Extensive evaluation trials done, the Mbombe 6x6 armoured combat vehicle is ready for production. South Africa’s Paramount Group (Stand 12-C22) and the King Abdullah II Design and Development Bureau (KADDB) of Jordan (Stand 01-B08) yesterday signed a major production contract at IDEX for the first 50 Mbombe vehicles.

“The production of Mbombe in Jordan signals an important milestone in the continuing growth of the defence industrial capability in the Middle East,” said Major General Omar Al Kaldi, chief executive of KADDB. “By integrating our technologies, engineering skills and know-how, we bring innovation to the industry.”

Signining of the contract followed extensive vehicle trials in 50°C desert environments in Jordan and the UAE, right down to -50°C during winter in Kazakhstan. Mbombe successfully completed the rigorous trials, covering more than 10,000km in the world’s most harsh and challenging environments.

Clearly pleased with Jordan’s decision to select the South African-developed Mbombe 6x6, Ivor Ichikowitz, founder and executive chairman of Paramount, noted the long history of collaboration with Jordan. “We are very excited to support the development of a defence industrial base in Jordan that will contribute to employment, skills development and technology transfer, as well as training.”

Unlike most South African-designed mine-protected vehicles, Mbombe uses flat-hull technology, and is the first to offer all-round protection against a variety of threats. Besides ballistic protection up to 14.5mm heavy machine gun rounds, it is similarly protected against 155mm artillery bursts. With Level 4 mine protection, it can withstand a 10kg mine detonating under the hull or wheels, and a 50kg TNT blast from IEDs.
The CZ P-09 is the latest high capacity service pistol going further along the design road started with the successful compact CZ 75 P-07 Duty.

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Bumper orders announced

Yesterday, on the first day of the IDEX exhibition, the UAE Armed Forces General Headquarters announced 19 orders that the UAE is placing or has placed with a range of contractors, from both home and overseas.

The total value of those orders is AED9.84 billion (US$2.68bn) – the largest daily total of orders announced at any IDEX show. More orders are expected to be announced over the following days at the daily GHQ press conferences.

By value, the biggest contract concerned the award to Airbus Defence and Space and Thales Alenia of an AED3.745 billion deal to provide the UAE with two satellites and associated ground control stations. The satellites are for military use, and will have both communications and imaging roles.

In terms of local companies, Al Taif Technical Services, a Mubadala/EDIC company, was awarded an AED2.4 billion contract to provide technical services for vehicles operated by the UAE ground forces.

Another EDIC member, Nimr Automotive from Tawazun, received an order for 500 vehicles, plus a further order for the development of 500 more, with a combined value of AED1.2 billion.

Among other orders was a contract with ADASI for a UAV system worth AED490 million, one with ADSB for two vessels worth AED870 million, and an AED18.5 million contract for Al Fattan Ship Industry to supply eight fast boats.

AMMROC was awarded an AED200 million contract for repairs and spares for the UAE’s Joint Aviation Command, while Abu Dhabi Airports was also awarded an aircraft technical support contract, worth AED70 million. The International Golden Group was awarded a contract worth AED52 million for the supply of mortars, and Al Jaber received an AED83 million contract for spares and parts.

One of the big winners of the first day’s round of UAE Armed Forces orders was Nimr Automotive.
The United Arab Emirates and Abu Dhabi continue to demonstrate an enduring commitment to excellence that resonates brightly on the world stage.

Sikorsky Aircraft continues to design, build and configure the world’s most successful military multi-role helicopters for critical global security operations.

At IDEX 2015, the men and women of Sikorsky Aircraft celebrate all that you have accomplished— for modernity, economic leadership, and regional stability.
Damen Shipyards is working in partnership with Abu Dhabi Ship Building (ADSB) (Stand B-022) to deliver two 67m offshore patrol vessels (OPVs) to the UAE Critical Infrastructure and Coastal Protection Authority (CICPA) under Project Arialah. ADSB was awarded a contract for the two ships in December 2013. The ships themselves will be delivered from Damen’s Galati shipyard in Romania in 2017; they will then go to ADSB’s facility in Abu Dhabi’s Mussafah industrial area for combat systems installation and integration prior to delivery to the CICPA.

The 67m Arialah multi-purpose OPVs will be capable of performing a number of roles, including maritime security, law enforcement, offshore patrol, and search and rescue. A key feature of the ships is the distinctive ‘sea axe’ hull, which offers exceptionally low resistance to enable superior seakeeping, and sustained high speeds in high sea states.

Damen (Stand B-028) has developed the sea axe bow design in partnership with the University of Delft, Royal Netherlands Navy, US Coast Guard and the Maritime Research Institute Netherlands. According to Damen, the Arialah design combines a chined hull and deep-V bottom with the sea axe bow to all but eliminate vertical acceleration and slamming as the vessel ‘cuts’ through the waves.

CICPA has specified a comprehensive weapon, sensor and command suite, for which Thales Nederland is taking major responsibility. As well as supplying its TACTICOS combat management system, SMART-S Mk 2 E/F-band surveillance radar, Mirador electro-optical (EO) system, STIR 1.2 EO Mk 2 radar/EO fire control director, Vigile radar-band electronic support measures (ESM) and Altesse communications ESM, Thales is also taking overall responsibility for combat system integration.

The Arialah ships will each be armed with an OTO Melara 76/62 gun forward, two OTO Melara MARLIN 30mm gun mountings on either beam, and a single Raytheon Mk 49 Mod 2 11-cell Rolling Airframe Missile launcher amidships. Rheinmetall MASS decoy launchers will be fitted for soft-kill protection.

CICPA’s Arialah vessels will be fitted with a helicopter flight deck aft. Fast interceptor boats, together with their associated launch and recovery equipment, will be sited amidships on either beam.
Hafeet eyes UAE market

European missile systems house MBDA (Stand 07-A07) has teamed with Nimr Automotive of the UAE to propose the Hafeet Air Defence Vehicle (ADV) to meet a UAE Defence Forces requirement for a high-efficiency very short-range air defence (V-SHORAD) system.

Hafeet ADV is based on the latest Hafeet 640A (6x6) from Nimr Automotive (Stand 05-A10 indoor, Stand CP-400 outdoor) all-terrain light armoured vehicle, on the rear of which is mounted an MBDA Multi-Purpose Combat System (MPCS). The two companies have already completed preliminary engineering studies, to be followed by full system integration once the UAE requirement has been frozen.

