

# Army Guide monthly



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## Exhibitions

### Denel To Highlight Its Capabilities At Top Middle Eastern Defence Show

Expectations of rapid growth in defence spending in countries in the Middle East offer platforms for Denel's participation in the region's top defence exhibition next month.

Zwelakhe Ntshepe, the Acting Chief Executive of Denel says the company will have a strong presence at IDEX 2017 hosted in Abu Dhabi from 19 to 23 February. "This is a region that is very familiar with the quality of Denel's products especially in the fields of artillery, armoured vehicles and munition and we want to build on this reputation by exhibiting our capabilities."

A report released by international consultancy company, Deloitte, earlier this month projected a growth of more than 3% in global defence spending in 2017 after years of declining budgets. This growth will be particularly strong in the Middle East and North Africa where a number of countries are starting to acquire next generation military equipment.

Top defence decision-makers and industry leaders from Gulf countries such as the United Arab Emirates, Oman, Qatar, Kuwait and Saudi Arabia will attend the biennial show that takes place at the Abu Dhabi National Exhibition Centre.

The Middle East is a vital region for Denel as a company which earns almost 60% of revenue from exports. Denel Vehicle Systems recently started with the delivery of its RG31 Mk5 mine-resistant vehicles to a client in the United Arab Emirates following on a similar contract to supply the 4x4 N35 armoured vehicles.

"Our reputation in the region is well-established based on the quality of landward defence products such as artillery systems, armoured vehicles and mine-resistant vehicles," says Ntshepe. "IDEX 2017 is a great opportunity for Denel to cement our reputation and create interest for other products in our portfolio."

A range of missiles manufactured by Denel Dynamics will be on display at the Denel stand. This includes the Umkhonto-EIR surface-to-air missile, the A-Darter air-to-air missile and the Ingwe and Mokopa surface target missiles. The Cheetah surface-to-air missile manufactured by Denel Dynamics and Rheinmetall Defence Munitions (RDM) which offers defence forces comprehensive counter rocket, artillery and mortar capabilities will form part of the Rheinmetall Air Defence stand.

The iNkunzi PAW20 is a 20x42mm semi-automatic weapon, both the weapon and the ammunition is manufactured by Denel PMP. The weapon is carried by a single soldier and is highly effective in modern urban warfare conditions at distance up to 800 metres.

Denel Land Systems will display its wide range of 60mm mortar systems, variants of the DMG-5 machine gun and its NTW 20 anti-materiel rifle that can be deployed against radar installations, bunkers and high value targets at range of more than 1 500 metres.

Ntshepe says scale models of the Rooivalk combat

helicopter and the Oryx medium-sized utility helicopter will also be shown at the Denel stand to highlight the company's capabilities in aviation design, manufacturing, maintenance and repairs.

## Contracts

### Polaris Wins Canadian Special Forces Ultra-Light Combat Vehicle Contract



Minneapolis, MN -- Public Works and Procurement Canada (PSPC) has awarded its Ultra-Light Combat Vehicle (ULCV) contract to Polaris, following an open and competitive bid process. The \$15.5 USD million contract includes DAGOR vehicles, maintenance and operator training, spare parts, and the option for additional vehicles (at an additional cost) to meet the requirements of Canadian Special Operations Forces Command (CANSOFCOM).

Ultralight ground mobility is at the forefront of many military's needs – especially the Canadian Special Forces, which can deploy on extremely short notice for counter-terrorism operations and other time-sensitive Special Operation Forces (SOF) missions. The DAGOR ultra-light combat vehicle is just as deployable and was designed to be modular and light-weight to support a variety of expeditionary missions.

The ULCV contract is structured to provide CANSOFCOM with a custom vehicle to meet Canada's unique SOF requirement. The flexible DAGOR platform will undergo engineering and mission configurations to incorporate new features and capabilities, including redesigned payload configuration, weapons mounts, electrical system improvements, and integrated communication systems. The final vehicle configuration, testing, and production of the ULCV will be a collaborative effort with CANSOFCOM.

"We are extremely pleased to have won the contract following the competitive process to provide our DAGOR vehicles to CANSOFCOM as this major international program award builds on our strong current domestic base," said John Olson, PhD, vice president and general manager of Polaris Government and Defense. "We are proud to partner with the Canadian government and industry to deliver this ground mobility capability and the lifecycle support to smartly sustain it. Our program management, engineering, operations, and logistics teams are looking forward to working closely with our Canadian customer.

Olson added, "We greatly appreciated PSPC's professionalism and found the ULCV procurement to be

rigorous, thorough and well-executed as they delivered clear requirements, were extremely responsive to industry questions, and crisply executed the entire effort.”

With seating for up to nine, DAGOR comprises the optimal balance of rapid air transportability, payload capacity and advanced mobility. DAGOR gives an advantage back to dismounted warfighters, allowing formations to move faster, carry more and significantly reduce combat fatigue. And its weight and size allow it to be internally transportable on a variety of in-service aircraft, including CH-47 and C-130.

Polaris Government and Defense vehicles deliver a coveted combination of deployability, versatility and off-road mobility, forged from more than 60 years of off-road vehicle experience that is simply unmatched. Vehicles include the rugged Sportsman MV 850, the modular and nimble MRZR, and the DAGOR, which expands upon the range, payload and off-road mobility of any previous tactical off-road vehicle. The enhanced tactical mobility provided by Polaris Government and Defense gives an advantage back to dismounted troops, allowing formations to move faster, carry more and significantly reduce combat fatigue. Polaris FSR support is scalable worldwide and includes military vehicle training, service and maintenance. It also can be supplemented internationally through the Polaris network of distributors. And because Polaris vehicles are in service throughout the world, there is a high degree of interoperability and commonality among U.S. and allied forces.



## Exhibitions

### Patria introduces new technology at IDEX 2017



Patria attends IDEX 2017 event held in February 19-23, in Abu Dhabi, UAE featuring its latest technology. At the event Patria will showcase the new Patria AMV 28A with Kongsberg PROTECTOR Medium Caliber Turret (MCT-30) with Commander's Independent Weapon Station with 12,7 mm Machine Gun and Javelin AT launcher and launch the world's first 120 mm mortar system integrated with a container. In addition, Patria AMV Part Task Trainer (PTT) – the training system for Patria AMV is on display. The venue is the Abu Dhabi National Exhibition Centre (ADNEC). Welcome to visit Patria's stand at CP-300.

