

IDEX 2015

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His Highness Sheikh Mohammed bin Rashid Al Maktoum (right) and His Highness Sheikh Hazza bin Zayed Al Nahyan tour the IDEX exhibition yesterday

during the course of IDEX, holding meetings with representatives from international companies.

Staff Major General Pilot Abdullah Al Hashimi, Executive Director for Strategic Analysis at the UAE Ministry of Defence, was keen to outline the advantages that IDEX brings to the UAE, pointing out that it reflects the vision of the late Sheikh Zayed bin Sultan Al Nahyan that the UAE's future would be based on educating the nation's young people, and not on oil. The exhibition helps to maintain the growth, strength, durability and diversity of the UAE economy, while making a major contribution to sustainable development. The exhibition demonstrates the UAE's ability to host major global companies and the economy's ability to absorb foreign investments, thereby encouraging further investment.

Al Hashimi added that the success of IDEX had influenced the decision to make the UAE the host of the International Renewable Energy Agency (IRENA), the first permanent headquarters of an international agency in the region. The general quoted Dr Hans Rosling's prediction that the UAE would be "the centre of the world" in 2100, and said it was a serious aspiration for all government departments to work towards this.

IDEX 2015 welcomes the world

Held under the patronage of His Highness Sheikh Khalifa bin Zayed Al Nahyan, the President of the UAE and Commander-in-Chief of the Armed Forces, the International Defence Exhibition (IDEX) was opened yesterday by His Highness Sheikh Mohammed bin Rashid

Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, and His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces. HH Sheikh Mohammed bin Zayed will be present

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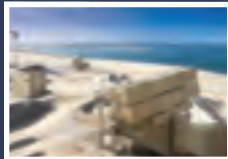


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IDEX officially opens



Main picture: The 'Al Fursan' aerobatic display team lit up the sky with the national colours.
Inset: Elements of the UAE Armed Forces displayed their professionalism during a demonstration of anti-terrorism capabilities

SAM J BASCH

Just before midday yesterday, IDEX 2015 was officially declared open, along with its subsidiary exhibitions NAVDEX and UMEX, in the presence of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, and Sheikh

Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces.

The official opening followed a spectacular live enactment of a fictional terrorist attack on a port facility, which friendly forces managed to suppress amid the staccato clatter of automatic fire, explod-

ing grenades and the scream of Mirage and F-16 fighter jets. As some 'enemy' forces tried to sneak into the meleé from the sea, friendly forces rappelled down from a hovering special forces helicopter to capture the enemy boat. Meanwhile, Apache gunships and a range of armoured vehicles and tanks took control of the port, as a last-minute desperate

missile launch by the terrorists was also neutralised.

As 'Al Fursan', the UAE Air Force's aerobatic team, streamed green, black, red and white smoke of the national colours in a perfect precision flypast, the packed grandstand applauded. Top-ranking military guests and VIPs in full regalia, with glittering gold braid and medals of rank, provided a counterpoint to the unusually overcast sky.

Nothing could have dampened the spirit, though. A military band entertained the guests as they came in, followed by a colourful cultural display of Arab heritage scenes. The 'Ayalla and Al Razfah' groups, who danced to traditional music, have performed at most national social and cultural events in the UAE. To the extraordinary lyrics of 'Al Taghrouda' as sung by camel riders of old, Hajana and Khayal demonstrated the role of horses and camels in Arab culture, followed by 'Al Nahaam', the traditional pearl divers' songs. With hooded falcons on their perches, this traditional hunting sport was depicted, while a group of children showed the guests their typical games played in the desert environment.

A precision rifle drill by a visiting honour guard from Belarus and a performance by a South Korean military band in traditional dress highlighted the growing foreign participation in IDEX. From small beginnings in 1993, this important event on the international calendar has grown to 55 nations represented by 1,100 foreign and 180 local companies.

Some 80,000 visitors are expected, attracted by IDEX and the dedicated NAVDEX and UMEX exhibitions. They have a lot to look forward to. ■



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Defeating the threat through co-operation

JON LAKE

As a prelude to the opening of the exhibition, the IDEX Conference took place on Saturday at the UAE Armed Forces Officers Club. Held under the patronage of His Highness Sheikh Khalifa bin Zayed Al Nahyan, UAE President and Supreme Commander of the UAE Armed Forces, the conference addressed a number of timely defence and security issues.

Danny Sebright, President of the US/UAE Business Council and master of ceremonies for the IDEX conference, described the UAE as an "island of stability in a sea of restlessness", and praised the country's contribution to the ongoing struggle against Daesh, which is perhaps the most obvious element within what another speaker identified as an ongoing "tidal wave of international strife and geopolitical flux". This has added urgency and relevance to defence discussions in the region and beyond.

According to Staff Major General Pilot Mohammed Rashid Al Ali, Director of the Joint Operations



Left: Staff Major General Pilot Mohammed Rashid Al Ali, Director of the Joint Operations Centre of the UAE's General Headquarters. Right: Philip Dunne MP, the UK's Minister for Defence Equipment, Support and Technology

Centre of the UAE's General Headquarters, the security and stability of the Gulf is not just a regional concern. In his address, he pointed out that it must be both a national and an international responsibility, making an eloquent plea for ever closer co-operation between allies. Even though the UAE has always preferred to adopt peaceful means of resolving disputes, the General detailed



how the UAE has established and built up armed forces that are well trained and well equipped to protect the country against "anyone who wants to interfere in its affairs".

Another of the conference speakers, Philip Dunne MP, the UK's Minister for Defence Equipment, Support and Technology, identified the "brutal campaign of murder and repression across northern Iraq and

Syria" being carried out by Daesh militants as being a major regional and international challenge.

The air campaign against Daesh has involved the air forces of the UAE, Saudi Arabia, Bahrain and Jordan, as well as those of the USA, France and the UK, and a recurring theme of the conference was the importance of building closer partnerships between allied air forces, and between air forces and industry.

However, the campaign in Syria and Iraq is only one of the challenges facing the region and the international community, as Dunne pointed out, marking only one facet of a wider threat, one of several vicious insurgencies being undertaken in the name of Islamic extremism, and which threaten the stability of the region. These include what he identified as "growing insurgencies in Libya and Yemen", and spreading insurgencies in Africa, where "the barbaric Boko Haram are moving across national borders beyond northern Nigeria to threaten neighbouring countries", as well as trouble in the Sahel and in Somalia. ■

EDIC grows by five

DAVID DONALD

Having launched with 11 companies in December, the Emirates Defence Industries Company (EDIC) has announced that another five companies are joining the new entity.

EDIC is an integrated national defence services and manufacturing platform that brings together companies from Tawazun Holding, Mubadala Development Company and Emirates Advanced Investments Group into a single entity. H.E. Homaid Al Shemmari is EDIC's chairman, and Luc Vigneron (previously of Thales) has been named as CEO.

First-phase companies comprised Al Taif Technical Services, Bayanat

for Mapping and Surveying Services and Horizon International Flight Academy from Mubadala; NIMR Automotive, Tawazun Dynamics and Tawazun Precision Industries from Tawazun; and C4 Advanced Solutions, Global Aerospace Logistics, Naval Advanced Solutions, Secure Communications and Thales Advanced Solutions from EAIG.

To join EDIC in the second phase are Advanced Military Maintenance, Repair and Overhaul Centre (AMMROC) from Mubadala, and four Tawazun companies: Abu Dhabi Autonomous Systems Investment (ADASI), Burkan Munition Systems, Caracal International, and Caracal Light Ammunition. ■

Typhoon deal signed

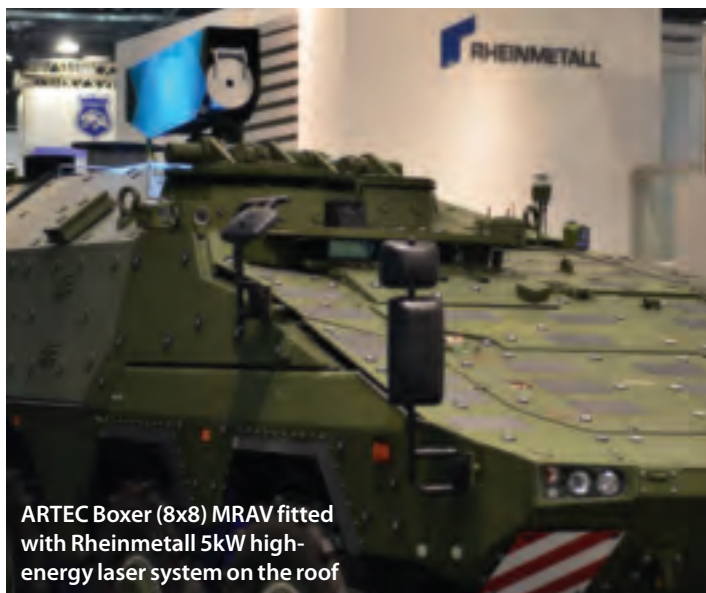
Yesterday at IDEX, a contract for the Typhoon Phase Three Enhancement (known as P3E) was signed by the UK's Minister for Defence Equipment, Support and Technology, Philip Dunne MP, writes Jon Lake.

The minister had earlier told the IDEX conference that he was looking forward to announcing a "further air-to-ground strike capability" for the Eurofighter Typhoon.

P3E will bring forward the integration of the MBDA Brimstone air-to-surface missile onto the Eurofighter Typhoon,

for service entry later in the decade. Brimstone will give the Typhoon a formidable direct-fire close air support weapon that has been combat-proven in Afghanistan and Libya. The weapon will augment a variety of Paveway laser- and dual-mode laser/GPS-guided bombs and the Storm Shadow cruise missile for attacking ground targets. Brimstone will be carried on triple carriers under the wings.