Already in quantity production for the export market, the MPCS features a gyro-stabilised sighting system that includes a day/thermal part of two MBDA Mistral fire-and-forget surface-to-air missiles (SAMs) in the ready-to-launch position. An additional eight Mistral SAMs are carried in reserve on each platform.

MBDA’s Mistral SAM can engage a wide range of aerial threats, covering unmanned aerial vehicles, helicopters and fixed-wing aircraft at ranges of more than 6,000m and at an altitude of up to 5,000m.

For maximum target effect, up to six Hafeet ADVs can be networked together, allowing the engagement of up to 24 targets coming from any direction in less than 20 seconds. The system can also be used with the latest-generation MBDA Mistral Coordination Post integrated on an all-terrain platform, which is fitted with a 3D radar system and would typically rapidly pass on target information to the firing platform best located to engage a particular target.

The Hafeet ADV can also be integrated into an overall layered air defence system.

Sights set on new areas

Arguably the best-known name in small arms, renowned Russian enterprise Kalashnikov Concern (Stand 09-C30) is actively branching out into the areas of UAVs and boats, writes Sam Basch. The company, which is part of state corporation Rostec, decided to acquire a controlling (51 per cent) stake in Euroyachting Rybinskaya Shipyard and Zala Aero.

“The decision to purchase a majority stake in Zala Aero and Euroyachting is to widen our product line and develop new sectors of our market,” said Kalashnikov Concern chief executive, Aleksey Krivoruchko.

The acquisition is part of the company’s strategy for corporate development through to 2020. Kalashnikov plans to develop and manufacture drones, along with mobile and earth-based management stations. The envisaged drone development is aimed at air surveillance in areas of heightened danger and emergencies, as well as for geodetic, mapping and scientific research operations in harsh climates and weather conditions.

According to Krivoruchko, the interest in the Euroyachting shipyard allows Kalashnikov to carry out turnkey development and mass production of military and civilian launches, and to support the entire life-cycle for its products. They are intended mainly for anti-piracy and counter-terrorism operations, patrol, transportation and landing of troops, and fire support, as well as search and rescue.

Kalashnikov envisages development and manufacturing of high-tech landing craft for the military, along with maritime and river pleasure cruise launches.

Forty Light: gun breaks cover

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Italian armaments house OTO Melara (Finmeccanica, Stand 06-A03) has lifted the veil on a new-generation lightweight single 40mm naval gun system designed to provide small craft with a bigger punch.

Making its official debut at IDEX 2015 yesterday, the all-digital Forty Light non-deck-penetrating mounting has been designed to take advantage of a new generation of 40mm ‘smart’ ammunition based on OTO Melara’s 4AP programmable fuze.

The company told the IDEX Show Daily that the decision to bring the Forty Light to market reflected projected requirements for a shipborne gun able to provide greater range and lethality than existing 30mm weapons, but of a weight and size enabling installation on vessels down to patrol craft size.

Building on OTO Melara’s long heritage in 40mm weapons, the Forty Light is engineered around a high rate of fire (300 rounds/min) 40/L70 cannon fed from a 72-round ready-to-fire magazine. Weighing approximately 1,900kg without ammunition, the gun assembly and ammunition box are enclosed within a compact and stealthy carbon-fibre gun shield. Platform space, weight and power requirements are claimed to be essentially the same as those required for a 30mm mounting.

A dual-feed mechanism allows the gun operator to switch between programmable and conventional ammunition.

According to OTO Melara, the “full integration between high rate of fire and modern programmable ammunition enables the system to engage efficiently and effectively a large number of targets”.

The new programmable 40mm round integrates a 4A40 OM smart fuze that leverages 4AP fuze technology previously developed by the company for 76mm, 12 mm and 155mm applications. The 4A40 OM
China North Industries Corporation (NORINCO) (Stand 10-E05) has brought its latest AR3 multiple-launch rocket system (MLRS) to IDEX this year. The system is integrated onto an 8x8 chassis, which not only provides a high level of cross-country mobility, but also strategic mobility. This allows it to be rapidly deployed to wherever it is required.

According to NORINCO, the complete AR3 launcher weighs 45 tonnes and has a cruising range of 650km on roads. It can be fitted with two pods each of four 370mm rockets, or two pods each of five 300mm rockets. These can be a mix of guided and unguided rockets. The system being shown at IDEX 2015 is the 370mm version.

There are at least three types of 300mm unguided rockets: BRC3 with a maximum range of 70km and fitted with a cargo warhead; BRC4 with a maximum range of 130km and a cargo warhead; and BRE2 with a maximum range of 130km and fitted with a high-explosive warhead. The BRE3 (or FD140A) is a 300mm guided rocket with a maximum range of 130km.

There are two 370mm guided rocket options, the BRE6 (FD220) with a maximum range of 220km and the BRE8 (FD280), offering a maximum range of 280km. A 30m circular error of probability is claimed for these weapons. The FD in the designation means ‘Fire Dragon’, with the figure denoting the maximum range. This family of rockets allows the AR3 to engage targets at a range of 20-280km.

For increased accuracy, the AR3 is fitted with computerised fire control system as well as a land navigation system. This also allows the weapon to come into and out of action much more quickly, and therefore it has greater survivability against potential counter-battery fire.

The AR3 can be deployed as a standalone system, deployed in a typical battery of six systems, or integrated with other artillery systems.

Oto Melara’s new Forty Light system is accommodated in a stealthy turret

The AR3 can fire these precision guided rockets to extended ranges

**Long-range firepower**

**CHRISTOPHER F FOSS**

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OTO Melara is proposing three Forty Light variants matched to alternative fire control philosophies: Type A is a full remote-control version slaved to a combat management system; Type B integrates a co-axial high-resolution daylight TV camera to provide a reversionary autonomous mode; while Type C is a fully autonomous configuration incorporating its own micro-fire control system based on an on-mount electro-optical director equipped with a daylight TV, a cooled thermal camera and an eyesafe laser rangefinder.

While the Forty Light displayed at the show is a full-scale mock-up, OTO Melara is already working on an engineering development model. First trials are planned to start in mid-2015.
RICHARD SCOTT

UAE-based unmanned air vehicle (UAV) specialist ADCOM Systems (Stand OA-003) has unveiled an anti-submarine warfare (ASW) variant of its United-40 Medium Altitude Long Endurance (MALE) UAV. Developed in co-operation with Finmeccania (Stand 06-A03) company Whitehead Alenia Sistemi Subacquei (WASS), the United-40 Block 6 has been developed so as to be able to carry and deploy sonobuoys, plus a single lightweight torpedo.