#### Showcasing Patria AMV 28A

Patria AMV 8x8 is the most modern and successful combat proven armoured wheeled vehicle with outstanding test results from all over the world. Nearly 1,600 vehicles have already been ordered. They are used in challenging conditions by customers in seven countries including the Finnish, Polish, Slovenian, Croatian, South African, United Arab Emirates' and Swedish Defence Forces. Patria AMV's structural solutions enable high payload capacity, high level of protection and integration of heavy weapon systems. Patria AMV has received excellent feedback from customers for its performance in combat and crisis management operations in Afghanistan and Chad. The latest addition to this product family, Patria AMV XP, provides further strength to the company's product range.

At IDEX Patria showcases a new member of the Patria AMV product family - Patria AMV28A with Kongsberg PROTECTOR Medium Caliber Turret (MCT-30) with Commander's Independent Weapon Station with 12,7 mm Machine Gun and Javelin AT launcher.

#### Features of Patria AMV28A

- Bolt-on marine environment amphibious kit to 28 ton GVW
- Automated amphibious mode, protected and continuous fighting capacity
- Modular amphibious kit, easy to detach and rearm when needed.
- Full operational capacity on land. Max. width 2.85 meters without amphibious kit
- Max. speed up to 10km/h
- Extended hull for larger size IFV turrets and crew of 8 dismounting soldiers
- Protectable for against modern threat levels
- Marine environment protective coating
- Superior firepower also on an amphibious operation
- Desert powerpack
- Desert AC

#### Introducing Patria Nemo Container - a heavy mortar system with high mobility

At IDEX Patria introduces the world's first 120mm mortar system integrated with a container. The Patria Nemo Container includes all the equipment required by a mortar unit in a single package.

The Nemo Container is delivered with everything that a mortar unit needs: protection for the crew, the weapon and ammunition. The container has its own power unit and air conditioning. In addition to an access hatch, the container has an escape hatch.

The customer can select NBC (Nuclear, Biological and Chemical) filtration systems, as well as the desired ballistic protection, made either of steel plates or ceramic armour. High-durability steel plating 8 to 10mm thick adds around three tons to the weight of the container. The container has space for one hundred mortar bombs. It has a crew of three: two loaders and a gunner, who also acts as the commander of the unit. The key benefit of the Patria Nemo Container is its easy mobility, which is unique to mortar systems of this caliber.

The container can be easily moved into a firing position on a high-speed boat, a ship or on a truck; the container can also fire from any of these carriers and



naturally also from the ground. For example, the container’s versatile mobility enables coastal jaeger platoons to relocate this independent firing unit during a mission. This is also an excellent solution for protecting military bases. The container can also be purchased as a separate unit without the weapon system, in which case the customer can make cost-effective use of its existing Nemo equipment.

**Cost-effective training for Patria AMV**

Patria AMV Part Task Trainer (PTT) combines virtual training environment and modelled AMV driver’s position with all the essential driver’s controls and systems. Training with AMV PTT familiarizes the trainee with the environment and functionality of the vehicle needed in operational AMV usage. High fidelity VBS (Virtual Battle Space) based synthetic environment with extensive networking capabilities makes it possible to network AMV PTT with other PTTs or simulators to enable mission training with e.g. vehicle mounted weapon systems as well as platoon level training. The simulator can also be networked with other training systems by using HLA (High Level Architecture). Patria AMV Part Task Trainer will be on display at IDEX 2017.

**Patria’s new company in Abu Dhabi**

Patria Group has founded a new company in Abu Dhabi, the United Arab Emirates. The company’s name is Patria Land Middle East Ltd., and it is fully owned by Patria Group. The new company will strengthen Patria’s presence in the Arab Emirates and Middle East, while indicating its long-term commitment to the region. At the initial stage, the company’s objective is to be close to the customer and support sales, marketing and offset trading. In the future, Patria may expand its operations by means such as starting to sell technical support, training and spare parts.

has been designing, building and launching vehicular production lines for over 30 years.

BAE Systems Australia Chief Executive, Glynn Phillips, said:

“I am delighted that Marand has chosen to work with BAE Systems Australia on Land 400. Today’s announcement demonstrates how Australian industry is getting behind our solution for the Australian Army.” Marand Chief Executive Officer, Rohan Stocker, said:

“BAE Systems is a great partner. The Company delivers on its industrial commitments, transferring technology that has allowed Marand to create high skilled jobs and defence exports. We have already proven that we can deliver complex defence production technology transfers in Australia with 100 percent quality and delivery performance.”

BAE Systems worked with Marand on its transition from the automotive and aerospace to defence industry through collaboration on the global F-35 Joint Strike Fighter program more than 10 years ago. BAE Systems provides titanium parts to Marand which are used in the manufacture of F-35 vertical tail fins in Australia and are in turn exported to the USA under contract from BAE Systems in the UK.

In July last year, BAE Systems and Land 400 bid partner Patria were confirmed as one of two tenders selected to take part in the 51 week Risk Mitigation Activity for the Australian Army’s Land 400 Phase 2 combat reconnaissance vehicle program.

BAE Systems and Patria are offering the combat-proven AMV35 for Land 400 Phase 2. The team is committed to manufacturing the AMV35 locally with an industry solution that will grow local manufacturing knowledge, create jobs and bring further economic benefits to the Australian SME supply chain.

**Defence Industry**

**BAE Systems and Marand announce teaming agreement on Land 400**



Marand will contribute leading cross-sector expertise gained from the automotive, aerospace, rail and defence sectors to the program, providing a range of production engineering solutions. The company has proven experience in welding ballistic steel, advanced machining and complex assembly performed on a daily basis for defence exports, and

**Contracts**

**KONGSBERG signs contracts for PROTECTOR RWS with Switzerland**



KONGSBERG has signed new contracts for delivery of PROTECTOR RWS to armasuisse for approximately MNOK 130.

The remote weapon system that will be delivered to armasuisse is an updated configuration with new advanced capabilities for new platforms.