P3E aircraft will be capable of simultaneously engaging air-to-ground and air-to-air targets out to beyond visual range. ■



ARTEC Boxer (8x8) MRV fitted with Rheinmetall 5kW high-energy laser system on the roof

High-energy laser platform on display

Rheinmetall has invested considerable funding in the design and development of high-energy lasers (HEL) for battlefield applications. Here at IDEX the company is showing a system integrated onto the ARTEC Boxer (8x8) multi-role armoured vehicle (MRV).

During trials carried out in Switzerland in front of a number of high-ranking overseas delegations, Rheinmetall (Stand 09-A10) showed its HEL integrated onto three land platforms. In addition to the Boxer MRV, the other two platforms comprised a RUAG Defence M113 fully tracked armoured personnel carrier and a Tatra (8x8) protected cross-country truck. During the demonstration in Switzerland, the Boxer HEL neutralised an oversized heavy machine gun mounted on a pick-up truck.

Currently the Boxer is configured for a 5kW or 10kW laser, which are identical with regard to mass and volume. Here at IDEX it is fitted with a 5kW HEL effector and is referred to as the Mobile HEL Effector Wheel XX. This features a special HEL effec-

tor module that takes full advantage of Rheinmetall's proprietary know-how, which is based on beam superimposing technology.

Known as the Mobile HEL Effector Track V, the RUAG M113 has been fitted with a 1kW HEL effector that has been successfully demonstrated in the remote explosive ordnance role. The third application is the Tatra (8x8) vehicle fitted with a containerised 20kW HEL effector and this is referred to as the Mobile HEL Effector Container L. The Roman numerals V, XX and L correspond to the laser categories of 5kW, 20kW and 50kW.

Rheinmetall Air Defence has also fitted and tested its Skyshield air defence system with the 35mm cannon replaced by an HEL. During the demonstration in Switzerland, the Skyshield HEL effector enabled the successful engagement of a series of incoming generic mortar rounds.

According to Rheinmetall, the engagement range of this technology demonstrator is 3,000m, an increase of 1,000m over that achieved in earlier HEL demonstrations. ■

Revealing an Enigma

CHRISTOPHER F FOSS

Yesterday, in the presence of His Highness Sheikh Mohammed Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, Emirates Defense Technology (Stand 11-B28) unveiled its Enigma Armoured Modular Fighting Vehicle (AMFV).

The Enigma AMFV is understood to be a potential contender for the United Arab Emirates' requirement for a large fleet of 8x8 armoured vehicles. The first example of Enigma was completed shortly before IDEX and will commence its mobility trials immediately after the show. This will soon be followed by further vehicles for additional trials

and demonstration purposes.

With a typical combat weight of about 28 tonnes, Enigma is powered by a Caterpillar C13 diesel developing 711hp, coupled to a Caterpillar automatic transmission and a two-speed transfer case. The Timoney Technology suspension provides a high level of cross-country mobility and is mounted on three sub-frames for ease of replacement of damaged units in the event of mine or improvised explosive device damage. Steering is power-assisted and a central tyre-inflation system is fitted as standard.

On display at IDEX is a fully amphibious version, driven in the water by two propellers mounted at the rear. The hull is of all-welded armour with appliqué armour for

Sudanese Khalifa-1 122mm self-propelled howitzer with weapon partly elevated and traversed to the right





Emirates Defense Technology's new Enigma (8x8) Armoured Modular Fighting Vehicle fitted with the complete turret of the Russian BMP-3 IFV

a higher level of ballistic protection. The lower part of the hull is V-shaped.

A key design feature of Enigma is the modular roof design, which allows it to be fitted with a wide

range of weapons. The example at the show is fitted with the complete turret of the Russian BMP-3 infantry fighting vehicle, which is used in large numbers by the UAE.

Main armament consists of a

100mm rifled gun fed by an automatic loader, with a co-axial 30mm dual-feed cannon and 7.62mm machine gun.

Standard equipment includes an air-conditioning system, battle



Scale model of the Enigma AMFV fitted with the BAE Systems 155mm/39 calibre lightweight artillery system

management system, cameras for situational awareness, electronic architecture and electrically operated grenade launchers.

Another potential application for the Enigma AMFV is a highly mobile artillery system, of which a scale model is being shown for the first time at IDEX 2015. Mounted on the rear of the hull is the combat-proven BAE Systems 155mm/39 calibre M777 lightweight howitzer. When travelling, this is carried in the horizontal position and, when required for action, fires over the rear.

Other weapon options include the Rheinmetall Air Defence Sky-ranger 35mm air defence turret and the Russian UralVagonZavod AU220M 57mm remote turret. ■

Sudanese howitzer makes debut



The Military Industry Corporation (MIC) of Sudan (Stands 12-D30, A-002 and CP-232) is exhibiting a wide range of weapons and equipment here at IDEX 2015.

One of the most interesting items of equipment being shown is the Khalifa-1 122mm self-propelled howitzer, which is already in service with the Sudanese Army, and is making its international show debut.

Khalifa-1 consists of a modified Kamaz 43118 6x6 cross-country chassis with a fully protected four-

door cab for the five-person crew. At present the cab does not have air-conditioning.

Mounted on the rear of the chassis is the complete upper part of the widely deployed Russian-designed 122mm D-30 towed howitzer. This has a manual traverse of 40° left and right, with elevation limits from -5° to +70°, albeit with some limitations over the cab.

When deployed in the firing position, stabilisers are lowered hydraulically at the rear. The steel sides also fold down under hydraulic control to provide rapid crew access to the 122mm ammunition. The latter is of the separate loading type, that is, projectile and associated

charge in a conventional cartridge case, with a total of 45 projectiles and charges carried.

The maximum range depends on the projectile/charge combination, but is quoted as being 17km. The maximum rate of fire is stated to be 8 rounds/minute.

The standard 122mm D-30 is normally towed by a 6x6 truck, which also carries the crew and a quantity of ready-use 122mm ammunition. By integrating the system on a 6x6 cross-country truck chassis, it has greater mobility. This allows it to be brought into action and then removed much more quickly, making it less vulnerable to counter-battery fire. ■

Big capability at an attractive price

JON LAKE

Abu Dhabi-based NorthStar Aviation has developed a new military derivative of the Bell 407, and has received an order for 30 of the helicopters from the UAE Armed Forces.

NorthStar has already delivered 11 production models of its Model 407MRH (MRH standing for Multi-Role Helicopter) and plans to deliver the remainder at a rate of about one per month through to the end of 2016. The company has received expressions of interest from potential customers in the Middle East, Europe and South America.

Founded in January 2011 and owned by Sheikh Ahmed bin Saif al Nahyan, a member of the Abu Dhabi royal family, NorthStar Aviation is a flexible, full-spectrum aviation modification, maintenance, repair and overhaul organisation working with government and military clients. The company is run by a management team that has a decade of experience of delivering complex aviation projects, specialising in the rapid design, prototyping and testing of systems. The company claims that it is able to go from initial concept to a fielded-capability aircraft more quickly than an original equip-



NorthStar's 407MRH is comprehensively equipped to perform a range of armed ISR missions

ment manufacturer (OEM) would be able to.

NorthStar is headquartered in Abu Dhabi, and has a US subsidiary in Washington DC. The NorthStar 407MRH prototype was developed and test-flown in Florida. The type was first unveiled at the Army Aviation Association of America's annual

'Quad A' conference in May 2014. An example is on display at NorthStar's display (Stand 02-B30) at IDEX.

The 407MRH is based on the improved Bell 407GX, which features the Garmin G1000HTM flight deck, with dual VHF and GPS, and Garmin's Synthetic Vision System, but also adds a plethora of military systems.

Most obviously, the aircraft is fitted with a reconfigurable, modular two-, three- or four-station Light Weight Weapons Platform, and has a corresponding Integrated Weapons Management System capable of supporting AGM-114 Hellfire missiles, a .50 cal GAU-19 machine gun, a 7.62mm M134 Minigun, or Hydra 70 rocket pods.

A FLIR Systems Star SAFIRE 260-HLD is turret-mounted below the nose. This is optimised for light attack platforms and incorporates a stabilised EO/IR sensor, an HD colour day camera, a mid-wave imaging infrared sensor, a solid-state low-light imaging system, a laser designator and tactical laser range-finder, an eye-safe laser range-finder, and a near-infrared laser illuminator visible to night vision goggles.

Both cockpit and cabin are armoured, and the aircraft has a new Mission Management System, an integrated moving map, embedded IMU/GPS and navigation processing software, integrated tactical multi-band radios, an integrated Mode IV IFF transponder, a Microwave Downlink System, TACAN, and NVG-compatible interior and exterior lighting.

The result is a high-performance, low-cost, lightweight multi-role military helicopter capable of light attack, CAS (close air support), ISR (intelligence, surveillance and reconnaissance) and light assault. "Not everybody has \$80 million to buy an Apache," said Adam Gunn, the company's technical director, pointing out that the NorthStar Aviation 407MRH's price tag is around \$9 million. ■

High capacity comms partnership agreed

Thales and Ultra Electronics TCS have established a partnership to bring the next generation of high-capacity line of sight (HCLOS) communi-

cations systems to market. Known as TN 4100, this new radio product family brings a suite of capabilities designed to enhance operational flexibility in the field.

The TN 4100 radio has been developed using flexible line-of-sight technology, offering high-capacity communications via a tri-channel,

dual-band 3+ and 4 IP platform, and supports point-to-point, point-to-multipoint, on-the-move and mesh applications. According to the two companies, the TN 4100 enhances the Thales NEXIUM Theatre tactical networking solution by enabling the flexibility to support high-capacity transmission, regardless of the mission. ■



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SAM J BASCH

A final series of recent flight trials of the Seeker 400 unmanned aerial vehicle (UAV) system from Denel Dynamics (South African Pavilion, Stands 12-C21 and UM-46) has cleared it for imminent production this year. In the event, the system is being offered in both a 'clean' ISR-only and an armed reconnaissance version, with the latter designated *Snyper*, said Sello Ntsihlele, Denel Dynamics' UAVs general manager.