ADCOM and WASS signed a letter of intent to co-develop an ASW-optimised MALE UAV in late 2013. Since then, they have been working to mature their United-40 Block 6 concept, leading to the unveiling of a first full-scale version at the show.

According to ADCOM Systems, the United-40 Block 6 UAV can be used to lay a barrier of sonobuoys, and then continue to loiter in the area for up to 16 hours with its torpedo armament. Sonobuoy pre-processing – employing proven multi-static techniques – would be performed on board the UAV, with acoustic data then shared via link to co-operating units.

Alternatively, a group of UAVs could operate together to create a larger field of sonobuoys. Co-operative operations could also be performed with maritime patrol aircraft and ASW helicopters equipped with active dipping sonars.

One other option postulated by ADCOM and WASS is the United-40 Block 6 UAV to be used as a dedicated weapon-carrier, thus allowing helicopters and MPAs to carry more fuel and hence extend time on station. Such an approach would increase the range at which submarine threats could be engaged. Furthermore, given the potential proliferation of submarine self-defence missile systems in the coming years, the use of a UAV to drop a torpedo in the target vicinity would enable manned airborne ASW platforms to remain at a safe range outside.

ADCOM and WASS are working to advance the electronic and mechanical integration of the ASW payloads, including drop testing from the United-40 platform. This is planned to culminate later this year with a torpedo drop test demonstration for the UAE Naval Forces.

USV from the UAE

UAE boat-builder Al Marakeb (UM-40) has given a first public outing to its recently launched B-7 unmanned surface vessel (USV) at UMEX 2015, claimed to be the world’s only pilotless craft with fully capable commercial as well as military applications. B-7 undertook successful open-water demonstrations at Al Hamra Marina, Ras Al Khaimah, in January this year. These sea trials marked the culmination of the B-7’s evaluation programme.

Al Marakeb is the first boatyard in the region to set up a production line for USVs, confident that the B-7 is ideally positioned to capture a significant slice of the emerging unmanned surface craft market.

“We believe that with the successful launch of the B-7, Al Marakeb is now at the vanguard of a new technology that is heralding a new era in nautical activity, not only for the region, but for the world,” said Nour Al Sayyed, director of Al Marakeb. “We have demonstrated with our successful sea trials that a UAE company can be the lead for an exciting new industry that is set to grow exponentially over the coming years,” he added.
Sounding out the submarine threat

RICHARD SCOTT

Thales has revealed details of a new anti-submarine warfare (ASW) sonar pairing specifically designed for small ship applications. Engineered to allow installation on offshore patrol vessels (OPVs) down to about 800 tonnes, the new CAPTAS-1 low-frequency variable-depth sonar and BlueWatcher hull-mounted sonar are intended to provide littoral navies with a credible ASW deterrent capability.

The CAPTAS family of low-frequency active/passive sonars was originally brought to market in the mid-1990s to meet growing demand for an improved surface ship ASW capability against quiet submarine threats. CAPTAS-1 builds on this pedigree, but shrinks the size to allow installation on small ships.

CAPTAS-1 uses a single-dependent tow for the active sonar source (a single free-flooded ring transducer operating at a centre frequency of about 1.5kHz) and a triplet receive array. Thales has also developed a compact and lightweight towed array handling system that uses a single automatic winch.

In July 2013, Thales (Stand B-030) conducted at-sea trials of a CAPTAS-1 engineering development model. According to figures released by the company, CAPTAS-1 will be able to operate at speeds of up to 12kts, and at depths down to 100m. Typical detection range is claimed to be in the region of 20-30km, depending on the target type and environmental conditions.

To enable installation on smaller OPVs, Thales has reduced deck footprint to 15m² and weight to about 8 tonnes. One option is to install CAPTAS-1 in containerised form, with the sonar body/receive array and electrically powered towed array handling system housed in a standard 20ft shipping container; the winch control and electronic cabinets are installed in a 10ft container mounted adjacent.

Alongside CAPTAS-1, Thales is also introducing the BlueWatcher hull-mounted sonar, which repackages the transmitter and receive arrays from the FLASH airborne active dipping sonar to provide small ships with a compact, 360° multi-purpose sonar. Thales has engineered the BlueWatcher ‘wet end’ to fit in a cylindrical volume just 700mm in diameter and 600mm in height, limiting dome/draft requirements to 0.85m. Inboard components are limited to a single cabinet and the operator console. Only a single hull penetration is required out to the array.

In active mode, used for ASW or collision/obstacle avoidance, BlueWatcher transmits on any one of three frequencies between 3-5kHz in FM (frequency modulation), CW (continuous wave) and combination pulse modes. In passive mode, the system can be used to detect small, fast surface craft. According to Thales, the implementation of adaptive beam-forming has delivered performance that is equivalent to an array twice the size. It also allows for installation on ‘noisy’ ships where there is no quietening or noise hygiene.
Denel’s diverse range of defence and aerospace products provides you with comprehensive solutions for all your defence and security requirements, whether air, sea or landwards defence. As a strategic national asset, Denel has invested in growing and developing talent and expertise to keep the company at the forefront of the industry both locally and globally.
Twin Otter complete

Canada’s Viking Air has officially handed over the ninth and final Twin Otter Series 400 aircraft to Global Aerospace Logistics (GAL) of Abu Dhabi, writes Jon Lake. GAL’s portfolio includes MRO activities, aircraft sales and tactical pilot training.

Manufactured by Viking Air under the original De Havilland Canada Type Certificate, the Series 400 incorporates a Honeywell Primus Apex glass cockpit and a host of other improvements. The nine aircraft were delivered green to a completions centre in Florida for modification before delivery to the UAE, where they are used by the UAE Government.

Modifications for the UAE include para-dropping provisions and intermediate flotation gear that allows operation on loose sand.

CHRISTOPHER F FOSS

The Republic of Korea Army (ROK) is now taking delivery of the Doosan DST (Stand 12-B11) Chun-Mu artillery rocket system (ARS) that entered quantity production in October 2014. Doosan DST is the prime contractor and system integrator; Hanwa supplies the rockets.

Chun-Mu provides the ROK with a step change in capability when compared with older systems currently deployed by the ROK Army. Mounted on an 8x8 cross-country chassis, it has greater mobility and fires more accurate rockets to a longer range.

Mounted on the rear of the platform is the powered launcher with two pods each of six 239mm solid propellant rockets that are understood to have a range of at least 80km. A computerised fire control system is fitted and for increased accuracy the rockets are fitted with a global positioning system/inertial navigation system (GPS/INS) guidance system. In addition, the system can fire unguided rockets to provide a saturation effect on the target.