“KONGSBERG has delivered PROTECTOR remote weapon systems to Switzerland since 2007. This configuration is the result of a close cooperation with the

customer to develop the system for a new generation of platforms,” says Espen Henriksen, President of Kongsberg Protech Systems.

The PROTECTOR RWS protects military troops by allowing the vehicle's weapons to be operated from a protected position inside the vehicle. As of today, PROTECTOR has been chosen by 18 nations and KONGSBERG is the world's leading provider of remote weapon systems.



## Contracts

### Orbital ATK to Develop and Qualify Next Generation AMP Tank Ammunition



Orbital ATK, a global leader in aerospace and defense technologies, announced today that the company was awarded a \$45 million dollar contract to complete development of the next generation 120 mm multi-purpose round for the Abrams Main Battle Tank. The award funds the final development and qualification for the U.S. Army's Advanced Multi-Purpose (AMP) round.

The contract calls for a 30-month development and qualification deliverable, and also includes three exercisable options for initial and full-rate production that could bring the total contract value to \$119 million dollars.

“Our development of advanced ammunition types provides combat overmatch for the soldier,” said Dan Olson, Vice President and General Manager for Orbital ATK's Armament Systems Division of the Defense Systems Group. “When fielded, AMP will greatly improve the Abrams' main-gun ammunition capabilities by closing the ATGM and wall breach capability gaps.”

The AMP round provides the warfighter with new capabilities to defeat Anti-Tank Guided Missile Teams/dismounted infantry and breach double-reinforced concrete walls. Additionally, the AMP consolidates the capabilities of four existing 120 mm munitions including defeat of light-armor, bunkers, and obstacle reduction, resulting in a reduced logistical burden while also allowing the warfighter to battlecarry a single munition for multiple engagement scenarios.

Using the Abrams' ammunition data link, the gunner will use the fire control system to program the AMP fuze for a specific operational mode (point detonate or airburst). The versatility of the round lies in the crew's ability to specify the engagement mode which in turn, greatly reduces crew reaction time and increases battlefield survivability.

Since 1980, Orbital ATK has partnered with the U.S. Army, to successfully type-classify 12 of the 14 current

120 mm tactical and training rounds for the Abrams tank and has delivered more than 4 million 120 mm tank rounds to the U.S. Army, U.S. Marine Corps, and allied militaries. The company has qualified and is in production with the M829A4 Advanced Kinetic Energy round, which provides the ability to defeat current and projected threat tanks equipped with third generation reactive armor and active protection systems.

Orbital ATK's Defense Systems Group is an industry leader in providing innovative and affordable precision and strike weapons, advanced propulsion and hypersonics, missile components across air-, sea- and land-based systems, ammunition and related energetic products.



## Defence Industry

### General Dynamics Land Systems-Canada to update Canadian Army's LAV fleet



General Dynamics Land Systems-Canada has been awarded a CA\$404 million contract amendment by the Government of Canada to upgrade 141 Light Armoured Vehicle (LAV) III vehicles.

The upgrades will enhance the performance and survivability of these Canadian designed and manufactured vehicles. It also ensures the consistency and availability of equipment for training and deployments. In addition, having a fleet of LAVs of largely the same configuration reduces long-term maintenance costs.

The LAV III Upgrade program delivers vehicles in the new LAV 6.0 configuration. It is the direct result of lessons learned by the Canadian Army in Afghanistan, and was developed with substantial inputs from the Government of Canada. The upgrades include the life-saving double-V hull, protection and mobility enhancements, onboard vetronics and capacity for future growth and modularity.

"We are committed to delivering highly protected, flexible and capable vehicles to our soldiers and the LAV 6.0 provides the Canadian Army with best-in-class protection and mobility," said Danny Deep, vice president of General Dynamics Land Systems-Canada. "This announcement is welcome news to the London area and to our suppliers across Canada whose jobs will be sustained with this additional work."

In October 2011, the Government of Canada awarded General Dynamics Land Systems-Canada a CA\$1.064

## Defence Industry

**AxleTech International exhibits new independent suspension at IDEX**

AxleTech International is exhibiting at IDEX from February 19-23 in Abu Dhabi. The company will be displaying the newest 5000 Series variant in its line of Independent Suspensions Axle Systems (ISAS®).

This latest 5000 Series ISAS variant incorporates several new design features, including outboard brakes and lower component weight. While many suspension options are available, the displayed model at IDEX demonstrates suspension variations from KONI; including the new HYDRORIDE® self-contained hydro-pneumatic springs and dampers.

“Our newest engineered design allows AxleTech to more readily accommodate various vehicle sub-frames and optimizes our manufacturing to reduce component costs for certain configurations,” said Tyler Bean, Vice President of Sales at AxleTech International.

AxleTech’s 5000 Series ISAS product family is the heaviest line of independent suspensions for the defense industry, with axle capacities reaching 13.2 metric tons. AxleTech is the only company manufacturing a complete line of field-proven axles and independent suspensions for combat and tactical wheeled vehicles around the world.

HYDRORIDE is a registered trademark of KONI, an ITT company.

## Exhibitions

**Nexter’s 8x8 combat proven reference “VBCI” in the spotlight at the IDEX 2017 trade show**

Abu Dhabi -- Nexter, the leading French land defense systems and ammunition designer and manufacturer, is showcasing its mature 8x8 VBCI Infantry Fighting Vehicle from February 19 to 23 on its booth at the IDEX 2017 exhibition.

billion contract to incorporate a comprehensive upgrade package into 550 of the Canadian Army's fleet of LAV III combat vehicles and extends their life to 2035.

This contract sustains approximately 250 highly skilled jobs in advanced manufacturing in the London, Ontario, region, says the company.

## Exhibitions

**Supacat unveils HMT 400 Desert special operations vehicle at IDEX**

Supacat is unveiling HMT 400 Desert, a new variant of its acclaimed ‘Jackal’ special operations vehicle, at IDEX 2017. HMT 400 Desert will be exhibited on the International Golden Group, IGG, stand 04-C30 as Supacat’s representatives in the UAE.

HMT 400 Desert has been adapted to enhance performance in the desert’s harsh environment and climatic conditions. It has no armour and the lighter gross vehicle mass improves the power-to-weight ratio and increases mobility over deep desert sand. Further desert features include cooling, a central tyre inflation system and lightweight bead locks to enable the vehicle to be operated at the lowest tyre pressures.