"Our latest trials involved the full gamut of performance tests, including range and altitude, safety, endurance and functional payload," he stated. "This brought us to the baseline as specified by the client, allowing us to head for production."

It appears that sensitivities about armed UAVs have prompted the South African Air Force (SAAF) to retain the Seeker 400 designation for a pure surveillance and reconnaissance aircraft. Seeker 400 is the latest and most advanced of Denel Dynamics' UAV portfolio, with an operating altitude of 18,000ft, 16 hours' endurance and a cruising speed of



Seeker 400

150km/h. With a payload capacity of 100kg, it can carry dual payloads comprising synthetic aperture radar, optronics turret and digital video system for different tactical missions.

Seeker 400 builds on the heritage of the smaller Seeker 200, derived from the Seeker II, which had significant export success. Both versions are on display at IDEX this year. "By aligning the design

with international specifications for an armed surveillance UAV, we can offer *Snyper* with four *Impi-S* missiles," Ntsihlele explained. "That still allows for a 40kg payload, typically the *Goshawk II HD* from Airbus DS Optronics, although we are still optimising *Snyper's* structure."

The *Impi-S* is derived from the proven Denel Dynamics short-range (5,000m) *Ingwe* and long-range

(10,000m) *Mokopa* anti-armour missiles. According to Ntsihlele, potential international clients have indicated a preference for the existing Denel Dynamics forward tactical ground station, despite a smaller ground station being available for ease of transport. The tactical ground station typically more than doubles the line-of-sight range of the aircraft – up to 750km in the case of Seeker 400. ■

Made to fit

For airborne operations, payload weight and size are rather critical factors, perhaps more so with tactical unmanned aerial systems (TUAS). Pennsylvania, US-based Delta Digital Video (Stand UM-14) has just announced that its Model 6805R HD/SD video encoder has been selected for integration with the *Shadow 200* drone payload.

George Nelson, the company's vice president/general manager, said, "Delta is proud to be a member of the *Shadow 200* team. We have worked closely with Textron Systems engineers to ensure that our new encoder meets the size, weight, power, cost and performance requirements for mission success."



Delta's Model 6805R H.264 HD/SD provides for the transmission of full-motion video for intelligence, surveillance and reconnaissance (ISR) applications. Primarily designed for small aircraft, the 6805R is a rugged, compact unit with all the features of Delta's JITC certified video encoder products.

Utilising H.264 (MPEG-4 AVC) encoding, the 6805R is flexible to allow for optimal video performance for any given bit rate. User-configurable parameters permit the user to adjust the video/audio/data features in accordance with mission requirements.

Delta's technology has been integrated, tested and flown in numerous applications with various airborne platforms and is compatible with MISB and STANAG standards. ■

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Defending the coastline

RICHARD SCOTT

UAE-based Siham Al Khaleej Technology (SAKT), working in partnership with European missile house MBDA (Stand B-036) and Italian navigation electronics group GEM Elettronica (Stand A-003 Italian Pavilion), is taking the leading role in the development of a new coastal battery system based on the Marte missile family.

Being displayed on the SAKT exhibit (Stand OA-007, UAE Pavilion) and in mock-up form at NAVDEX, the baseline system configuration has been designed to satisfy requirements for surveillance, control and protection of sea lines of communication, and protection of coastal assets. SAKT is taking the role of prime contractor and system integrator, MBDA is responsible for the supply of missiles and launch



Artist's impression of the coastal defence battery featuring two quadruple Marte missile launchers and a remote radar shelter

systems for the Marte anti-ship family missile, and GEM will provide remote radar stations.

Developed under the framework of a heads of agreement signed

in late 2013, the proposed coastal defence system would provide a capability for both maritime surveillance and threat interdiction. In its baseline configuration, the system

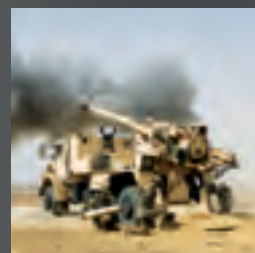
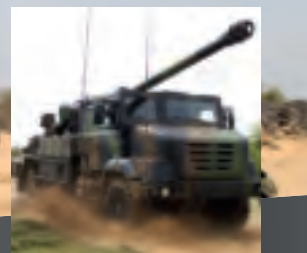
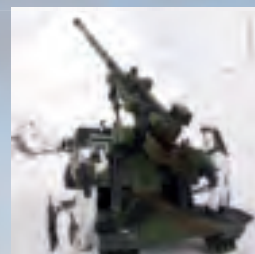
comprises a surface coastal radar system, a command and control shelter, and a number of Marte missile launchers. Rapidly redeployable to coastal sites and small islands, the system can be connected via datalink to an upper echelon of command and control, if required.

GEM Elettronica's CBRS-100MD coastal battery remote station is a compact shelter-based system incorporating a solid-state LPI (low probability of intercept) radar system designed for short-to-medium-range coastal surveillance missions out to a maximum range of 100 nautical miles. As an option, GEM is also offering an adjunct electro-optical/infrared sensor package to provide positive identification of tracks.

Marte missiles are fired from a four-round pedestal-mounted launcher. The system can be configured to use either the intermediate-range (out to 35km) Marte Mk 2/N missile, or the new turbojet-powered Marte ER (able to achieve a range beyond 100km). ■

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• Batteries	VITZROCELL (Hall 10-B17)



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New VAB looks for export sales

CHRISTOPHER F FOSS

Renault Trucks Defense (French Pavilion, CP-300) has developed a new version of its well-known Véhicule de l'Avant Blindé (VAB). The latest Mk III has been developed by the company specifically for the export market as a follow-on to the original VAB. More than 5,000 VABs were built for the home and export markets, with customers in the region including Lebanon, Morocco, Oman and the United Arab Emirates.

The VAB Mk III is a new design, and not only has more volume and payload but also has a higher level of ballistic protection, while being able to mount a wider range of weapon stations. While the original VAB was available in both 4x4 and 6x6 configurations, the Mk III is only available as a 6x6.



VAB Mk III (6x6) at IDEX 2015 fitted with the Kongsberg remote weapon station armed with a .50 heavy gun and a 7.62mm MG

When being used as an armoured personnel carrier (APC), the VAB Mk III has a crew of two and carries seven dismounts, who are provided

with special blast-attenuating seats. The APC has a typical gross vehicle weight of 20 tonnes.

Development of the VAB Mk III

is complete and the company has already built a pre-production batch of five vehicles powered by a 350hp diesel coupled to an automatic transmission. The all-welded steel hull is fitted with appliqué armour and provides ballistic protection to STANAG 4569 Level 4, as well as blast and improvised explosive device (IED) protection.

Under contract to the French Defence Procurement Agency, Renault Trucks Defense has just delivered the Elector hybrid electric drive (HED) demonstrator, which is now being put through a series of exhaustive trials.

Renault Trucks Defense is part of the Volvo Group Governmental Sales (VGGs), with other famous brand names including ACMAT Defense, Panhard Defense and Volvo Defense, the last of which is based in the USA. ■

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The seminars will be held at Aloft Abu Dhabi, situated adjacent to ADNEC. An elevator will take you directly from the exhibition grounds to the hotel. Both seminars are 45 minutes long, and food will be served in between.

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Hit a moving target

SAM J BASCH

For precision combat marksmanship, a target with human-like actions comes close to the real thing. Australia-based Marathon Smart Targets (Stand 04-C20) is showing its range of robotic targets, including the flagship T-40, developed in conjunction with the country's Department of Defence.

The human-shaped targets display artificial intelligence by moving and behaving autonomously like real humans, even reacting to live-firing from a shooter. When hit, the mannequin drops and other targets on the range scatter for cover, only to re-emerge after a pause to counter-attack. In this way, combatants are trained to fight against unpredictable moving targets, using live ammunition. According to the company, its smart robots represent the next evolution in marksmanship and live-fire tactical training.

Smart targets can be installed on existing ranges without requiring additional construction or infrastructure. They are able to operate day or night in any weather, while remaining within the designated safety zones. In addition to training for multiple skills, various scenarios can be created, ranging from simple to complex and unpredictable.

The mannequins are mounted on an armoured-plated drive train with puncture-proof wheels. Sensors detect shots from all directions, distinguishing body shots from head or spine hits. ■



Canada impresses

With no fewer than 50 companies and four government organisations, the Canadian presence this year is the largest ever at IDEX. The Canadian Pavilion (Stand 01-B46) is hosting 16 exhibitors, including the Canadian Commercial Corporation (CCC), in support of the country's defence and security exporters.

Canada's defence and security companies are best known for armoured vehicles, special

mission aircraft, C⁴ISR, training systems, cyber security and shelters, as well as VIP helicopters.

These companies are represented by the Canadian Association of Defence and Security Industries (CADSI), with the mandate to strengthen relations with external stakeholders. The industry employs more than 100,000 Canadians and contributes in excess of \$13 billion to the country's economy. Some 40,000 Canadians work in the UAE, resulting from long-standing diplomatic relations between the two countries. ■

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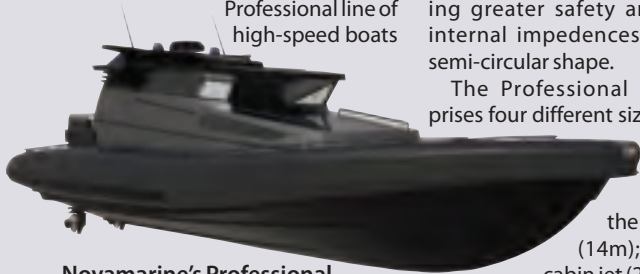
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Boats with Italian flair

RICHARD SCOTT

Italian fast-boat builder Novamarine (Italian Pavilion, Stand C-001) is making a splash at NAVDEX with its Professional line of high-speed boats



Novamarine's Professional 120 design with cabin

for the military, security and commercial user communities.