New rocket pods are loaded rapidly using an onboard loading system. The pods are transported by a similar 8x8 vehicle to the Chun-Mu ARS, which has a fully protected cab, air-conditioning and NBC systems.

For better cross-country mobility, the vehicle has independent suspension and a central tyre-inflation system with run-flat inserts.

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Home-grown firearms

SAM J BASCH

With the growing interest in pistols and rifles for the civilian, military, law enforcement and sporting markets, local firm Caracal International (Stand 05-A10) is making a name for itself with its range of latest products. Part of the Emirates Defence Industries Company (EDIC), Caracal is showing its CAR816 and CAR814 tactical rifles, the CS338 tactical sniper rifle and the CC10 semi-automatic carbine. It has also unveiled its new Caracal 1911 handgun, one of the most mature and in-demand designs in many parts of the world. Inspired by more than 100 years of history, the Caracal 1911 is based on John Moses Browning's quintessential 1911 pistol. "The new Caracal 1911 attracted a lot of interest in the US thanks to the pistol's design and finish," said Caracal chief executive Hamad Salim Al Ameri. "It will be interesting to gauge demand here at IDEX as we interact with a much greater international audience." The pistol is available in a 5in barrel and a compact version, designated Caracal 1911C, which has a shorter 4.25in barrel.

Caracal's assault rifles are tactical weapons designed for law enforcement and military operations. They are available in semi-automatic and select-fire configurations, and with different barrel lengths. They have been designed in accordance with NATO standards.

The CC-10 semi-auto 9x19mm carbine is aimed at the sporting market and is offered in long-barrel (LB) and short-barrel (SB) versions.

According to the company, all its products have been designed and manufactured in the UAE. All the models on show here have been built and tested at the Caracal factory, located in the Tawazun Industrial Park in Abu Dhabi.

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Freccia rolls into IDEX

CHRISTOPHER F FOSS

CIO (Iveco Fiat-Oto Melara Consortium) has brought its latest Freccia (8x8) to IDEX 2015, in the infantry fighting vehicle (IFV) configuration, to offer it for the first time to meet potential requirements in the region. Freccia is in full-scale production for the Italian Army under two contracts, one for 249 vehicles and a second for 381. More than 220 units have already been delivered.

The Freccia IFV is fitted with a two-person turret armed with an Oerlikon 25mm dual-feed cannon, 7.62mm co-axial machine gun and a similar roof-mounted weapon. Other armament options include an ATK 30mm Mk44 cannon and an anti-tank guided weapon mounted either side of the turret.

In addition to its crew of three, the vehicle also carries eight dismounts in the IFV configuration. More specialised Freccia versions include reconnaissance, command post vehicle and 120mm self-propelled mortar.

An armoured personnel carrier version is also being marketed, while a specialised amphibious version has been developed for the Italian Army and Marines. Through BAE Systems, this has been further developed to meet a US Marine Corps requirement.

CIO (Stand 07-B10) has also achieved considerable success with its Centauro 105mm Mobile Gun Systems (MGS), with a total of 400 delivered to the Italian Army. A further 84 were sold to Spain, which also took delivery of a batch of four armoured recovery vehicles.

In the Middle East, CIO is supplying 141 Centauro 105mm MGSs to Jordan. They are drawn from stock that has become surplus to the requirements of the Italian Army. Oman has taken delivery of nine Centauro systems armed with a 120mm smooth-bore gun.

In the meantime, CIO is developing a new-generation Centauro 2 to replace the current production system. The first Centauro 2 has recently been completed to undergo extensive user trials.

Standard production CIO Freccia infantry fighting vehicle with a two-person turret, armed with 25mm cannon and 7.62mm machine gun.

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Breathe easy

SAM J BASCH

Ever since chemical gas has been used in battle, the military has had to find special ways to protect its own forces and even civilians. UK-based Scott Safety (Stand 05-C22) is renowned for innovative solutions for respiratory protection.

Its general service respirator (GSR), developed for the UK armed forces, involved a thorough assessment of every element of military respirator design. Not only does it feature new technologies for improved levels of respiratory and ocular protection against CBRN threats, but it also improves on the psychological and physiological burden of wearing a respirator for extended periods.

Likewise, Scott Safety’s first-responder respirator (FRR), based on the success of the GSR, has proven comfort characteristics for 24-hour wear.

Another of its products is the Scott Patriot 5510 hybrid modular system, which can be rapidly adapted to overcome any CBRN environment.

Scott Safety’s new tactical ProPak, incorporating its proven self-contained breathing apparatus (SCBA) technology, comes with the option of Scott’s 379-bar cylinder. This provides 25 percent higher pressure than the standard 300-bar SCBA, which allows for increased duration with minimal increases in size and weight.

Following a pause in production, the Turkish company of BMC Otomotiv Sanayi ve Ticaret (Turkish Pavilion, Stand 10-D10) has ramped up output of its Kirpi (4x4) mine-resistant ambush-protected (MRAP) vehicle, which is being shown at IDEX 2015 fitted with a remote weapon station.

Following a competition, the Turkish Land Forces Command (TLFC) selected the Kirpi to meet its requirement for its first MRAP vehicle. An initial contract was placed for 468 vehicles, but production ceased for a period after 278 vehicles. Production has now started again, and the company told the IDEX Show Daily that, “around 600 vehicles have now been delivered and they are now operating successfully”.

The Kirpi MRAP has been offered on the export market for several years and the first customer was Tunisia, which has taken delivery of about 40 vehicles.

The Kirpi MRAP features an all-welded steel armoured monocoque hull with a V-shaped lower half that provides a high level of protection against mines and improvised explosive devices (IEDs), small arms fire and shell splinters.

In addition to its crew of three, the Kirpi MRAP carries a total of 10 dismounts when used in the armoured personnel carrier configuration. Standard equipment includes an air-conditioning system and suspended seats with five-point safety belts for a higher level of crew survivability.

Further development by the company has resulted in a 6x6 version of the Kirpi, which shares many common automotive components with the current production 4x4 vehicle, but has more volume and payload and can undertake a wider range of battlefield missions.

Development of the Kirpi (6x6) is complete and production can commence when firm orders are placed. BMC has delivered approximately 5,000 wheeled vehicles to the Turkish armed forces, including 2.5-ton and 5-ton (4x4), 10-ton (6x6) and 20-ton (8x8) versions.

In addition to the Kirpi (4x4) MRAP, the company is exhibiting its BMC 380-26-P (6x6) 10-ton cross-country tactical truck fitted with a cargo body – just one of the many versions currently available.