The vehicle has been configured to fully comply with the UAE Presidential Guard’s requirements for a new special operations vehicle, including tactical CH-47 internal loading, and has undergone successful tactical trials and testing by UAE forces over the summer. The HMT series, widely known as ‘Jackal’, has been battle proven in service with numerous elite special forces worldwide.

“Supacat is committed to supporting the region and in the event that HMT 400 Desert is selected by the UAE Presidential Guard a large element of the production and subsequent support programmes will be conducted in UAE”, said Phil Applegarth, Head of Supacat.

The flexibility of the HMT series has been recently demonstrated by Supacat in developing additional variants and conversions to meet wider and emerging requirements. These include HMT in the Recovery, Logistic Support and Gun Towing roles as well as a unique 4Γ—4 to 6Γ—6 convertible feature, which were announced in September at DVD in the UK.



The VBCI is designed as an 8x8 armored frontline combat vehicle that can deliver an infantry section onto a heavily defended position. As a result of the platform's flexibility, it is also able to perform a full range of missions effectively—from high-intensity combat to peace-keeping. The VBCI provides the perfect balance between protection, fire power and payload.

Over 600 units have been delivered, and the VBCI has earned an enviable reputation as the French Army's principal combat platform during all its recent expeditionary campaigns. From Afghanistan to Mali and Central African Republic, the VBCI's reliability, protection, mobility and crew comfort have stood up to the test posed by the most demanding of operational environments. As part of Operation Serval, the VBCI spearheaded the projection of French Forces into Mali over a distance of 2,400 km in 4 days. It was recently deployed in the UAE during the Gulf Falcon international military exercise led by the French Army.

The VBCI now features key technology evolutions on the VBCI platform currently in service with the French Army, notably in the areas of protection, engine power, payload and supportability.

"The VBCI is today one of the most reliable and mature 8x8 Infantry Fighting Vehicles on the market. It also spearheads Nexter's offering in the Middle East" said Mike Duckworth, Vice President Marketing & Sales. He added "This unrivalled fighting vehicle provides our customers with the ability to dominate the battlefield—not just today but will also do so for decades to come. The combination of the VBCI and the T40 CTA turret with AntiTank Guided Missiles is a real game changer that sets a new pace for the toughest operations".

### Exhibitions

#### Nexter announces the signing of a new contract to supply additional CAESAR® artillery systems to the Indonesian National Armed Forces



Abu Dhabi -- Nexter, the leading French land defense company and part of KNDS Group, has been a longstanding partner supporting the modernization of the TNI (Tentara Nasional Indonesia) since entering into an initial contract in 2012 to supply 36 CAESAR® artillery systems. Today at the IDEX 2017 trade show, Nexter is proud to announce the signing of a new contract to supply a further 18 CAESAR® systems to the Indonesian National Armed Forces.

The CAESAR® 155mm wheeled self-propelled

howitzer, deployed by the French Forces during operations in Mali, as well as in Lebanon, Afghanistan and Iraq, is recognized worldwide as striking the best balance between the simplicity of towed artillery and the mobility of a self-propelled system. Not only is the CAESAR® highly accurate and mobile, allowing it to evade counter-battery fire, it also has the lowest maintenance costs of any mobile artillery system on the market. It is in service with the armed forces of France, Indonesia, Thailand and a Middle Eastern country, and over 270 CAESAR® systems have already been produced. They have fired more than 80,000 rounds and covered a distance of over one million kilometers.

In addition to the artillery systems, Nexter will also provide its firing control system, FINDART®, CAESAR® simulators for training and over 50 artillery battalion auxiliary vehicles assembled in Indonesia by its local partner PT Pindad.

"This latest success in Indonesia demonstrates that the impressive performances of CAESAR® meet the most demanding requirements on the ground in South-East Asia" commented Gilles Sarreau, Senior Vice President Artillery, Turret and Weapon System Programs.

### Exhibitions

#### Nexter's UAE Leclerc MBT stands strong at the IDEX 2017 exhibition



Abu Dhabi -- With a century's experience in tank manufacturing to its name, Nexter, the leading French land defense systems and ammunition designer and manufacturer, is one of the world's most experienced tank manufacturers. The Leclerc Main Battle Tank, a key component of the French and UAE land forces, is the latest tank resulting from Nexter's strategic know-how. The UAE Leclerc MBT will take pride of place on Nexter's booth from February 19 to 23 at the IDEX 2017 exhibition.

Since the first prototype was unveiled and the UAE Leclerc MBT contract was sealed in 1993, more than 750 Leclerc MBTs have been produced by Nexter and deployed by the French and UAE Armies. The Leclerc remains one of world's elite tanks and acts as a tremendous deterrent, as it has demonstrated in Kosovo and Lebanon and during military exercises in Poland and the Gulf Falcon exercise in the UAE.

Nexter continues to invest heavily in its service offering to ensure that the Leclerc's operational effectiveness remains unequalled. The Leclerc is featured on the booth together with some new equipment, including a KMW Remote Controlled Stabilized Weapon

Station (RCWS), a new commander sight, and a new vision system. Nexter also invest and innovates on main battle tanks product lines through an upgrade and modernization initiative carried out under the French SCORPION program, which aims to equip the Leclerc with better protection, better armament and better vision systems. Such activities guarantee Nexter to enhance MBT design and engineering capabilities for the foreseeable future.

“Leclerc MBT is still the best in its class and—now more than ever before—well-suited to handling current threats” said Gérard Griseri, Senior Vice President Armored Vehicle.



## Exhibitions

### Rheinmetall at IDEX 2017

From 19 to 23 February 2017, Rheinmetall is showcasing its products and capabilities at the International Defence Exhibition IDEX – one of the most important defence and security shows in one of the world’s most strategically sensitive regions.

#### World firsts: Cyber Defence and Multi-Mission UGV

Nations today face a security challenge that transcends conventional military and asymmetric threats. In our networked world, safeguarding cyberspace has become a matter of vital strategic importance. The same is true when it comes to protecting critical infrastructure and borders. For the first time ever, Rheinmetall is presenting its activities in the field cyber defence. These include *cyel* equilibrium, the Group’s cyber network security solution, and its “cyobs” cyber radar. The latter measures, analyses and visualizes cyberspace, making it visible and manageable. Cyobs is an important means of fostering cyber situational awareness.