Based in Olbia, Sardinia, where it operates out of SNO Yachts' facilities, Novamarine has combined its extensive design expertise with the latest materials and manufac-

turing techniques. For example, the Professional line is constructed with special rigid tubes manufactured in a specific shock-resistant, pierce-proof foam, thereby offering greater safety and reducing internal impedences through its semi-circular shape.

The Professional range comprises four different sized boats: the 100 (10m length); the 120 (12m); the 140 cabin jet (14m); and the 220 cabin jet (22m). The Professional 100 and 120 series can be configured with outboard (FB variant) or inboard (EFB) engines. Open deck and cabin options (EFB variants) are also available.

Novamarine has already achieved regional success, being contracted in 2014 to provide vessels for the Qatar Coast Guard. ■

S351 is seen on first sea trials earlier in February



Surfacing at NAVDEX

UK-based MSubs (UK Pavilion, Stand B-052) is making its first appearance at the NAVDEX show. A specialist in the design, manufacture and integration of manned (submersibles and submarines) and unmanned underwater vehicles, the company has built up a strong pedigree in the military market since delivering its first submersible in 1986. Examples include the large-scale unmanned Mobile Anti-Submarine Training Target and the Mobile Undersea

Systems Test Laboratory vehicle. MSubs' most notable recent success was the award of a contract to build a prototype commercially classed 'dry' submersible vehicle, designated S351, for test and evaluation by the US Special Operations Command (USSOCOM).

Sea trials of S351 began from Plymouth earlier this month; the craft will now complete several months of sea trials prior to delivery to USSOCOM. ■

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First Win

Armoured excellence from Thailand

Chaiseri Defense is Thailand's leading military vehicle specialist, and has been in the business of upgrading and reconditioning armoured vehicles for more than five decades. Now it has harnessed that experience, plus its high-technology manufacturing capabilities, to produce the First Win, a new family of 4x4 vehicles that can affordably meet the needs of armies and security forces around the world.

Established in 1969, Chaiseri Defense has grown into a company that is recognised around the world for its expertise in military vehicle support and technology. As well as supporting the vehicles of the Royal Thai Army and Navy, Chaiseri has exported its products and services to more than 35 countries in six continents. The company's plant is equipped with state-of-the-art equipment.

Chaiseri Defense prides itself on the quality of its products, and ensures that stringent conditions are met through rigorous testing procedures at all stages of the manufacturing process. Testing is conducted at raw material, component and final stages, including field-testing, to ensure that products meet US and NATO military standards.

A key area of competence for Chaiseri is the support of military vehicles and their sub-systems through a wide range of upgrade, reconditioning, maintenance and repair services. In this role the company has supported both domestic and international customers. Chaiseri also has expertise in maintaining and upgrading key sub-systems such as engines.

Through its long experience of working with military vehicles Chaiseri Defense has also been able to devise new technologies to further enhance vehicle capabilities. Its advanced metal/rubber track systems have been fitted to many popular vehicle types. The company has also developed a run-flat tyre system.

First Win

From this rich wealth of experience Chaiseri has gained the knowledge and expertise necessary to develop its own vehicles, thus elevating the company from being a support organisation to the status of original equipment manufacturer. Known as First Win, Chaiseri's initial entry into the OEM world is a tactical 4x4 aimed at both armed forces and internal security needs.



First Win has been devised as a family of versions, offering different levels of protection and mobility to suit various customer requirements. The vehicle can be reconfigured for many different battlefield and security roles, such as ambulance, command post, reconnaissance and infantry fighting vehicle. It is easily transportable by air, sea, rail or road, and can be fitted with a variety of overhead weaponry such as 7.62mm or 12.7mm machine guns, and 40mm automatic grenade launcher. A variety of internal configurations can be installed, but with a single driver the First Win can carry 10 troops.

Protection for the crew and occupants is provided through an all-welded Vee-shaped armour steel hull, which also is the basis of the chassis-less monocoque structure. The protection not only covers the crew compartment, but also that of the engine.

Powered by a 300hp Cummins diesel, the First Win personnel carrier offers a high degree of resistance against mines and IED blasts. It has STANAG Level 2

protection against ballistic threats as standard, with an option to upgrade to level 3, while it has full level 3 protection against mines. This equates to protection against the equivalent of an 8-kilogram TNT blast under the belly, or 10 kilograms under the wheels.

First Win-E is a slightly smaller vehicle with a 250hp engine and independent suspension that is optimised for fast-moving reconnaissance operations. It has Level 2 mine blast protection but has reduced weight compared to the standard First Win, but with a corresponding increase in mobility. Chaiseri also offers the First Win-L, a lighter version with 200hp engine and Level 1 protection as standard, intended primarily for internal security uses where mines are not a threat.

More than 30 First Win vehicles are already in service with the Thai army and internal security agencies. Chaiseri is now offering the vehicle for export as a versatile and efficient vehicle that offers high levels of protection for its occupants, but at an affordable cost.



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Aravis for Gabon's UN commitment



Aravis (4x4) protected vehicle armed with a Kongsberg Protector RWS armed with a .50 M2 HB MG

CHRISTOPHER F FOSS

Nexter Systems will deliver 12 Aravis (4x4) highly protected vehicles to the Gabonese Republic by June 2015, under the terms of a contract awarded to the company in October

2014. They will be part of a battalion deployed by the Multi-dimensional Integrated Stabilisation Mission in the Central African Republic (MINUSCA), operating under a United Nations mandate.

Currently being built at the Nexter

Systems facility in Roanne, France, these Aravis vehicles will be fitted with the Nexter System ARX20 remote-controlled turret (RCT) armed with a 20mm M621 cannon. For a higher level of protection against the widely deployed RPG-7

rocket-propelled grenade, they will be fitted with the PG-Guard protection system. They will also carry the Nexter Robotics Nerva unmanned ground vehicle for use in the reconnaissance role.

According to Nexter Systems, the baseline Aravis has the highest level of protection in its class against a wide range of battlefield threats, including small arms fire, mines and improvised explosive devices (IEDs). Aravis has a high level of cross-country mobility because it is based on the Mercedes-Benz UNIMOG U-5000 (4x4) chassis.

Nexter's first customer for the Aravis was the French Army, which from 2009 took delivery of 15 units, of which 11 were deployed to Afghanistan for use with French Army engineers using the MBDA SOUVIM 2 route-clearance system. The remaining four Aravis vehicles were retained in France for training purposes. France has now ceased combat operations in Afghanistan.

French Army Aravis vehicles are fitted with a Kongsberg remote weapon station (RWS) armed with a .50 M2 HB machine gun (MG), Thales PR4G communications equipment, an Exavision camera system to provide situational awareness through a full 360° and electronic devices to counter IEDs.

Although Nexter Systems has never confirmed the contract, it is also supplying Saudi Arabia with 200 Aravis vehicles in three batches, the first for 73 units – deliveries are underway. Some of them are fitted with the Nexter Systems ARX20 RCT. In addition to the troop-carrying version, some specialised vehicles are being supplied to Saudi Arabia. ■

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Giving a balanced view

NICK BROWN

Finland-based Savox (Finnish Pavilion, Stand 06-B41) has launched its Thor integrated helmet electronics package at IDEX.

At heart, the system comprises a ballistic helmet shell – made by FY Composites – outfitted with a range of new proprietary attachments and standard military connectors and interfaces. These fittings enable hearing protection and communications, night vision goggles (NVGs) and a host of ancillary systems to be mounted using a common sensor and communications power rail.

Thor was designed for the Finnish Defence Forces and has been developed for a range of roles from dismounted infantry to armoured vehicle personnel and aircrew, but is now being launched for export. Mikael Westerlund, Savox's chief



strategic officer, acknowledged that there are already a range of helmet set-ups available on the market for modern digitised soldier systems, but said the innovation of the Thor

package is that all of the elements, from the powerpack at the rear, through the wiring loom and on to the NVGs and hearing protection, are fully integrated and balanced.

This design means that no counterweights are required (the average counterbalance weight of most conventional systems is 600g) to keep the helmet and NVGs centred on the wearer's head, reducing neck wear and increasing comfort.

The helmets can be specified in a cutaway special forces-type design – as launched at IDEX – or a longer form with coverage for the back of the neck. Additionally, the modular design enables Savox to supply a range of system configurations at customer requests, but in the configuration developed for the Finnish Defence Forces the baseline configuration weighs 1.9kg, rising to 2.3kg with a night vision monocle and 2.8kg with a full binocular set. The battery pack is a conformal design, with space for two AA batteries to ensure ease of replacement in the field.

Savox is looking at how to apply its technologies to other soldier-worn applications, starting with a load-bearing vest with an individual soldier router and power source. ■

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Advanced turret takes aim

CHRISTOPHER F FOSS

Belgian company CMI Defence has launched its latest Cockerill 3000 modular turret system (MTS) at IDEX. The equipment is being displayed integrated on the General Dynamics European Land Systems Desert Piranha 5 (8x8) armoured fighting vehicle.

As part of the company's display (Stand 12-C35), the Cockerill 3000 MTS is being shown fitted with the combat-proven ATK Armament Systems 30mm Mk44 dual-feed cannon, which can be upgraded to 40mm, and a 7.62mm co-axial machine gun.

These weapons are laid onto the target using an advanced computerised fire control system, with commander and gunner being provided with stabilised day/night sight capability, incorporating a laser



Desert Piranha 5 fitted with the latest CMI Defence 3000 series modular turret system

rangefinder. The turret on show has an advanced commander's panoramic sighting system that allows hunter/killer target engagements to take place.