BMC Kirpi (4x4) MRAP fitted with a remote weapon station armed with a .50 machine gun
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Qatar is now operating all four of the stretched C-130J-30s that it ordered, while Tunisia has both of its C-130Js in service. Oman has two standard C-130Js and one C-130J-30 in service, Kuwait has three KC-130J tanker/transports, and Iraq has six C-130J-30s. In Saudi Arabia, where the sale of 25 C-130Js has been notified to US Congress, two C-130Js are now on order. Saudi Arabia is already an operator of the ‘classic C-130’ or ‘Heritage Herc’, with a fleet of about 50 aircraft—making it the largest C-130 operator outside the USA.

The C-130J would also seem to be a good fit for the UAE Air Force and Air Defence, though it faces competition from the faster, jet-powered Embraer KC-390, the thrifty Airbus Military C295 and the rugged Alenia C-27J—all of which represent lower cost options than the Lockheed offering, but none of which offer the range performance of the Hercules.

Hercules support in the region will be enhanced with the opening of a new facility at Al Ain—the product of a partnership between Lockheed and AMMROC—which is just one part of a truly global support infrastructure for the C-130.

Lockheed is now offering a dedicated commercial LM-100J, based on the C-130J-30. Although this is a commercial aircraft, it is possible that it will be purchased by military customers, like its predecessor the L100-30, which is in service with the UAE Air Force and Air Defence.

JON LAKE

Since its first flight in 1996, the C-130J has become a firm favourite of Middle Eastern air arms. Steve Pigott, Lockheed Martin international vice president for air mobility and maritime programmes, is unsurprised by this. "The C-130J has great performance in hot and desert environments, so we expect more orders in the MENA region," he told the IDEX Show Daily.

Proper cleaning

Having extensive experience in CBRN (chemical, biological, radioactive and nuclear) decontamination, Italy-based Cristanini (Italian Pavilion, Stand C4-001) is well equipped to deal with crises such as the dreaded Ebola outbreak, writes Sam J Basch.

Although the disease is having its greatest impact in certain West African nations, isolated cases have been reported elsewhere. Cristanini recently assisted when a suspect case was transported from Guinea to Brazil. The company’s rapid intervention CBRN trailer and other equipment were employed in decontaminating the aircraft at Galeão Internacional Airport in Rio de Janeiro. This autonomous and multifunctional trailer system can be used to decontaminate personnel, vehicles, equipment, external infrastructure and terrain.

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Nexter Systems is showing its latest export version of the VBCI (Véhicule Blindé de Combat d’Infanterie) (8x8) in the infantry fighting vehicle (IFV) configuration, fitted with the company’s new two-person T40 turret. This combination recently underwent a series of firing trials in a country in the Middle East. Nexter Systems (Stands CP-240 and CP-260) declined to reveal the country, but IDEX Show Daily sources indicated this was Qatar, which has a requirement for about 82 8x8 IFVs.

In French Army service, the VBCI is fitted with a one-person turret armed with a M811 25mm dual-feed cannon, but export customers prefer a two-person turret armed with a large-calibre weapon. The T40 turret is of all-welded aluminium construction with a layer of appliqué armour for a higher level of protection.

It is armed with a CTAI 40mm Case Telescoped Armament System (CTAS) that was qualified together with its initial tranche of ammunition in mid-2014 by the French and UK governments. The 40mm CTAS is now the largest medium-calibre cannon programme in Europe, having been specified by the French Army for the Jaguar (6x6) reconnaissance vehicle, and by the British Army for the General Dynamics UK Specialist Vehicle – Scout and the Lockheed Martin Warrior Capability Sustainment Programme.

Mounted on the roof of the turret is a remote-controlled 7.62mm machine gun, and provision is made on either side of the turret for an anti-tank guided weapon (ATGW). Other features include all-electric gun control equipment, stabilised sights for commander and gunner that feature day and thermal channels, and a laser rangefinder.

Bernard Berger, VBCI export products manager at Nexter Systems, told the IDEX Show Daily: “There is considerable flexibility in the design of the T40 turret and it is adaptable to the final customer requirements, for example, for whichever ATGW is used by the customer.”

In addition to being installed on the VBCI (8x8) platform, the T40 turret is being marketed for installation on other chassis, tracked and wheeled.
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RICHARD SCOTT

One of the Pakistan Navy’s latest small surface combatants is on display at the NAVDEX marina. PNS Azmat is a 63m fast missile craft built by the China Shipbuilding & Offshore Company’s Xingang Shipyard in Tianjin under the terms of a government-to-government contract signed in late 2010. The ship was handed over in April 2012, and commissioned into the Pakistan Navy in June that year.

Based on the Houjian class (Type 037/2) missile craft design in service with the Chinese People’s Liberation Army Navy, Azmat is equipped with a powerful offensive anti-surface capability in the shape of eight C-802A (CSS-N-8 ‘Saccade’) surface-to-surface missiles. Fitted in box launchers mounted athwartships, the C-802A is capable of striking targets up to 180km away.

Other armament includes a twin 37mm gun mounting forward, a single Type 630 30mm close-in weapon system, two 12.7mm machine guns, and two six-barrel decoy launchers. The sensor fit on board includes a Type 360 surveillance radar and a Type 347G radar/electro-optical director.

A second ship of the class, PNS Dehshat, has been built locally in Pakistan by Karachi Shipyard and Engineering Works (KSEW) under a technology transfer agreement. Dehshat was commissioned into the Pakistan Navy in June 2014.

PNS Azmat is alongside at NAVDEX

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Turkey’s Otokar has confirmed to the IDEX Show Daily that its latest Cobra II (4x4) armoured amphibious tactical vehicle (AATV) successfully completed 5,000km of exhaustive trials in the Gulf late last year.

Cobra II has a typical gross vehicle weight of 12 tonnes. It is powered by a Cummins six-cylinder turbocharged common rail diesel engine developing 360hp, coupled to an Allison fully automatic six-speed transmission and a two-speed transfer box. Maximum road speed is quoted as 110km/h. The Cobra II is fully amphibious, being propelled in the water by two propellers at a maximum speed of 8km/h.

When used in the armoured personnel carrier role, the Cobra II has a crew of two and can carry eight dismounts. Standard equipment includes a central tyre-inflation system, air-conditioning, front and rear cameras and vision blocks.

A total of 10 prototype and pre-production Cobras has been built by Otokar (Turkish Pavilion, Stand 10-C05) and development is considered to be complete. Production can begin when orders are placed.