In military and law enforcement contexts alike, robotics is playing an increasingly important role. On show for the first time at this year’s IDEX, Rheinmetall’s new Multi-Mission Unmanned Ground Vehicle lends itself to a wide range of uses: tactical surveillance, CBRN detection, radio relay station, transport operations, casualty evacuation and/or as an effector platform. It can be readily equipped for these roles either with customer-specific or Rheinmetall subsystems.

Moreover, Rheinmetall also offers multifaceted, integrated solutions for protecting critical infrastructure. One of the great strengths of the Dfjsseldorf, Germany-based specialist for mobility and security is its ability to network various sensors and effectors into a fully integrated system of systems.

#### Leadership in Cannon Design

The motto “Leadership in Cannon Design” epitomizes Rheinmetall’s comprehensive expertise in the field of medium-calibre technology. From 20mm x 128 to 35mm x 228, Rheinmetall covers all standard calibres – whether for gas-operated, revolver guns or externally powered weapons. In addition, the Group supplies an extensive array of highly effective ammunition for applications of

all types.

Likewise debuting at IDEX 2017 is Rheinmetall’s 27mm revolver gun, the Sea Snake-27, a weapon specifically designed for maritime applications. Based on the Group’s tried-and-tested MLG-27NG lightweight naval gun (also on display at IDEX), the Sea Snake 27 features a multimode, multiple-target tracker sensor unit. A highly effective all-round effector for engaging targets at short and very short ranges, it is ideal for neutralizing asymmetric threats, whether employed as a suppression weapon or in high-precision single-shot mode.

Also on display at the Rheinmetall stand is the 20mm Fieldranger, the first of a new family of weapon stations. These include the stabilized, fully digital Amarok for light and medium machine guns, and the Qimek for heavy machine guns, both of which are on show as well. Another Rheinmetall medium-calibre automatic cannon on display at IDEX is the Oerlikon Revolver Gun Mk3, a ground-based air defence system that simultaneously emphasizes the Group’s leading role as a tech enterprise dedicated to security and mobility.

Rheinmetall likewise remains on the cutting edge of tank gun development. The 120mm smoothbore technology used in the main armament of the Leopard 2 and M1A1 Abrams continues to set the global standard. Rheinmetall is currently working on new forward-looking technologies. On the one hand, efforts are underway to enhance the performance of 120mm tank guns. But the Group is also pressing ahead with development of 130mm main armament for future combat vehicle systems. The first successful live fire trials took place in December 2016. Visitors to IDEX can familiarize themselves with Rheinmetall’s extensive expertise in the domain of weapon systems and ammunition.

#### Air Defence

The Oerlikon Revolver Gun Mk3 is a remotely controllable, autonomous, network-capable 35mm platform. It features a tracking sensor unit with X-band tracking radar and electro-optical sensors as well as built-in electronic warfare components. This enables swift, autonomous processing of externally assigned targets.

At IDEX 2017, the cannon is integrated into a ‘below Patriot concept’. Here Rheinmetall is presenting a solution for neutralizing projectiles that cannot be stopped with larger, missile-based air defence systems – e.g. mortar rounds, small missiles, drones, etc. – or which slip through the defensive belt as ‘leakers’. Besides automatic cannon, other effectors in the five highly realistic scenarios depicted include high-energy lasers and the Cheetah missile.

#### A world leader in tactical mobility

Rheinmetall’s Vehicle Systems division is one of the world’s top names in tactical mobility. Its portfolio ranges from trucks and wheeled armoured vehicles to heavyweight combat vehicles. The Fuchs/Fox wheeled armoured transport vehicle numbers among the Group’s longest-serving products. The vehicle on display at IDEX 2017 is the NBC reconnaissance version. Underscoring



Rheinmetall's unsurpassed expertise in the main battle tank domain, the Leopard 2 PL is also on show in Abu Dhabi. A TGS 4x4 and an HX 77 represent the division's logistics acumen. The HX family – a line of military-off-the-shelf products – constitutes the core of a globally deployable fleet of high-mobility transport vehicles, equipped where necessary with threat-commensurate force protection features. Roughly 10,000 of these vehicles are already in service around the world. This results in major advantages with respect to interoperability and logistics, particularly when it comes to multinational operations. Vehicles of the HX family range in size from 4x4 to 10x10. The variety of potential configurations is huge: cargo vehicles, tankers, recovery vehicles, system platforms, folding road and bridge-laying systems – practically anything is possible.

### Simulation & Training

Rheinmetall is one of the world's leading sources of simulation and training solutions for army, air force and naval operations. The spectrum ranges from e-learning to the design, installation and operation of large-scale training centres. Visitors to IDEX can gain an idea of Rheinmetall's expertise in this field from the Leopard Gunnery Skills Trainer, used to develop and sustain the skills for crews of armoured fighting vehicles. The Group is also presenting its family of Legatus live training products. Installed in stationary and mobile training facilities, these systems enable troops to prepare for complex military operations in open and urban terrain under outstanding realistic conditions.

### Comprehensive expertise

Rounding out the array of Rheinmetall products and services on show at IDEX are the Group's soldier systems, high-performance optics and sensors as well as its force protection solutions. For example, visitors can learn about the latest laser light modules and fire control technology for infantry weapons; sensor platforms; and mortar, tanks and artillery ammunition. Other focal points include the Multi Ammunition Softkill System MASS for maritime applications, and the Gladius and Argus soldier systems, which enable integration of individual infantrymen into the network-enabled warfare loop.

The companies of the CZECHOSLOVAK GROUP (CSG) holding and the TATRA TRUCKS automaker will bring several new items and interesting exhibits to the IDEX 2017 fair. As part of the CZECHOSLOVAK GROUP holding, the companies EXCALIBUR INTERNATIONAL, EXCALIBUR ARMY, EUROPEAN AIR SERVICES, MSM GROUP, ZVS, RETIA and KARBOX will present themselves at IDEX 2017 to introduce benefits they can jointly provide to the customers in various regions.