To meet a wide range of user requirements, the Cockerill 3000 MTS can be fitted with various weapons. Medium-calibre options include 25mm, 30mm, 35mm,

40mm and 50mm weapons, while heavier weapons include 90mm and 105mm rifled guns.

Both of the heavier weapons can fire a gun-launched anti-tank guided missile (GLATGM) to 5,000m, which is well beyond the range of the rifled gun. The GLATGM is fitted with a tandem high-explosive anti-tank warhead to defeat targets fitted with explosive reactive armour.

A wide range of optional equipment is available, including co-axial machine guns, roof-mounted remote weapon station armed with various weapons up to 40mm automatic grenade launchers, banked grenade launchers and rail- or tube-launched anti-tank missiles.

The turret's modular protection package allows for a maximum ballistic protection level of STANAG 4569 Level 5. ■

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IN BRIEF

Meeting refrigeration rules

With new EU F-gas regulations published last year, Dutch firm Heinen & Hopman (Netherlands Pavilion, Stand A-024) is well placed to install and maintain compliant air-conditioning and refrigeration systems. The company offers a quick-response, worldwide service to help customers conform to the new rules.

Seen from above

Spain's Hisdesat company (Stand 07-A42) is showcasing innovative satellite systems. SpainSat and XTAR-Eur offer flexible security in the X- and military Ka-bands. For earth observation applications such as border control, military operations or high-resolution mapping, the company offers two satellites, Ingenio and Paz.

Guarding the perimeter

SAM JBASCH

The name Guardian is quite apt to describe the B400 series e-scan radar equipment from UK firm Blighter Surveillance Systems (Stand 05-C16) that has just been selected for installation at a strategic Middle East air base. The contract was awarded to Blighter by Pennsylvania-based Unlimited Technology Inc, to secure the perimeter of the air base.

Blighter's PESA (passive electronically scanned array) radars and a long-range illuminated camera system for day and night operation form part of the integrated perimeter security system. Completing the configuration that is known as the Blighter Guardian are the BlighterTrack multi-hypothesis software-based radar target tracker and its BlighterView HMI 2 control system that displays radar data and

uses the camera systems.

According to Brent Franklin, president of Unlimited Technology, a field-proven robust and reliable e-scan radar was required. "It was vital that the solution was maintenance-free with a 24-hour all-weather capability, low false alarm rate and with a range to look beyond the perimeter."

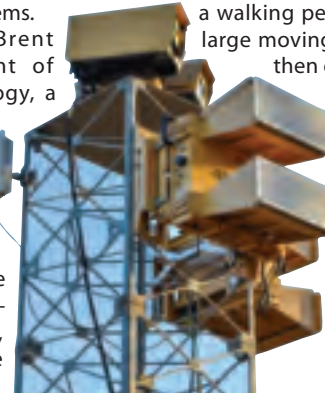
Guardian was designed with these capabilities, able to detect small and slow-moving targets, even in cluttered environments, thanks to its coactive frequency modulated continuous wave (FMCW) Doppler fast-scan processing. It can detect

a walking person at 11km or a large moving vehicle at 25km, then cueing the camera to follow and identify the target.

Said Blighter chief executive Mark Radford: "Our solid-state PESA technology has no mechanical moving parts to wear out or to get contaminated by sand or dust, therefore it is ideal for the

Middle East environment."

Blighter's ITAR-free systems are used worldwide commercially, by governments and in defence for asset and infrastructure protection, coastal surveillance and military applications. ■



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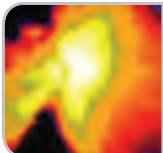


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Take a sip

SAM J BASCH

Hydration is arguably one of the most important drills for any combatant; dehydration could incapacitate or even kill. A host of innovative packs, reservoirs and accessories is what has made CamelBak (Stand 06-A29) renowned the world over.

With its Elixir product, CamelBak makes hydration not only palatable

but also tasty. Elixir is a sugar-free effervescent tablet to add flavour and nutrition to water in a reservoir or bottle. CamelBak offers five flavours, including tangerine-orange and raspberry-lime, with two containing caffeine, to replace electrolytes lost through sweating.

The fifth-generation Chem Bio Reservoir (CBR X) is ideal for CBR threat environments. A lightweight, durable and flexible reservoir, it provides more than three hours of hydration without the user having to connect/disconnect a canteen every time a drink is required.

CamelBak's DuraFlex Barrier technology ensures there is no penetration of live chemical and biological warfare agents or common toxic industrial chemicals and materials. Worn with a protective mask, the CBR X Reservoir is



Clockwise from left: Elixir hydration tablets; CBR X Chem Bio Reservoir; Mil Spec Antidote reservoir; Rubicon assault pack



designed to be fully operational in lethal gas environments.

The Mil Spec Antidote reservoir offers maximum adaptability for changing missions or combat environments. It features the Quick Link exit port and QL HydroLock bite valve adaptor for fast refilling with automatic shut-off.

CamelBak's Skirmish pack features a contoured back panel and integrated Mil Spec Antidote lumbar reservoir to transfer weight from the back to the hips. Pouches and gear can be attached by means of the low-profile composite MOLLE panel.

CamelBak's largest, most advanced assault pack is the Rubicon, designed

to make carrying even the heaviest load more comfortable. As well as the integrated Mil Spec Antidote lumbar reservoir and MOLLE panel, it has ASIPS radio attachment points to hold communications securely. ■



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customers' needs, we aim to identify or anticipate at an early stage how requirements are likely to develop.

As a result, the whole product range is subjected to a continuous development process. Evolving needs are fed back to Engineering, who in turn develop a steady stream of enhancements in terms of payload, mobility and protection. Where necessary, complete new vehicle families are developed.



A new way to cross the divide

The Vedette F2 can be easily transported and launched from a tipping low-loader

RICHARD SCOTT

France's CEFA (Stand 07-B30, French Pavilion) has capitalised on more than 50 years' experience in water crossing operations to develop a new military support boat based on the concept of the German M-Boot.

Already acquired by the French Army, the 7m Vedette F2 craft is designed to enable land forces to cross rivers or other waterways; it also has application for disaster relief/humanitarian aid situations where populations have been affected by flooding or inundation.

Driven by two integral Schottel waterjets powered by Deutz engines, the flat-bottomed Vedette F2 platform can use all its power in just 0.5m of water, regardless of climatic conditions (including ice). Driven like a car or a jet ski, the craft can achieve a speed of 8.5m/s in

water depths greater than 4m.

The French Army took delivery of eight Vedette F2 boats in December last year. Key roles for the craft include push-towing and towing, navigation and anchoring manoeuvres, the installation of protection nets, logistics and diver support. ■

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Korea aims for the Middle East

CHRISTOPHER F FOSS

Hyundai Rotem (Stand 12-B09) is using IDEX to spearhead export marketing of its latest armoured fighting vehicles (AFVs) that the company has developed to meet the operational requirements of the Republic of Korea Army (ROK Army). The company is looking to increase its market share in the Middle East region through local co-operation concerning its latest range of tracked and wheeled AFVs.

An initial contract has been placed with Hyundai Rotem by the ROK Army for the supply of 100 of the company's latest generation K2 main battle tanks (MBTs), with the first batch of 13 vehicles handed over on 1 July last year. The K2 MBT is to supplement the K1 (105mm) and K1A1 (120mm) MBTs that are currently deployed by the ROK Army.



Latest Hyundai Rotem KW2 (8x8) in baseline APC configuration, armed with a roof-mounted .50 M2 HB machine gun

These were also designed, developed and manufactured by Hyundai Rotem.

The latest K2 MBT has many advanced features, including a reduction in the number of crew to three due to the installation of a bustle-mounted automatic loader

for its 120mm/55 calibre smoothbore gun, an advanced computerised fire control system coupled to day/thermal sights for the commander and gunner, a 1,500hp diesel powerpack and an advanced modular armour system. The K2 has a high power-to-weight ratio of more than

27hp/tonne and its in-arm hydro-pneumatic suspension system gives improved cross-country mobility and improved ride for its crew.

Following a competition, Hyundai Rotem was also awarded a contract for a new family of 8x8 and 6x6 armoured personnel carriers (APCs) and variants for the ROK Army, which currently operates mainly tracked APCs and infantry fighting vehicles.

Prototypes of these vehicles are now undergoing extensive trials with the ROK Army and it is expected that the first production vehicles will be delivered in 2018. The first production contract is understood to be for 675 units. The 6x6 version is referred to as the KW1; the 8x8 version is the KW2. The latter has more volume and payload, which will enable it to undertake a wider range of battlefield missions. ■

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In 'plane' sight

SAM J BASCH

South African aerospace company S-PLANE Automation (Stand UM-59) is running live demonstrations of its latest Paragon product suite for command and control and C4I applications.

The suite provides a common operating picture in a detailed 3D graphic world of all forces, infrastructure and elements for headquarters, tactical and mobile forces application. All role-players benefit from sophisticated messaging, geo-tagged battlespace objects and real-time tracking of assets.

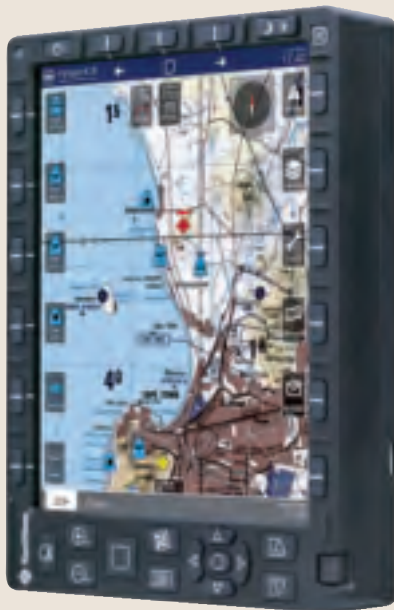
Said business development director Charl van der Merwe: "All deployments in one environment operate in the same 3D world, share the same data and support multiple missions simultaneously and independently."