Cobra II is being marketed alongside the popular original Cobra (4x4) light armoured vehicle, of which more than 2,500 have been built for domestic and export markets, with production still underway.

On display is the latest amphibious version of Otokar’s Cobra II

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IDEX Show Daily
editorial

The IDEX Show Daily is produced by IHS Jane’s. The English Language version is prepared by the Show Daily Team. Publisher: Lynne Raishbrook; Operations Manager: Simon Kay; Editor: David Donald; Deputy Editor: Christopher F Foss; Production Editor: Lynn Wright; Deputy Production Editor: Nicola Keeler; Senior Reporters: Richard Scott, Sam Basch and Jon Lake; Photographer: Patrick Allen; Online Editor: James Macinnes. Printed by MM Print Services Ltd.

Five editions of the Show Daily are being written and produced on site, where material for inclusion can be delivered by hand to the IDEX Show Daily office on the first floor of ADNEC opposite entrance H, next to the Media Centre.
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SEE OUR NEW LAV DEMONSTRATOR AND OCELOT TACTICAL VEHICLE IN: HALL 3 C06
With several subsidiaries in Europe, Singapore and India, Danish defence and security group Terma (Stand 03-C14) has just opened an office in Abu Dhabi.

“For the past 10-15 years, Terma has supplied radar systems and airborne solutions to the Middle East region in close collaboration with regional partners,” said Jørn Henrik Rasmussen, vice president, Terma Global. “Opening a permanent presence here was a natural next step.”

As far back as 2003, Terma delivered the first surface movement radar and Scanter 2001 radar to Abu Dhabi International Airport. Since then, the company has provided Dubai, Bahrain and Qatar with its state-of-the-art solutions, radars and automated terminal information systems.

Terma is showcasing its T.react Critical Infrastructure Protection system here at IDEX, which provides a total metre-by-metre coverage of large areas. By analysing and fusing overlapping data from multiple intelligent detection sensors and cameras, it can identify threats inside and outside a perimeter. A demonstration site was established in Bahrain to show the system in operation by means of live scenarios. Terma and Lockheed Martin have partnered to field the T.react CIP at Lockheed Martin Mission Systems and Training facility in Owego, New York.

Besides the Scanter radars, Terma is also showing its naval C-Flex command and control solution, and its 3D Audio, which provides aircrews with significant situational awareness and speech intelligibility enhancement.

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**Intelligent protection**

**SAM J BASCH**

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**Discreet armour**

Not everyone wishes to be seen wearing body armour, which is why UAE-based Hardshell (Stand 11-B06) developed the Steller vest for children. Resembling a book-bag carried on the back with a waistcoat-style vest, it is not immediately apparent that the child is wearing protection. The bulletproof vest and backpack is made of lightweight material with front and back padding, and provides ballistic protection, even for the sides. 3D mesh inside improves airflow around the body. Hardshell offers body armour for various threat levels, designed to absorb, deflect or prevent slashing or penetration attacks. The Steller vest conforms to Level IIIA.
Whatever the mission, wherever, whenever
IN BRIEF

Defeating IEDs and mines
USA-based NIITEK, part of Chemring North America (Stand 06-A24), and Critical Solutions International (CSI) have announced an exclusive partnership on their respective ground-penetrating radar sensor and Husky mine-clearance vehicle systems. NIITEK’s and CSI’s combined technologies have saved countless lives by locating and marking improvised explosive devices (IEDs) and landmines. The US Department of Defense considers these two technologies to be ‘essential and inseparable’. Thomas Thebes, president of Chemring Sensors and Electronic Systems and NIITEK, called it a “comprehensive and unmatched solution for landmine and IED detection”.

Increased firepower
Russian holding company Techmash’s (Russian Pavilion) subsidiaries NPO Splav and Bazalt are showing new and more powerful munitions. The 5-8 OFP is the latest in the 80mm unguided rocket family, with the ability to destroy land targets from the air. Also featured are the RPG-28 handheld anti-tank weapon, and the disposable single-shot RMG, designed to defeat modern tanks and light armoured vehicles.

A T-129 of the Turkish armed forces fires a CİRİT

Turkey’s Roketsan (Stand 10-B05, Turkish Pavilion) is showing off an impressive range of weapons at IDEX. Most interesting to Emirati visitors will be the Roketsan CİRİT – a laser-guided 2.75in rocket that has been combat-proven on the Bell AH-1W helicopters of the Turkish Army (4,500 having been delivered since it entered service in 2011), and which has been ordered for service with the UAE Armed Forces.

Though CİRİT has a theoretical maximum range of 8km, the UAE requested a range of 10km, and this has now been demonstrated, including a terminal manoeuvre, according to Cem Taşdeler, Roketsan’s head of market development for Europe and the Americas. The weapon has been integrated on the UAE’s Air Tractor AT-802i, and is being integrated on Emirati Blackhawk helicopters. Taşdeler said it would also be installed on the UAE’s new Bell 407s and two further fixed-wing platforms. The weapon is being acquired together with an autonomous trailer-mounted platform with its own EO-based sighting system, capable of being towed behind land vehicles.

CİRİT has also been integrated on the Turkish Army’s T-129 ATAK helicopter, and the T-129s ordered by the type’s first, as yet undislosed, export customer. CİRİT will also be supplied to Bahrain to arm its upgraded Bell AH-1s, and Roketsan has signed an agreement with MBDA to integrate the weapon on German Eurocopter UH Tigers.

Laser rocket is on target

US defence giant Raytheon Integrated Defense Systems is highlighting some of its capabilities against ballistic missiles here at IDEX, a clever strategy in a region that is becoming increasingly concerned over the threat posed by cruise missiles and ballistic missiles capable of hitting targets across the Gulf region – and beyond. These missiles are likely only to grow in capability, increasing their reach and payload.

A ballistic missile will typically carry both real warheads and a plethora of decoys designed to confuse a defender’s radar. Given that it may not be possible to engage every incoming object, distinguishing warheads from decoys and countermeasures is vitally important. To achieve this, radar must be capable of accurate discrimination, picking out the warheads from a cluster of multiple objects before passing accurate targeting information to the interceptor.

Raytheon (Stand 03-B07) has invested hundreds of millions of dollars with the sole aim of creating radars that provide real cutting-edge discrimination capability.

Two of the systems resulting from this investment are the X-band AN/TPY-2, a land-based radar with a 9m²
Floating hospitals

SAM J BASCH

Having received a significant order from the German Navy to overhaul a number of MERZ containers for shipboard hospitals, German company FHF-GmbH is up to the task. Onboard ship hospitals for the navy usually incorporate the same medical functions as field hospitals operated by armed forces the world over. However, the containers are somewhat different, being a combination of 20ft and 30ft ISO containers designed for offshore conditions.