EXCALIBUR ARMY, for example, will introduce a complete novelty in the form of the RM-70 Vampire 4D launcher, which uses proven GRAD 122mm firing equipment with a capacity of 80 missiles. This rocket launcher on the TATRA FORCE 8x8 chassis with a TATRA engine, semi-automatic TATRA-NORGREN transmission and four-door, five-seat cab is a highly mobile arsenal that, after firing its rockets, can use its speed to immediately change firing position. Making its world premiere in Abu Dhabi will be the unmanned CANTAS E aerial vehicle with the capability of vertical take-off and landing, made by EXCALIBUR INTERNATIONAL. CANTAS E is designed for long reconnaissance or patrol and surveillance missions, and has a flight endurance of up to 18 hours. CANTAS E belongs to a larger family of versatile UAVs, and the CANTAS A version will also be exhibited at IDEX 2017. TATRA TRUCKS supplies vehicles for the transport and control of these UAVs to customers in the Middle East. The manufacturer of RETIA special electronics will present the latest version of the special ReTWis radar equipment.

At IDEX 2017, TATRA TRUCKS will present a command vehicle on the TATRA TACTIC 6x6 chassis, whose special superstructure was designed by KARBOX, a part of CSG Holding. These vehicles are produced in Saudi Arabia in cooperation with the Military Industries Corporation.

The importance of the IDEX fair, which is held every two years, is constantly growing. This is evidenced by the numbers of exhibitors and visitors. In 2015, 1,100 exhibitors from more than 120 countries showed their exhibits on an area of 35,000 square meters, and the number of visitors exceeded 100,000. It is also interesting that in 2015 Czech participation occupied the largest exhibition space of all new EU member countries and the share of CZECHOSLOVAK GROUP holding and TATRA TRUCKS formed a very significant part of it. United Arab Emirates and the Kingdom of Saudi Arabia are among the most important customers of TATRA TRUCKS. The number of TATRA vehicles on active duty in the armed forces of the two countries now exceeds 2,000 units.

### Exhibitions

#### The CZECHOSLOVAK GROUP holding and TATRA TRUCKS truck maker will attend the IDEX 2017 defense exhibition



### Exhibitions

#### Otokar is now closer to its users in the Gulf Region

ВЪOtokar, Turkey's largest private defence industry company, exhibited four vehicles at IDEX 2017, the biggest defence industry exhibition in the

Middle East. The vehicles included COBRA II, KAYA II, ARMA 6x6, as well as the new generation tracked armoured vehicle TULPAR-S Personnel Carrier version, which was presented for the first time in the region, on February 19 – 23, 2017 in Abu Dhabi, the capital of the United Arab Emirates.



Serdar Gökçüoğlu, Otokar General Manager, stated that Otokar had established “Otokar Land Systems Limited” in the United Arab Emirates in 2016 to strengthen export activities of Otokar, which has left 30 years behind in the defence industry, and added: “Today 30 thousand military vehicles we have developed for different needs are being used on five continents in over 30 countries. Otokar Land Systems will be our driving force in our regional expansion, especially in the Gulf countries.”

Otokar has participated in the IDEX 2017 (International Defence Exhibition and Conference) in Abu Dhabi, the capital of the United Arab Emirates with four vehicles. At the largest defence industry exhibition of the Middle East, hosting over one thousand companies in 12 halls spread on 133,000 square meters of area, Otokar exhibited its own design COBRA II, KAYA II, ARMA 6x6, as well as the new generation tracked armoured vehicle TULPAR-S that stands out with its superior mobility and mine protection capabilities. Otokar also shared information about the world's modern main battle tank, ALTAY, with visitors.

### **“WE WILL BE MORE INFLUENTIAL IN THE REGION WITH OUR NEW COMPANY, OTOKAR LAND SYSTEMS”**

Serdar Gökçüoğlu, Otokar General Manager, expressed that the IDEX Exhibition is an important organization in terms of increasing cooperation in the region, “IDEX Exhibition which we are participating for the eighth time is especially significant for us. In 2016, we established a new company titled Otokar Land Systems Limited in Masdar City Free Zone in the United Arab Emirates to strengthen our position as one of the world's leading players in the defence industry. Having left 30 years behind in the defence industry, Otokar has nearly 30 thousand military vehicles being used on five continents in more than 30 countries. With Otokar Land Systems, we will be closer to our users in regions where we operate. By following the export activities more closely, we intend to strengthen our cooperation abroad, especially in the Gulf region, open to new markets and increase our sales.”

## **“ARMOURED VEHICLE DELIVERIES CONTINUE”**

Serdar Gökçüoğlu informed that Otokar, as the biggest supplier of Turkish Armed Forces, continued to increase its armoured vehicle deliveries in 2016 in line with user expectations and against current threats, and added:

“The success of Otokar’s armoured vehicles was also a reference for new orders. In 2016, we completed the deliveries of armoured vehicles ordered in 2015 by different countries. Last year, a Gulf country client with URAL armoured vehicles already in its inventory placed a new order for URAL because of the vehicle’s successful performance. We will complete these URAL deliveries within this year. On the other hand, we signed the first export contract for COBRA II with a South Asian country. The vehicles are expected to take part in United Nations Peacekeeping operations. As the deliveries continued, user tests of Otokar vehicles in different geographies were conducted throughout the year in our target markets, North Africa and Gulf countries. The testing activities that involved mobility in challenging desert conditions and live firing tests have proved the suitability of our vehicles for the hot climate and geographical conditions.”

### **TECHNOLOGY INVESTMENTS CONTINUE TO GROW**

Explaining that Otokar continued to invest in new technologies with increasing demand for armoured vehicles, Serdar Gökçüoğlu also noted that a total of 269 patent applications, utility models and industrial design applications, including 37 industrial designs, have been filed for the products and subsystems in the last decade. Gökçüoğlu said that Otokar continues with its investments to provide fast and quality response to the demands from the defence industry, “The Otokar R&D centre, one of Europe’s leading facilities, is equipped with simulators, testing equipment and the latest information systems to create and evaluate information for the purpose of testing the manufactured vehicles faster and with higher technology. Otokar’s test centre featuring a climate controlled test chamber with dynamometer, and electromagnetic compatibility (EMC / EMI) testing qualification, also serves as an independent accreditation centre for defence industry’s R&D activities.”