The ParagonC4I HQ gives decision-makers immediate access to video feeds, sensor data and elements reported from the field to allow rapid assessments to be made. Field commanders get an accurate and up-to-date common operating picture with the ParagonC4I Tactical. This suite enables command and control of unmanned systems, including S-PLANE's own vehicles, such as the Swift.

Aircraft, ground and sea vehicles, as well as dismounted personnel,

receive exceptional situational awareness with the same real-time access to data, payloads and messaging provided by the ParagonC4I Mobile.

Besides S-PLANE's 7.5m wing-span Swift offered as an operational unmanned intelligence, surveillance and reconnaissance (ISR) vehicle, the company specialises in unmanned vehicle navigation, flight control and mission management sub-systems, with product development now also extending to autonomous land, sea-surface and underwater vehicle systems and their sub-systems.



ParagonC4I information can be presented on a handheld device



Inzpire's air-land integration training uses real-world operational incidents and case studies to deliver success on the battlefield

Get Inzpired

With an expert team comprising skilled military personnel, British company Inzpire (Stand UM-60) offers unmanned aerial system (UAS) training to international civilian and military clients, ranging from the basic to the design of end-to-end unmanned vehicle employment strategy.

According to the company, its UAS experts have accumulated more than 25,000 flying hours on UAS operations, with many more on manned aircraft. They cover disciplines from sensor operation and mission payload command, to imagery analysis and intelligence.

Aiming to fulfil existing and future requirements, the company makes use of training from desktop through software delivery, courseware and final operating support.

Its GECO family of mission systems for airborne and land applications is intuitive and easy to use. Designed by warfighters for warfighters, its basic configuration provides integrated GPS, digital moving map and satellite imagery on a touchscreen system. GECO significantly improves the effectiveness and speed of mission planning, rehearsal and execution, as well as debriefing for air and ground operations. Additional capabilities, or 'apps', can be incorporated.

Inzpire's managed services group covers niche aviation requirements, including technical support and increasing pilot throughput with human factors and safety training. Team members pride themselves on instinctively understanding their clients' needs – empathy arising from real-life experience.



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STAND 03-B23

SAM J BASCH

For most combatants it is terrifying to come under hostile fire, and especially so when they are unsure from where the firing emanates. Dutch firm Microflown AVISA (Stand 10-B33) has the solution with its Acoustic Vector Sensor (AVS). This extremely small device is derived from the company's proven acoustic multi-mission sensor (AMMS), which is already of low size, weight and power (SWaP) for use on platforms ranging from vehicles and boats to helicopters and unmanned aerial vehicles (UAVs).

Here at IDEX, the company is showing what it claims to be a world first in an acoustic UAV payload, which locates sniper and mortar fire positions with a directional accuracy of typically 1.5°. Co-operating with WB Electronics, Microflown AVISA is demonstrating the AVS

Acoustics take to the air

Microflown AVISA's Acoustic Vector Sensor on a FlyEye UAV

fitted to the Polish FlyEye UAV.

Also on show will be related equipment in the AMMS family, including the Forward-Flown

AMMS, which is making its public debut, and the vehicle-based V-AMMS, which is now fielded by the Netherlands armed forces.

Microflown AVISA states that its

highly accurate and reliable localisation systems boast a multi-threat capability, allowing for the location of small arms fire and rockets, as well as artillery and mortars. ■

Plug-and-play accommodation

When the military deploys, it's got to be in double-quick time. That's where a system like the HERCon hard-walled expandable redeployable container from Weatherhaven Africa (South African Pavilion, Stand 12-C20) comes into its own.

Looking like a standard ISO shipping container, the HERCon expands to three times its container footprint in a matter of 30 minutes. Importantly, all internal services, such as electrical wiring, plumbing and sewage, are pre-installed, and no earthworks are required.

"This is true 'plug-and-play',

because it can be operational within an hour or two, enabling the military to rapidly set up anything from ablutions, kitchens or dining complexes to sleeping quarters and offices," explained Karen Coetzer, Weatherhaven Africa's marketing manager.

She added that the container's internal volume is not compromised, and with a CSC rating, the containers can be stacked.

The HERCon low cube unit is transportable by C-130 Hercules, and requires no materials handling to offload at smaller airfields.

Besides numerous enquiries from

international clients, the company has, in recent times, been awarded South African Air Force contracts for a 350-man shelter (accommodation), operations rooms, storage and ablutions with quarter tanks.

"Weatherhaven Africa, and our sister company Canvas & Tent, have an in-house manufacturing capability for all our redeployable camp systems, including the HERCon. Our factory is already manufacturing the ablutions and quarter tanks," said Coetzer.

Optional extras for the HERCon system are carpeting, air-conditioning,



When fully deployed, the HERCon system almost triples in capacity compared with its ISO-sized transport configuration

luxury wall coatings and furniture.

Weatherhaven Africa prides itself on providing environmentally friendly installations, which often include grey water, biological instead of chemical sewage treatment, and solar power. ■

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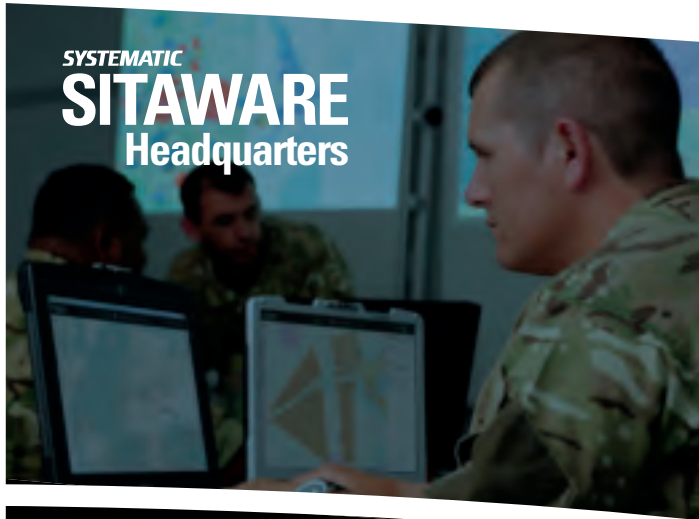
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Off the beaten track



Lengths of HGMS are deployed from a vehicle-mounted spool, which swivels through 90° from the carriage position

SAM J BASCH

Military forces are often required to traverse difficult terrain, from desert sand to snow or marshland. The Danish armed forces have become the latest to acquire products from FAUN Trackway (Stand 05-D23) to help them do just that.

About 40 military forces around the world use FAUN Trackway's Heavy Ground Mobility System (HGMS), the company's own portable, temporary roadway system. The Danish order for the HGMS includes Trackrack and Spoolrack.

Developed about 40 years ago, the design of interlocking aluminium panels forms the basis of FAUN Trackway's product portfolio of roadways and runways. Panels can be added, allowing potentially unlimited lengths of roadway or runway to be created. The HGMS can withstand repeated loads of tracked and wheeled vehicles up to 70 tonnes (MLC 70).

According to Chris Kendall, director at FAUN Trackway, the HGMS is designed for speed, allowing 50m of Trackway to be laid by two men in only six minutes. Trackrack is meant to launch, recover, transport and store the panels.

"Spoolrack is designed to store and transport additional lengths of Trackway," said Kendall, "which can then be transferred for deployment through a spool-to-spool system."

With the Danish order, the company achieved a milestone in its 60-year history: its Anglesey site is now building the 100th Trackrack and 50th Spoolrack. A prime contractor to the UK MoD, FAUN Trackway also boasts aircraft landing mats and rapid runway repair kits.

In Canada, the hamlet of Kugluktuk has just ordered a boat ramp kit from FAUN Trackway USA, part of FAUN Zoeller UK. The boat ramp kit is specially designed for deployment and transportation and is constructed from MLC 70 Trackway panels. Once assembled, the MLC 70 panels are rolled out into water as a permanent solution, or they can be removed and used again in a different location.

Canada's harsh winter conditions cause severe damage to ramps constructed from materials such as concrete, which require yearly repair or replacement. The boat ramp kit can be deployed to provide a stable ramp system during the spring and then removed before the winter ice forms. ■



Trackway can be used as a means of providing a durable, redeployable boat ramp

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The Exelis Individual Soldier System (ISS) provides the critical capabilities of voice, video and data in a single integrated platform, enabling commanders to view what soldiers are seeing, as well as send text message instructions and imagery directly to soldiers' goggle displays. The Exelis ISS combines expertise in night vision technology, ad-hoc self-forming/healing mesh net radios and critical intelligence data flow to deliver a wide range of battlefield ISR, collectively reducing decision-making time and better ensuring tactical and overall mission success.



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Longer-range coverage

RICHARD SCOTT

Raytheon Missile Systems has revealed that it is pushing ahead with development of an extended-range variant of its Advanced Medium Range Air-to-Air Missile (AMRAAM) to extend the coverage offered by the National Advanced Surface-to-Air Missile System (NASAMS). A first AMRAAM-ER flight test is due before the end of this year.

Designed specifically for the ground-based air defence (GBAD) mission, the AMRAAM-ER missile will incorporate a new propulsion stack to improve kinematics to enable intercepts at longer ranges and higher altitudes.

"The new missile will be even faster and more manoeuvrable than the current AMRAAM," said Mike Jarrett, Raytheon vice presi-

dent of Air Warfare Systems. "By leveraging many existing AMRAAM components, Raytheon can deliver AMRAAM-ER quickly and affordably with very low risk."

Raytheon will integrate the



extended-range missile into the NASAMS launcher. Developed in partnership with Kongsberg Defence Systems, NASAMS is a short- to medium-range GBAD system that uses a surface-launched

AMRAAM missile as its effector. The NASAMS system has been sold to seven customers to date, with more than 70 fire units delivered. Fielded in Norway for more than a decade, NASAMS is operationally deployed in the US National Capital Region, Spain, Finland, the Netherlands and in an undisclosed country. It is also in production for Oman under a contract received last year.