FHF-GmbH specialises in the provision of special-purpose containers, either new-build or converting existing containers in line with client needs. This capability includes laboratories, offices, large container complexes and rocket or mortar-proof accommodation. The company can outfit the containers for extreme climatic conditions.

Starting the work on the shipboard hospital only this year, the company has indicated that the 27 containers will be completed, with ancillary equipment, by April 2015.

Correction: FHF-GmbH is incorrectly listed in the IDEX 2015 Show Guide as FFG. FHF-GmbH can be found in the German Pavilion on Stand 09-A02.

The USA has Raytheon TPY-2 radars in a number of strategic locations, including Turkey, Japan and Guam.

phased array antenna incorporating 72 transmit/receive modules (TRMs), and the company’s X8R X-band air defence radar – a sea-based radar based on a converted offshore oil rig that is claimed to be the largest and most sophisticated phased-array, electro-mechanically steered X-band radar in the world. It was specifically designed to carry out discrimination of enemy warheads from decoys, followed by the precision tracking of the identified warheads.

Both of these systems have become synonymous with discrimination, the AN/TPY-2 forming the backbone of the US Ballistic Missile Defense System and the Terminal High Altitude Area Defense (THAAD) weapon system.

For the future, Raytheon is incorporating discrimination capability into radars operating in other wavelengths, most notably the new S-band AN/SPY-6 Air and Missile Defense Radar (AMDR) for the US Navy’s DDG-51 Flight III Arleigh Burke-class of guided missile destroyers. This radar uses the latest gallium nitride TRM technology and employs modular hardware and software. The technology is scalable enough to form the basis of a new family of air defence radars.

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FNSS unveils Saber 25 turret

CHRISTOPHER F FOSS

Turkey’s FNSS Savunma Sistemleri is launching the Saber 25 one-person medium-calibre turret at IDEX 2015 (Stand 10-A05). The turret has been developed by the company as a private venture for installation on new-build tracked and wheeled armoured fighting vehicles (AFVs), or to upgrade the firepower of older platforms.

Saber 25 builds on the company’s experience in the design, development and production of more than 120 Sharpshooter Mk 1 and Mk 2 turrets, which have been supplied to a number of export customers for installation on tracked and wheeled platforms. Development of the Saber 25 started in 2013 and first static firings took place in 2014.

The turret is of all-welded aluminium armour with an appliqué composite and steel armour package that is claimed to provide ballistic protection to STANAG 4569 Level 4. When compared with the Sharpshooter Mk 1 and Mk 2 turrets, the Saber 25 turret has a significant 60 per cent increase in internal volume, but with less than a 10 per cent increase in external dimensions.

As shown at IDEX, the turret is armed with the combat-proven ATK Armament Systems stabilised 25mm M242 dual-feed cannon with a 7.62mm coaxial machine gun (MG), plus banks of electrically operated grenade launchers. The M242 is provided with 240 rounds of ready-use ammunition; the empty cartridge cases are ejected out of the turret.

The latest all-electric gun control equipment is fitted, plus a digital fire control system with ballistic computer. The gunner is provided with a roof-mounted sighting system that includes a third-generation long- or mid-wave thermal imager, a telescopic day optical channel, an eye-safe laser rangefinder and a unity window for surveillance purposes.

Being shown for the first time at IDEX 2015 is the FNSS Saber 25 turret, shown here fitted with the ATK 25mm M242 cannon and a 7.62mm coaxial MG
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Having integrated its innovative IGS-4S targeting system in the Colombian Army’s fleet of Cascavel vehicles, South African defence company Rippel Effect (IGG pavilion, Stand 04-C20) now offers its VK-RSS-02 thermal imaging rifle scope as a further enhancement, and as a standalone night scope. The VK-RSS-02 can be used with secondary weapons such as the 7.62mm machine gun on an armoured vehicle. According to Rippel Effect chief executive, Fritz Visser, the system integrates seamlessly with the IGS-4S, allowing the crew also to operate the secondary weapon from under armour. However, as Visser explained, “the VK-RSS-02 is more than that; it is a self-contained fully integrated ballistic solution for special operations forces, snipers or combatants. It provides for any combination of thermal imager, HD camera and laser rangefinder, coupled to a real-time 10 MIPS ballistic processor”.

A range estimator or laser rangefinder provides input to the ballistic processor, resulting in a high-resolution image projected on a single eyepiece display. With the range determined, the aiming mark is automatically moved to the correct position on the image. The system also allows for barometric pressure, temperature corrections and other variables to be implemented as options for greater accuracy. Visser said up to 15 different weapons can be accommodated in the ballistic processor.

Rippel Effect is renowned for its XRGL40 extended-range 40mm multi-shot grenade launcher, now in operation with numerous armed forces, including in the Middle East. The XRGL40 has the ability to fire both low- and medium-velocity grenades (accurately up to 800m) and less-lethal ammunition from the same weapon. The company has just released its RLL37/38 and RLL40 dedicated less-lethal launchers.

Rippel Effect test fires a pair of XRGL40 extended multi-shot grenade launchers from its double mount.
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Integrated ships’ comms

RICHARD SCOTT

Communications specialist EID (Portuguese Pavilion, Stand 11-A10) has been contracted to provide the navies of Belgium, the Netherlands and Portugal with its sixth-generation Integrated Communications Control System (ICCS6). Under the M-class frigate user group memorandum of understanding, a contract with a maximum value of EUR15 million is being let by the Portuguese government for the supply of 10 ICCS6 systems on behalf of the three nations.

EID’s ICCS system is based on a distributed architecture, being composed of a number of switches, user terminals and work stations. ICCS6 features IP technology and has been designed to provide efficient management of ships communications.

According to EID, five systems will be installed on board Portuguese ships, these comprising two M-class frigates – NRP Bartolomeu Dias and NRP Dom Francisco de Almeida – and three MEKO 200PN Vasco da Gama-class frigates. A further three ICCS6 systems will be fitted to the Royal Netherlands Navy’s (RNLN) M-frigates HNLMS Van Amstel and HNLMS Van Speijk, and the landing platform dock ship HNLMS Rotterdam. The Belgian Navy’s two M-class frigates, BNS Leopold I and BNS Louise-Marie, will also be upgraded.

