state-of-the-art avionics and communication systems that reduce crew workload while enhancing mission capability and safety. Airbus Helicopters has incorporated significant advances in terms of man-machine interface, ensuring the most important information arrives to the pilot for the most effective decision-making process.

The flight crew has at their fingertips all navigation and piloting data from the electronic flight instruments in the glass cockpit, including dual-channel full-authority digital engine control for the H225M's two Turbomeca turboshaft engines.

Airbus Helicopters' renowned 4-axis, dual-duplex autopilot provides precision and stability and enables flight in search and rescue patterns as well as automatic approaches in instrument flight rules (IFR) procedures.

Unrivalled redundancy is provided in key on-board systems to maintain full functionality, including the dual-duplex Automatic Flight Control System (AFCS), dual-engine full authority digital engine control (FADEC) with backup; five LCD electronic flight instruments; and two Vehicle Monitoring Displays, among other features.

Using the proven military heritage of Airbus Helicopters' Puma and Super Puma rotorcraft, the H225M was conceived with survivability in mind. Its airframe has reinforced structural main frames and is equipped with high energy-absorbing landing gear, along with self-sealing and crashworthy fuel tanks.

Cockpit protection is provided by armoured and energy-absorbing crew seats, while the cabin can be equipped with armour plating in the floors and walls or fitted with armour-plated carpets. The rotor blades' multi-box construction enhances their resistance to bullet impacts.

Contributing to the H225M's survivability is a radar warning receiver, missile approach warning system, and chaff/flare dispensers. The engine exhausts can be fitted with infrared suppressors, with protection against sand and ice provided by inlet

design and with installable filters.

Strong "Punch"

The H225M carries a strong "punch" when called on, ready for everything from front-line missions to critical logistics support. Qualified armament includes a 7.62 mm machine gun in the forward cabin windows; along with 180-round 20 mm gun pods and 19-tube 2.75-in. rocket launchers.

Included in the mission avionics are a flight management system with Doppler, GPS satellite navigation and SAR (search and rescue) modes; a digital moving map; a personal locator system; a loud speaker and a searchlight, among others.

From home base to the most remote locations, Airbus Helicopters conceived the H225M with maintainability in mind. The Turbomeca Makila 2A1 turboshaft engines are of modular design for easy maintenance, and Airbus Helicopters' Spheriflex fiberglass main rotor head is easy to adjust. The airframe includes a built-in step to access the engines. Overall maintenance information is provided through the integrated HUMS (Health Usage Monitoring System).

The high load capacity and easy cabin

Technical Specifications

Crew: Two

Passenger Capacity: 29 troops

Main Rotor Diameter: 16.2m

Length: 19.5 m

Height: 4.6 m

Empty weight: 5,330 kg

Gross weight: 11,000 kg

Max takeoff weight: 11,200 kg

Powerplant:

2 × Turboméca Makila 2A1 turboshaft engines, 1,776 kW each



Pilots are assisted by the H225's modern cockpit, with electronic instruments for flight information and system monitoring

access of the H225M, combined with fast cruise speed, long range and in-flight agility make this aircraft the perfect tactical transport helicopter for troops and cargo.

For cargo transport missions, the H225M's high-density cabin floor accommodates a sizeable internal load, while the maximum external load sling capacity is 4,750 kg.

Search and rescue

Search and rescue (SAR) missions require a fast, high-performance helicopter able to function in all weather conditions. Able to take off in less than five minutes, followed by high-speed cruise, the H225M reaches the scene rapidly, and is ready for a quick return to base when the assignment is completed.

Its low vibration levels provide an excellent environment for crew and passengers – which is important for concentration and mission readiness – while also reducing airframe and equipment fatigue.

The radius of action of more than 300 nautical miles is extendable by refuelling during flight or in hover – giving the reach needed on long-range missions or during prolonged SAR operations.

Furthermore, the high load capac-

ity and easy cabin access, combined with fast cruise speed, long range and in-flight agility make this aircraft well suited for medical evacuation and casualty evacuation duties (MEDEVAC/CASEVAC). Up to 11 stretchers and five attendants can be installed. Another possibility is the transport of two self-contained medical units with attendants.

Service solutions

To contribute to helicopters' availability optimisation, Airbus Helicopters has put at operators' disposal a robust worldwide-spread support and a wide choice of services that have been elaborated according to customers' operational return of experience from the field.

The material management offer includes: HCare Easy: On-catalogue services; HCare Smart: Contractual By-the-Hour programs and HCare Infinite: Complete support solutions.

Their global distribution network, composed of logistics platforms, regional and local inventories, ensures efficient and cost-effective deliveries anywhere, anytime.

The Customer Centres manage customer relation on a daily basis, and answer to

any operators' request to make sure customers get the full benefit.

Airbus Helicopters team of more than 150 qualified tech representatives provides on-site technical assistance, and perform On-the-Job Training to operators' technicians for first-class maintenance operations.

Training centres

To optimise flight and maintenance operations, Airbus Helicopters offer local Training Centres with state-of-the-art means such as Full Flight Simulators (FFS) or Flight Navigation.

Furthermore, pilots' proficiency can be enhanced within the flight environment thanks to pilots' accompaniment and mission operational courses performed on-site.

Airbus Helicopters through its Connected Services opens a new way of interacting with its customers. Such solutions pave the way to faster and easier data exchange between the helicopter manufacturer and operators.

This exchange contributes to continuously improving the support and performance of helicopters.