

June 16th, 2008  
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## **GDELS briefs on the evolution of the PIRANHA armoured wheeled vehicle family at EUROSATORY 2008**

PARIS - **General Dynamics European Land Systems (GDELS)** will inform about the evolution of the PIRANHA family and will present its new products, i.e. the PIRANHA III 8x8 High Protection and the PIRANHA V 8x8 at EUROSATORY 2008.

The PIRANHA III 8x8 is already very successful on the market and this vehicle category will stay in our product portfolio and will be further developed in accordance with customer needs. The PIRANHA V 8x8 is the latest development and candidate for many future system procurements.

### **PIRANHA III 8x8 High Protection Version**

The PIRANHA III 8x8 High Protection is a special development to respond to present and future threats. Due to the modular conception, different levels of protection against mines, IEDs, EFPs and KE projectiles can be realized.

Description of the features and capabilities:

#### **Survivability**

A particular feature is the protection of the crew by the reinforced cell and the latest energy-absorbing seats, which not only enhance the protection against mines, but also implement energy management in case of side blasts and other accident situations. The new PIRANHA III 8x8 benefits from the latest technology with respect to ballistic, IED, EFP, KE protection and mine developed for the PIRANHA V. We are fully aware that the breakthrough with respect to protection in the light vehicle class will come with the Active Protection System (APS) era. Our assessment shows that the SAAB LEDS APS offers many advantages for our application on light armored vehicles.

The modular design of the SAAB LEDS offers:

- Laser Warning
- Active signature management
- Fire extinguishing capability

- Active protection against guided and unguided AT weapons e.g. RPG`S even at short range
- Active protection against KE rounds – Long range

### Mobility

The well-known mobility of the PIRANHA is further enhanced with the latest design of the conventional suspension system with progressive coil spring characteristic. As an option, the PIRANHA III can be ordered with a hydrop suspension system with height management, which allows to increase ground clearance for improved off-road mobility and mine protection.

### New Power Pack

The latest design allows the integration of a 460 HP Caterpillar diesel engine with low fuel consumption, low emissions and outstanding performance features.

### Payload

The PIRANHA III offers a payload of 8 tons in its basic version.

### Large interior volume

The PIRANHA III with its compact outer dimensions and the internal volume of approx. 13.5 m<sup>3</sup> is without competition in its class of vehicles.

### Ergonomics

Mine protection requires a new approach with respect to seating arrangement and HFE criteria. The internal height is increased by 100 mm and gives room for the integration of seats with energy management system. All integration with respect to HFE has been redesigned regarding mine and IED protection.

### Amphibious capacity

The PIRANHA III can be equipped with an amphibious kit, which consists of a propeller drive with rudder steering, trim vane, and seawater cooling system. The PIRANHA can manage sea state 3 conditions and reaches a swimming speed of approximately 10 km/hr.

### Air transportation by C-130

The PIRANHA III can be transported in a C-130 Hercules airplane with minimum preparation. Roll on – roll off was the must criterion for the Stryker Vehicle (of which the PIRANHA III is the baseline platform).

### Modularity

The vehicle is laid out such that different customer-specific variants with their specific turret integration are possible on the same platform. Up to now, there are more than 40 customer-specific variants in service.

## **PIRANHA V 8x8 FUTURE MULTI-ROLE ARMORED WHEELED VEHICLE**

The PIRANHA V 8x8, the latest development is dedicated to future-oriented programs. First demonstrator vehicles will be available as from the end of 2009. The PIRANHA Evo 8x8, which is exhibited at Eurosatory, is the basis for the new development. The PIRANHA V vehicle architecture allows the integration of new technologies at some later stage and gives the customer a system which will be state-of-the-art in 20 or more years. The protection layout gives growth potential for emerging and increasing threats.

Description of the features and capabilities:

### Survivability

The basic hull is of monocoque design, which gives us a stiff crew cell, and with the integrated mine protection, we create the basis for all kinds of protection suits and technologies. The PIRANHA V offers high protection against mines, EFP mines, IEDs, EFPs and KE rounds. With the use of a combination of steel and composites the highest level of energy absorption is achieved and herewith, the required crew survivability. For mine protection, the well-proven system approach with the integrated mine protection seat (energy management system), special integration of the equipment, new HFE features, reinforced crew cell, and double floor of V-shape design is applied. All integrated protection suits, inclusive the composite mine protection floor are exchangeable and can be upgraded in the future.

### Mobility

The PIRANHA V 8x8 is equipped with 8 independent wheel suspensions of the same design. The hydrop system with height management offers enhanced off-road mobility by increasing the ground clearance, and enhanced mine protection due to the increased distance from the ground. The suspension system has an active feature – the spring force characteristic changes with the vehicle speed and obstacle height. This gives outstanding crew comfort on every terrain.

### Power pack and drive train

The high-performance diesel engine from MTU offers an optimal power-to-weight ratio. The MTU engine fulfills the current and future emission requirements. The integrated starter/generator offers 100 kW of electrical power output, which can be used for a powered unit or, later on, for electric weapons and electric armor. A new development in this area of the integrated starter/generator is the Hybrid Boost Power Technology. This adds, as a parallel hybrid drive, an additional 100 kW to the drive train and improves the mobility of the vehicle significantly.

A new invention is the Fuel Efficiency Drive train System (FEDS). The primary aim is to improve the drive train efficiency by reducing the power loss in each gear. The current test results show that with this system we achieve a lower fuel consumption than any conventional parallel hybrid drive or serial E-Drive.

### Payload

The basic PIRANHA V 8x8 offers a payload of 12 tons. This opens a wide spectrum for its usage.

### Large interior volume

The PIRANHA V 8x8 has a usable interior volume of 14.2 m<sup>3</sup> to 17.4 m<sup>3</sup> – depending on the hull configuration.

### Ergonomics

The driver's station is equipped with a three display cockpit. This new feature provides the driver with all information from the on-board VETRONICS system. Further information boards are provided for the commander and the crew. Mine protection needs a new approach with respect to the seating arrangement and with respect to HFE criteria. The new mine-protected seats offer high-energy absorption in horizontal and vertical direction during mine and IED impacts. The same type of Active Protection System as integrated on the PIRANHA III is also available for PIRANHA V.

### Amphibious capacity

The current requirement for the PIRANHA V does not call for amphibious operations. The vehicle concept allows for further development to an amphibious version with the well-known features of current amphibious PIRANHAs.

### Air transportation by A 400M

The PIRANHA V 8x8 is air-transportable in the A 400 M without special preparation. The low weight of the PIRANHA V is a benefit with respect to the cruising range of the plane.

Modularity

The baseline design allows the integration of different mission kits. Depending on customer requirements, various weapon stations and turrets from small calibers up to heavy 120 mm guns can be installed.

The modularity with respect to protection layout enables the deployment for any scenario:

- Homeland security
- Low-intensity conflicts
- High-intensity conflicts

As we know, the threats are changing and call for new protection solutions, which can be integrated at a later stage.

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