Multi-band radio system

With some 20 years’ experience in developing advanced military tactical radios, Czech company DICOM (Stand 01-B18) has just launched its new RF40 integrated radio system. This follows the success of DICOM’s RF13 and RF20 in the international market, both of which continue to be sold in more than 20 countries.

While the RF40 comes with additional advanced elements, it maintains full backward compatibility with its predecessors. It is a handheld multi-band radio in the 30-512MHz frequency band and supports frequency and amplitude modulation.

Taking its cue from current trends in tactical radio communications, DICOM focused its design of the RF40 on high-speed data transfer and multi-channel solutions. It introduced a completely new waveform marked as WF40 that operates on the narrow channel bandwidth of only 250KHz. Such channel width can be used in both UHF and VHF.

As a MANET waveform with built-in multiple automatic rebroadcasting capability, WF40 allows for two independent voice connections to operate in one channel along with a parallel data transfer. Data in the transmission is secured by Transec technology and the AES block cipher with the key length of 256 bits.

According to DICOM, the RF40 accommodates an expansion module that makes it a fully fledged two-channel handheld radio for narrowband communication at VHF/ UHF frequencies, and broadband communications at L-band and or S-band frequencies. It comes with an option to connect to the main types of globally used tactical radios, and to allow data interoperability with systems used in NATO in accordance with STANAG 4677.

Hand-made for stepping out

SAM J BASCH

A grand military parade goes hand-in-hand with striking uniforms. What is often less obvious amid the pomp and ceremony is that much of the insignia and accoutrements are still hand-made, such as the products of Stepahead Military Headwear (South African Pavilion, Stand 12-C20). The company has a score of specialist gold thread embroiderers in its manufacturing facility in Pretoria to supply military headgear and rank badges to armed forces in the Middle East, Indian Ocean islands and southern Africa.

"From the beginning almost 12 years ago, we made quality our pride and top priority," said managing director Maureen Simoes. "Not only do we comply with stringent international quality control tests, but the South African Bureau of Standards in its annual capability report has given Stepahead a 100 per cent pass rate for the past eight years."

A state-of-the-art computerised colour density reader ensures colour consistency in Stepahead’s products, which are made from the very best wool, Melton cloth and gold wire. Its military products include woollen berets, officers’ and ceremonial peak caps, badges and epaulettes, as well as webbing bags and equipment.
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JON LAKE

France’s Musthane has invented a 20x20m Helicopter Landing Mat that is specially designed for desert use, overcoming the problems of ‘brown-out’ and foreign object damage that occur when operating from unprepared desert surfaces.

It has taken more than four years of research and development (and three pending patents) to bring the mat to market, but the company suggests that it provides a quantum shift in safety, compactness and speed of deployment.

Accordning to Musthane (Stand 07-B22), it is the innovative combination of polymers, composite materials and technical textiles that allows its Helicopter Landing Mat to exceed the performances of existing rapidly deployable plastic or metallic mats.

The mats are of double-ply, rubber-coated, anti-skid, abrasion-resistant fabric construction, reinforced with composite rods. This allows the use of heavy ground support equipment around the helicopter, even on soft ground with a lower California bearing ratio rating.

Moreover, Musthane claims its mat is 100 per cent impermeable to mud and sand, and that it is easier to remove from wet and muddy ground than other solutions, as well as being repairable and easy to clean. The basic product can be customised (in colour, size and surface markings) to meet individual customer requirements.

While most existing deployable Helipad solutions use heavy metallic stakes to fix them to the ground, the new Musthane mat uses a lightweight anchoring design comprising an anchor, a flexible link and an arming and blocking device. The mat is compact and of light weight, and can be stowed in an air-portable box measuring 3x1.2x1.2m and weighing just 1,000kg. Installation and removal take a four-man team less than three hours.
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DALO selects Tarian

CHRISTOPHER F FOSS

AmSafe Bridport (Stand 05-C18) has been selected by the Danish Defence Acquisition and Logistics Organisation (DALO) to design and supply its Tarian net-type rocket-propelled grenade (RPG) armour system for installation on a wide range of wheeled and tracked armoured vehicles. This will be AmSafe Bridport’s first major export order, which was awarded by the DALO after an extensive competition – including field trials – conducted during 2014.

Under the terms of the contract, for an undisclosed amount, the seven-year programme for DALO will introduce a single RPG armour system across the fleet of not only Danish Army armoured fighting vehicles but also tactical support vehicles, with first deliveries taking place at the end of 2015.

AmSafe Bridport’s DALO contract follows the £10.6 million (US$16.2 million) order placed by the UK Ministry of Defence (MoD) in 2012. The UK MoD order was funded as an urgent operational requirement (UOR) for vehicles then deployed on operations in Afghanistan.

Under this contract, Tarian armour was installed on a number of British Army platforms, including the Navistar Defense MXT-MV Husky Tactical Support Vehicle (Medium) and the General Dynamics Land Systems – Force Protection Europe Light Protected Patrol Vehicle (LPPV).

A key feature of the Tarian RPG armour is that, with a weight of only 0.8kg/m², it is much lighter than the widely deployed bar/slat armour, and is claimed to offer improved protection. Tarian disables the incoming RPG-7 warhead and its associated fuze before it impacts the main armour. When not in use it can be folded flat against the vehicle.

The Tarian armour system was first installed on the British Army Oshkosh Defense 1070F (8x8) heavy equipment transporters (HETs) as a covered panel. More recent versions of the armour are net-only, permitting full vision for the crew.

In 2013, AmSafe Bridport signed an agreement with the Turkish company FNSS Savunma Sistemleri and at IDEX 2013 its Pars (6x6) armoured vehicle was shown fitted with the Tarian RPG armour. It also has a similar collaboration agreement to install Tarian RPG armour on vehicles manufactured by Singapore Technologies Kinetics.

The system has been shown integrated on the British Army Warthog armoured all-terrain vehicle that is now to be taken into the core British Army fleet in a specialised role.
See you again on
19-23 February 2017
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<tr>
<td>Exhibitor Access to IDEX 2015</td>
<td></td>
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<td>دخول العارضين إلى أيدكس معرض أبوظبي 2015.</td>
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<td>IDEX Open for Visitors</td>
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<td>دخول الزوار إلى أيدكس معرض أبوظبي.</td>
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<td>&quot;Ship of the Day&quot; - Demonstration</td>
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<td>NAVDEX - ADNEC Marina</td>
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<td>ختام الفعاليات اليومية لمعرض أيدكس.</td>
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<td>حفل استقبال المعرضين في أيدكس.</td>
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<td>IDEX 2015 Daily Press Briefing (Media attendance only)</td>
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