NASAMS uses a battle management, command, control, computers, communications and intelligence module to integrate a number of sensors and launchers. Targets are detected and tracked by a high-resolution, 3D pencil beam radar; multiple radars and the associated fire distribution centres are netted together via radio datalinks to create a real-time recognised air picture. ■

Targets are detected and tracked by a high-resolution, 3D pencil beam radar; multiple radars and the associated fire distribution centres are netted together via radio datalinks to create a real-time recognised air picture. ■

Missile precision from Korea

JON LAKE

Part of a 22-strong group of Korean defence companies participating in IDEX 2015, LIG Nex1 is displaying a range of its missile products on Stand 12-B15.



K-SAAM naval surface-to-air missile

These weapons include the company's Chiron IR-homing surface-to-air missile, which is in service

with the Republic of Korea Army and won the Korea National Defense Science, Research and Development Award in 2004. The missile employs a two-colour seeker that provides good discrimination between a target and modern IR decoy flares.

The system's light weight and compact dimensions make it portable and rapidly deployable, like the Raybolt man-portable anti-tank guided missile, which is also being shown at IDEX.

The latter weapon can be used in direct or top attack modes, allowing it to target an armoured vehicle's vulnerable top surfaces. The missile is fire-and-forget and smokeless, reducing the likelihood of the operator being detected and allowing the missile to be fired from inside a building.

LIG Nex1 is also showing its

Raybolt shoulder-launched anti-tank weapon

KM-SAM land-based surface-to-air missile and the newly developed K-SAAM naval surface-to-air missile. Both weapons are vertically launched, with the KM-SAM using radar guidance, and the K-SAAM employing inertial mid-course guidance and a dual microwave and imaging infrared seeker for terminal guidance.

The company is also showing off its Maritime Perimeter Security System, now in service with the Korean Navy. This uses a mix of distributed sensors, passive for outer-zone target detection, magnetic and acoustic sensors for mid-ranges, and active sonar, electro-optical tracking equipment and radar for inner-zone detection.

Hyokoo Lee, chief executive of LIG Nex1, has expressed his company's commitment to expanding its presence in the UAE market, which he says has a special meaning for LIG Nex1. ■



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Safety at sea

Austrian communications and information systems house Frequentis (Stand A-040) is giving a public debut to its new ICM (Incident and Crisis Management) system at NAVDEX 2015. ICM organises and automates emergency management procedures to support operators in their decision-making process, and so improve the speed and efficiency of responses. The system integrates into existing maritime communications and information systems.

ICM guides operators through approved emergency management procedures, collating and displaying incident-related information automatically, and identifying key contacts and assigned responsibilities. According to Frequentis, "These contacts and relevant deployment resources receive automated alerts and information updates, helping to

ensure a faster and more informed incident response."

A particular feature of ICM is the user interface, designed in collaboration with experienced operators. A Geographic Information System (GIS)-based Tactical Communication Chart displays incident-relevant data, including the location and status of resources, improving the operator's situational awareness.

Guiding decision-making based on standard operating procedures, this improved understanding of the situation, underpinned by automated communications and data exchange, allows the operator to focus on managing responses. ICM also records all activities in an action log, providing a vital resource for subsequent investigation, performance analysis, compensation negotiations and/or legal proceedings. ■



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The supply of the FREMM frigate *Normandie* to Egypt was negotiated at the same time as Egypt's Rafale fighter purchase

Egypt signs for FREMM frigate

RICHARD SCOTT

French shipbuilding, systems and services group DCNS is to supply a FREMM multi-mission frigate to Egypt under a contract signed on 16 February. The vessel, originally built as *Normandie*, is to be taken up from the French Navy production line to expedite early delivery. Handover to the Egyptian Navy is scheduled for the middle of this year, following the completion of final outfitting.

Displacing 6,000 tonnes, the FREMM frigate is equipped with an OTO Melara 76/62 Super Rapid gun, Aster 15 point defence missiles and MM40 Block 3 Exocet surface-to-surface missiles (both manufactured by MBDA), plus Nexter Narwhal 20mm remote guns and Eurotorp MU90 Impact lightweight torpedoes. Sensors include the Thales Herakles E/F-band multi-

function radar and the same company's ARTEMIS staring array infrared search and track system. A hangar and flight deck aft provide for the operation of a 10-tonne class helicopter.

Normandie was originally intended to be the second FREMM delivered to the French Navy. To ensure that the operational capability of the French Navy will not be affected, DCNS will now accelerate the production of subsequent FREMM ships at its Lorient yard in Brittany.

According to DCNS, this sales agreement strengthens the company's relationship with Egypt. Last July, the company signed a separate contract with Egypt for the supply of four Gowind 2500 corvettes, three of which are to be assembled in-country under a transfer of technology arrangement. ■

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See the full picture

The best way to react to fast-breaking situations is to have an operational picture like that offered by Raytheon (Stand 03-B07) with its Command View Mission Solutions. As the company affirms, commanders must instantly understand what is going on around them. Command View Mission Solutions, an integrated suite to manage C⁴I, places decision-makers in a cyber-secure, common-computing environment to collect timely, critical information.

Raytheon C⁴I Systems business development manager, retired US Army Brigadier General Chuck Taylor, said: "The system must combine accurate and current situational awareness and assessment with scenario planning and war-gaming to enable tactical to strategic mission accomplishment."

Several nations use Raytheon's command and control systems. Likewise, commanders of the North



A view of Raytheon's Command View Mission Solutions C⁴I suite

American Aerospace Defence Command monitor a larger portion of the continent's airspace than ever with the Battle Control Station-Fixed developed by ThalesRaytheonSystems, Raytheon's JV with the European defence electronics company.

Raytheon believes Command View provides the necessary information, communication and connectivity in a complex and dynamic environment. Taylor added, "Our solutions make it simple for the customer to focus on what is important." ■

Surveillance on the prowl

SAM J BASCH

Two decades of developing mobile solutions for the civil and military markets have seen Desert Wolf (South African pavilion, Stand 12-C20) offering a range of products for land, sea and air applications.

"Besides South Africa's military and police, our clients include the UK armed forces, the United Nations and numerous security and law enforcement agencies around the world," said managing director Henrie Kieser. "With proven capabilities to meet very specific client requirements, Desert Wolf's mobile systems are used widely in the petrochemical, mining and border control environments."

With access to high-end sensors, like those from FLIR, for which Desert Wolf is the official SADC distributor, the company's offering includes fully fledged mobile command and control stations, communication and satellite trailers, and mobile surveillance systems.

The company has also developed tactical fixed-wing remotely piloted aerial systems (RPAS) and multicopter RPAS for surveillance and crowd-control operations. With the increasingly widespread use of unmanned air systems (UAS), Desert Wolf is focusing on affordability and functionality.

"I believe clients would do well to look at our UAS launchers," Kieser



Top: mobile surveillance system (solar power panel still to be deployed); above: customised pickup with Will-Burt mast and FLIR sensor suite alongside Desert Wolf's Bat UAS on a launcher

added. "They are man-portable and designed for quick change to launch different airframes one after the other with the same launcher system."

Given its wide-ranging capabilities, Desert Wolf is actively seeking collaborative partnerships and even joint manufacturing in client countries. ■



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Get a wolf for protection

SAM J BASCH

With security forces and civilians increasingly exposed to the threat of improvised explosive devices (IEDs), landmines and explosive remnants of war, Swiss company MineWolf Systems (Stand 08-A32 in the Swiss Pavilion) offers a range of innovative solutions.

In recent times, its large MW370 has cleared mine-contaminated land for the oil and gas industry in Iraq. The MW240 was deployed in Bahrain for IED and EOD (explosive ordnance disposal) operations, and in Pakistan to clear cluster munitions from runways. UN peacekeepers in Mali are also using it for IED and mine clearance. In the four years to 2014, German and British forces in Afghanistan successfully employed the unmanned Mini MineWolf



The MW50 demonstrates its ability to handle a vehicle-carried IED

(MW240) to conduct route clearance on patrol.

MineWolf prides itself on its customisable 'toolbox concept', with an array of multi-purpose attachments to clear threats. These interchangeable attachments include flails and

tillers and a remote-controlled robotic arm for IED and battle area clearance.

The company has now identified the need for equipment suited to security forces involved in maintaining stability, peace

and security. Its bespoke solution is the Micro MineWolf (MW50), a remote-controlled multi-purpose platform best suited for multiple scenarios, especially where explosive devices are threatening the lives of human beings or where critical infrastructure is under attack.

Although it is the smallest MineWolf platform, the MW50 offers various attachments, including the multi-use robotic arm able to carry a payload of several hundred kilograms. It therefore fills the gap between the larger manipulator vehicles and smaller, less robust EOD robots (ROVs).

The Micro MineWolf at IDEX is shown with the camera system and the robotic arm attachment with a selection of front-end tools, including a gripper, bucket, EOD Multi-tool and disruptor capability. ■

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Packing new pistols

Those who are keen on target or competitive shooting, hunting or focused on personal protection, would do well to stop by the USPavilion to see a series of new handguns that Colt's Manufacturing Company (Stand 03-038) is introducing this year. As to be expected of a company that has been in business for 175 years, the new handguns offer an array of options in calibre, weight, rails and other features to best meet customers' preferences and needs.

A good example is the O5870A1 Gold Cup National Match featuring the Series 70 firing system, along with a classic flat top slide. Regarded as the finest shooting semi-automatic in the world, the Colt Gold Cup is also the standard for competitive guns. Colt has now added numerous

refinements as standard features.

Of three new handguns in the Colt Rail Gun family, the O4012RG Colt Combat Commander Rail Gun with Picatinny rail stands out; it combines the popular features of the original Commander, the Colt M45A1, and the Rail Gun.