In 2016 Otokar was awarded with the internationally recognized accreditation certificate for its mine testing equipment, considered one of the world's most advanced for defence industry products, ballistic laboratories, and ballistic and mine tests, and the IAS (International Accreditation Service) has confirmed the laboratory’s compliance with ISO / IEC 17025: 2005 standards.

With the technological infrastructure and experience in defence industry, Otokar, which manufactures with the aim of meeting the requirements of its users, exhibited the following products for 5 days at IDEX 2017:

### **ARMA: NEW GENERATION MODULAR WHEELED ARMOURED VEHICLE**

ARMA, a new generation multi-wheeled modular

armoured vehicle with high tactical and technical specifications that Otokar presented at the exhibition, offers superior mobility, high mine and ballistic protection, as well as medium and high calibre weapon system integration options. ARMA also comes in an amphibious version. The ARMA 6x6 stands apart especially with its high battle weight and large internal volume. ARMA can be equipped with different weapons and turret systems for various requirements. The ARMA family can be used for different purposes such as armoured personnel carrier, armoured combat vehicle, command control, and CBRN reconnaissance vehicle. The 8x8 version can be used with various weapon systems ranging from 7.62 mm to 105 mm. Otokar Arma 6x6 is already actively used Gulf. The Arma 6x6 exhibited at the exhibition integrated with Otokar designed Bozok 12.7mm turret system.

### **COBRA II: EXCELLENT PERFORMANCE IN TOUGHEST MISSIONS**

Another vehicle that Otokar presented to users at IDEX 2017 was COBRA II. The vehicle produced against current threats to meet user expectations was added to the Otokar product range in 2013. In addition to superior technical and tactical features, COBRA II also offers high degree of protection and forms a base for a modular platform. With a capacity of carrying nine personnel, as well as high level of protection, firepower and mission equipment, the vehicle is an ideal vehicle for several different missions, and is also available in an amphibious version. The Turkish Armed Forces and security forces actively use COBRA II, which delivers superior performance in the most demanding terrain and climate conditions.

### **KAYA II MINE-RESISTANT PERSONNEL CARRIER**

KAYA II is a mine-resistant personnel carrier, which has been developed particularly for export markets and successfully passed challenging tests in many different regions of the world. Including Gulf. Specially designed against current explosive threats, KAYA II offers superior protection against mines and kinetic energy ammunition. With unique mobility in all kinds of terrain and climate conditions, the vehicle has a capacity of carrying ten crew including commander and driver in a monocoque body consisting of a single cabin.

### **TULPAR-S: CHALLENGING ALL TERRAIN AND CLIMATE CONDITIONS**

TULPAR-S Personnel Carrier, the new member of Otokar's tracked armoured vehicle family, presented for the first time in the region, stands out with its superior mobility, and high ballistic and mine protection. The new generation modern design and flexible electronic architecture sets TULPAR-S apart from its competitors, and the vehicle can be used in various configurations ranging from weapons carriers to personnel carriers. The modular platform allows the vehicle to be produced in different configurations according to the user requirements while the large interior volume, high payload and flexible architecture make it possible to

respond to future needs for a light tracked platform. TULPAR-S, which challenges all kinds of terrain and climate conditions, can be used both on land and at sea with its amphibious specifications. TULPAR-S, with its powerful mobility, survivability and firepower, was exhibited at the IDEX 2017 with the Otokar designed BASOK turret.

Otokar also makes a difference with its vehicles ranging from 4x4 to 8x8 and tracked armoured vehicles, and turret systems that are produced in different types and versions. In addition to the products exhibited at the exhibition, Otokar also offers the worldwide known 4x4 armoured tactical vehicle COBRA designed to serve for various missions; the URAL 4x4 tactical wheeled armoured vehicle specially designed for security forces, KAYA and KAYA vehicles in the 4x4 mine protection class, Otokar ISVs produced in the armoured internal security segment, and TULPAR, the heavy tracked armoured combat vehicles.

Otokar is also the main contractor of Turkey's main battle tank, ALTAY. After the successful completion of the design and development tests in the ALTAY project that was launched in 2009, the Acceptance Tests carried out by the Undersecretariat of Defence Industry and the Land Forces Command started. Upon the Undersecretariat for Defence Industry's request, Otokar submitted its final bid for the serial production of 250 Altay battle tanks and their Integrated Logistics Support activities on August 29 in order for serial production to commence as soon as possible.

## **Defence Industry**

### **Safran's Epsilon One navigation systems chosen by a Middle-East country for combat vehicles**

Safran Electronics & Defense and its Middle Eastern Partner, International Golden Group signed a contract for the supply of Epsilon One inertial ground navigation systems and technical integration services for an initial batch to outfit a first armored brigade of a Middle-East country.

The procurement program encompasses more than 12 different vehicle types, from all-terrain 4WD and troop transport vehicles to infantry fighting vehicles and main battle tanks.

Safran's Epsilon One system is based on an inertial core using advanced resonating structure gyros. A proprietary solution patented by Safran, the system features very high reliability and reduced cost of ownership. Offering high performance in a compact package, it gives combat vehicles autonomous engagement capabilities, including in environments where GPS signals are jammed.

The customer's decision was based on the results of an intensive series of tests under operational conditions, pitting Epsilon One against an international field of competitors. In particular, these tests showed that Epsilon One is perfectly suited to asymmetrical combat



in urban zones. Connected to a battle management system, Epsilon One gives crew members precise information on position and heading, even under the most demanding conditions.

This new success of Epsilon family follows the French army's choice of Safran's Epsilon systems for its new generation vehicles of the Scorpion program which confirm the advantages in terms of costs and performances of resonating inertial sensors for new-generation navigation systems.

The European leader in navigation systems, Safran has developed proven expertise in all inertial technologies: mechanical and dynamically-tuned gyros (DTG), ring laser gyro (RLG), fiber optic gyros (FOG), resonating (HRG), and micro-electromechanical (MEMS), with more than 60 years of experience in providing navigation systems for both civil and military customers operating in all environments.



**Exhibitions**

**AM General Debuts Multi-Purpose Truck Concept at IDEX 2017**



AM General, the premiere Global Vehicle Solutions Provider, showcased its innovative vehicle solutions, global reach and diversification at the International Defence Exhibition & Conference (IDEX) tradeshow held at the Abu Dhabi National Exhibition Centre, Feb. 19 – 23, 2017.