There are also two new handguns in the Colt XSE Series, while Colt's classic 1991 Series offers the O1992 model in three calibre options. It comes chambered in 9mm, with the other two chambering options being .45 ACP and .38 Super.

"Our new handgun introductions provide customers with the same high-quality products the market expects from Colt, with a greater diversity in design and configuration," said Joyce Rubino, vice president of marketing, Colt's Manufacturing.

Colt's Manufacturing Company supplies the global civilian, military and law enforcement markets from its facilities in West Hartford, Connecticut, USA, and its subsidiary, Colt Canada Corporation, in Kitchener, Ontario, Canada. ■



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Falcon flourishes in the desert



JON LAKE

Having evaluated and rejected the Dassault Rafale and the Eurofighter Typhoon, and having been informed that the existing order backlog alone would keep the UAE from obtaining the F-35 Joint Strike Fighter until after 2020, a solution to the UAE Air Force and Air Defence's long-term requirement for a 'next-generation fighter' to replace the Mirage 2000 from 2018 seems as far away as ever.

In the meantime, the UAE is expanding its fleet of Lockheed Martin F-16E/F Desert Falcons through the acquisition of 30 new Block 61 F-16E/F aircraft. The 79 surviving Block 60 F-16E/F Desert Falcons will be upgraded to a similar 'Block 60+' standard.

Lockheed Martin has thus far refused to comment on the Block 61



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and Block 60+ configurations, but the new-build Block 61 is believed to be an evolutionary upgrade of the original Block 60, with diminishing manufacturing sources and obsolescence issues addressed, and some interoperability enhancements.

Block 61 aircraft are being purchased via a direct commercial sale, rather than using the more usual foreign military sale (FMS) process, so there was no requirement for the usual Defense Security Cooperation Agency notification of the aircraft sale to Congress, though Congress was notified of an associated FMS sale of training, logistics support and support equipment, weapons and other items to the UAE, on 23 January 2014.

Entering front-line service in 2005, the Block 60 F-16E/F has been called "the most advanced F-16 variant in the world", and is described as being "a half-generation ahead of the F-16 C/D Block 50/52+ aircraft that form the backbone of the US Air Force." The aircraft is fitted with a Northrop

Grumman AN/APG-80 AESA (active electronically scanned antenna) radar, which made it the first F-16 variant to be fitted with an AESA array, and is still the only in-service F-16 version with an 'e-scan' radar. The introduction of the Block 60 F-16 made the UAE AF&AD the first fighter force outside the USA to field this revolutionary radar technology.

The Block 60 also has provision for the conformal fuel tanks associated with later Block 50/52 aircraft, giving it a mission radius of 1,650km – a 40 per cent increase compared with non-CFT-equipped F-16 variants.

While the USA does not normally export the vital software source codes required to program the electronic warfare and radar systems on US-built fighters, in the case of the Block 60 F-16, the USA provided "object codes", which allow new mission data to be added to the F-16E/F's threat library autonomously. This has allowed the UAE to refine and improve the Block 60 aircraft exponentially, and to keep it



abreast of developing threats.

Lockheed did integrate the UAE's MBDA Al Hakim rocket-boosted glide bomb on the F-16E/F, but the US State Department refused to allow integration of the MBDA Black Shaheen cruise missile (a derivative of the Storm Shadow used on UAE Mirage 2000s). This

was because the Black Shaheen was assumed to have a range of more than 300km, which is the current range limit for cruise missiles under the Missile Technology Control Regime (MTCR). Instead, the USA is providing AGM-84 SLAM-ER missiles and the AGM-154C Joint Stand Off Weapon. ■

30mm Remote Controlled Stabilized Naval Gun System

SMASH



- Automatic target detection and tracking
- Automatic ballistic calculation
- Automatic slew to targets assigned from C3, radar and target designator
- Day/night operation under various weather and terrain conditions
- Independent EO Sight in two axis
- Manual operation as back-up mode
- Surveillance Mode (without aiming the gun)
- No deck penetration

Expanding the MASS



The MASS decoy system is being enhanced so as to provide better protection against both anti-ship missile threats and torpedoes

RICHARD SCOTT

Rheinmetall Defence (German Pavilion, Stand 09-A10) is introducing new features to its best-selling MASS (Multi Ammunition Soft Kill System) shipborne decoy launcher system to broaden its all-round self-protection capability.

Originally designed to provide protection against anti-ship missiles and asymmetric threats employing radio frequency (RF) microwave, infrared (IR) and/or electro-optical (EO) seekers, MASS is a compact, reactive and fully automatic soft-kill launcher system deploying programmable multi-spectral Omni-Trap decoy rounds with radar, IR, laser, EO and ultraviolet payloads. The system can be integrated into any command and control system,

or operated in standalone mode.

Presented at IDEX 2015, the latest version of MASS adds new functionality to afford additional protection against radar-guided missile threats and torpedoes. In the first instance, Rheinmetall has introduced the Saab SME+ electronic support measures system to provide threat warning in the millimetric waveband (mmW). Alongside this, the OmniTrap decoy now additionally includes a mmW payload.

To further improve anti-ship missile defence capabilities, an Off-board Corner Reflector (OCR) decoy has been developed to provide an improved capability against the most modern anti-ship RF seekers. Rheinmetall has developed the OCR in co-operation with Airborne Systems, which already has significant

Keep cool Partner in the air

AMETEK Rotron (Stand 07-C34) has released a 19in rack-mountable liquid-cooling heat exchanger assembly designed for years of reliable service in harsh and demanding applications, including military and commercial equipment racks.

The unit, housed within a ruggedised 6U aluminium chassis, is one of various similar heat exchangers that are designed to dissipate more than 10kW of heat. In one particular application, the heat exchanger pairs copper-nickel cores with a MAXIAX vane-axial blower to dissipate heat from the electronics rack for a ship's water supply.

According to AMETEK Rotron, assemblies can be customised for different input voltages, heat transfer rates, chassis-mounting options and mil-grade environmental requirements, including acoustic and structure-borne noise requirements.

The units can be paired with tube axial fans and monitored using Rotron low-speed warning detectors. They can also include power inverters that allow the use of 400Hz or DC fans and blowers. This enables increased volumetric flow and pressure within a compact design. ■

JON LAKE

Italy's Finmeccanica (Stands 06-A03 and B-005) has been a long-standing partner of the UAE Armed Forces, having had a presence in the nation for more than 40 years, and it is exhibiting many of its products here at IDEX 2015. The company now has a UAE corporate headquarters in Abu Dhabi.

The UAE was an early customer for the Aermacchi MB.326 and MB.339 jet trainers and for the piston-engined SIAI Marchetti SF.260 basic trainer. Before the amalgamation of the UAE's separate air arms to form the UAE Air Force and Air Defence in 1999, the Dubai Defence Force Air Wing operated a single Alenia G.222 transport.

Alenia and Aermacchi themselves merged on 1 January 2012, becoming the Alenia Aermacchi division of Finmeccanica. The company is exhibiting a number of aircraft in model form, including the MC-27J, the MB.339 (which is used by the UAE's 'Al Fursan' national



The UAE Air Force's national aerobatic team 'Al Fursan' flies the Alenia Aermacchi MB.339

aerobatic display team), and the M-346 Master – which was selected to meet the UAE Air Force and Air Defence advanced trainer requirement in 2009, but has still not been ordered.

The new M-345 HET (High Efficiency Trainer) is also being shown. The M-345 is a derivative of the M-311 (itself derived from the SIAI Marchetti S.211/Aermacchi S-211),

powered by a Williams International FJ44-4M turbofan.

Finmeccanica's helicopter arm, AgustaWestland, is showing off the AW139 in search and rescue configuration, and the derived new generation AW169 in emergency medical service configuration.

The dedicated military AW101, AW149 and AW159 Lynx Wildcat are also being displayed. ■

effect

experience in RF corner reflector decoys.

Finally, to address the torpedo threat, Rheinmetall has worked with DCNS in France to integrate the latter's CANTO acoustic decoy into the MASS system. The CANTO rounds are fired from twin launch tubes affixed either side of the base of the MASS mounting.

The UAE Naval Forces have already chosen MASS to provide soft-kill protection for their fleet, having specified the system for their six Baynunah multi-mission corvettes, the Abu Dhabi corvette programme, and the two Falaj 2 strike craft.

Other regional customers for MASS include Oman and Pakistan. In total, MASS is now in service with 14 navies, with 212 launchers installed on 28 different ship classes. ■

Buoyed by recent export success, UK-based Airborne Systems (UK Pavilion, Stand B-052) is pushing the merits of its FDS3 inflatable floating corner reflector decoy at NAVDEX 2015. Based on the latest version of the Royal Navy's Outfit DLF soft-kill decoy system, FDS3 is a ship-deployed, passive radio frequency (RF) countermeasure that can be used in seduction, distraction and confusion roles against even the most modern RF missile seekers.

The FDS3 system comprises a deck-mounted launch tube, which is preloaded with the stowed decoy. Following launch activation in the operations room, the decoy package – of 'metallised fabric' construction – is launched out of the tube and then fully inflated alongside the ship's hull on the sea surface.

Once fully inflated, the decoy is automatically released and floats free past the stern. According to Airborne Systems, the very rapid deployment and inflation time "means that full radar cross-section

Decoys afloat



FDS3 is a rapid-response RF floating decoy

is achieved within seconds of launch into the sea... this provides for a very effective seduction capability suitable for use against supersonic and late turn-on threats'.

In September 2013, Airborne Systems announced a contract award from the US Navy to supply a variant

of the FDS3 decoy system – designated Mk 59 Mod 0 – to meet a rapid response effort for improved soft-kill self-defence. In July 2014, it chalked up another success when New Zealand selected FDS3 as part of its ANZAC class Frigate Systems Upgrade programme. ■



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