“IDEX 2017 is an excellent venue for AM General to display its diverse range of innovative products and services,” said AM General Executive Vice President, International Defense, Larry Platt. “As the Company continues to expand and strengthen its partnerships in the region and around the globe, we will use this opportunity to engage current and potential customers, listen to their unique needs and offer them the most innovative, affordable mobility solutions available today to meet their demands.”

**Multi-Purpose Truck/MPT**

Making its world premiere at IDEX 2017, the Multi-Purpose Truck (MPT) is a commercial base 4x4 platform chassis truck (cab and chassis) with 8,391 kg (18,500 lb) GVW and 2,359 kg (5,200 lb) payload capacity engineered to serve the extreme-environment needs of energy, mining, industrial, and government customers around the world. The MPT is engineered and designed based on existing and test-proven AM General components, Off-the-Shelf (OTS) AM General items, Commercial Off-the-Shelf (COTS) items from other

commercial vehicles and Military Commercial Off-the-Shelf (M-COTS) items. The MPT was designed to allow customers to configure payload modules based on their needs. The Cab & Chassis Base Platform is the base vehicle configuration. MPT modules can be developed by the purchasing country’s engineering experts or, if needed, by AM General engineers. Modules can include several applicable configurations utilizing a 2-man cab. Other variants include the 2-man w/ Flat Bed, 2 + 6 Personnel Carrier, 4-man Base w/ Cargo box, and 9 Crew Capacity Vehicle.



**Future Technologies**

**SAIC Unveils First Amphibious Combat Vehicle 1.1 to U.S. Marine Corps**



CHARLESTON, S.C. -- Science Applications International Corp. (NYSE: SAIC) unveiled its first Amphibious Combat Vehicle (ACV) 1.1 prototype to the U.S. Marine Corps during a ceremony held at the company’s integration facility in Charleston, South Carolina. This vehicle is the first of 16 to be delivered for testing by the Marine Corps, which is scheduled to begin next month.

“SAIC is incredibly proud to deliver this modern, high-tech, highly-capable solution to the Marine Corps. Our employees and team members worked tirelessly to successfully deliver this solution to the Marine Corps on time despite delays due to an initial contract award protest,” said Tom Watson, SAIC senior vice president and general manager of the U.S. Navy and Marine Corps Customer Group. “We are confident that this vehicle is equipped with the latest technology which will strengthen the amphibious capabilities of the USMC today and into the future.”

SAIC’s ACV 1.1 solution is an enhanced, customized variant of ST Kinetics’ TERREX vehicle fielded by the Singapore Armed Forces. Tailored to meet Marine Corps requirements, SAIC’s ACV is an 8x8 wheeled, armored amphibious vehicle with improved survivability, mobility, lethality, and C4ISR capability tailored to transport Marine Corps fighting units from ship to shore. SAIC’s ACV engine and transmission offers 600 horsepower for outstanding mobility while still exceeding fuel economy targets.

On land, the ACV 1.1’s independent suspension system improves ground mobility and ride quality for Marines. In water, its hydraulically driven propulsion systems with full independent thrust control authority and innovative water mode cooling solution supports

safe operation at Sea-State 3 for ship-to-shore operational employment and through six-foot plunging surf.

Within the vehicle, state-of-the-art technologies include 360-degree situational awareness, force protection through leading blast protection seats, and a V-Over-VTM hull design to keep Marines alive in combat. All Engineering, Manufacturing, and Development (EMD) vehicle hulls are manufactured and integrated in the United States.

“Our vehicle was designed with future Marines in mind. We are equipping a new generation of Marines with the latest technology that they have grown accustomed to and using it as a way that will improve warfighting capability and could potentially save their lives,” said Bernie Ellis, SAIC ACV 1.1 program manager.

SAIC has a proven track record – more than 10 years – of modifying and upgrading armored vehicles for the Department of Defense ensuring warfighters are protected during combat, while securing command and control and repair capabilities. ST Kinetics is one of Asia’s leading land systems and specialty vehicles companies having delivered hundreds of TERREX vehicles to the Singapore Armed Forces as well as the Warthog, a twin chassis, multi-purpose articulated tracked carrier, to the British Armed Forces.

Last February, the Marine Corps awarded SAIC a \$121.5 million contract for the EMD phase of the ACV 1.1 program. Additionally, SAIC is currently the prime contractor providing the Marine Corps with initial survivability upgrades to 10 Assault Amphibious Vehicle (AAV) prototypes.

Republic of Korea by delivering L3 systems that are the most widely used, battle-proven combat vehicle transmissions in the medium-weight class today,” said Michael T. Strianese, L3’s Chairman and Chief Executive Officer. “This win exemplifies L3’s focus on forming enduring customer relationships and providing enabling, high-technology products. Also, this contract expands our international business in markets that offer new and follow-on opportunities.”

Work will be done by L3’s Combat Propulsion Systems division, which is part of the Power & Propulsion Systems sector within the Electronic Systems business segment.

L3 Combat Propulsion Systems, located in Muskegon, Michigan, is a Manufacturing Center of Excellence, providing heavy manufacturing to allied militaries worldwide, with a focus on engines and transmissions for ground combat vehicles.

Headquartered in New York City, L3 Technologies employs approximately 38,000 people worldwide and is a leading provider of a broad range of communication and electronic systems and products used on military, homeland security and commercial platforms. L3 is also a prime contractor in aerospace systems, security and detection systems, and pilot training. The company reported 2016 sales of \$10.5 billion.

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## Contracts

### L3 Awarded Vehicle Transmission Contract Supporting the Republic of Korea Army



NEW YORK -- L3 Technologies announced today that it has received a contract to provide 800-horsepower transmission kits for the Republic of Korea Army’s K21 Next-Generation Infantry Fighting Vehicle and the Light Recovery Vehicle programs. L3 has supported the country’s armed forces with advanced military vehicle transmission systems since 1999. The award is initially valued at \$17.3 million, with product deliveries expected to begin in the third quarter of 2017 and be completed by 2019.

“We are pleased to receive this important award, which builds on our long-standing partnership with the