

SURFACE-TO-AIR

Tetraedr works to refine A3 multipurpose system design

BY MIROSLAV GYÜRÖSI

Belarus company Tetraedr has assembled prototypes of the command post and unmanned combat module for its A3 (anti-air, anti-armour, anti-terrorism) multipurpose light gun-missile system, although development has not yet been completed.

During the early months of 2009, company engineers will work on fine-tuning various sub-systems and on the system software, including the combat algorithms.

Two more combat modules are due to be completed in May 2009 and Tetraedr plans to begin initial trials of the system in the fourth quarter of 2009.

The A3 is intended to defend high-priority fixed targets such as command posts, airports and nuclear power stations from attacks mounted by aircraft, helicopters, unmanned aerial vehicles, missiles and guided bombs. It can also engage ground threats such as main battle tanks, infantry fighting vehicles, armoured personnel carriers and even dismounted infantry and is being promoted for anti-terrorism tasks.

The unidentified launch customer specified a basic battery consisting of a command post mounted on the Kamaz-43114 three-axle truck chassis and six unmanned combat modules each mounted on a wheeled trailer. Tetraedr was hoping to start deliveries in the second or third quarter of 2010 but the global financial crisis could change this timescale.



The combat module's mast-mounted electro-optical unit is based on the OES-1T sensor unit that the company developed for its upgraded Osa-1T self-propelled surface-to-air missile system. *Miroslav Gyürösi: 1331267*

SPECIFICATIONS

Command post on Kamaz-43114
 Weight: 9,040 kg (without mast /sensor head)
 Length: 8.03 m
 Height: 3.25 m
 Width: 2.55 m

Unmanned combat module
 Weight: 4,500 kg (without weapons)
 Length: 5.39 m
 Height: 2.43 m
 Width: 2.33 m

Work on the A3 system started in February 2007 and is currently focused on the configuration chosen by the lead customer. However, the company is now planning alternative platforms that could be offered to potential customers. The command post could be mounted on the GM-352M1E tracked vehicle originally developed for the tracked version of the Pantsir-S1E self-propelled gun/missile system, while the combat module could be offered on a GM-352M1E or on an MZKT-6922 wheeled chassis.

Communications between the command post and combat modules will be via radio or wire links. The system will use the Asterix protocol, enabling it to connect to other Asterix-compatible surveillance sensors and weapon systems.

The command post has workstations for the commander and two operators. The commander will have information regarding the tactical situation and the location of each of the combat modules, while each operator will be able to control up to three combat modules. A power generator and a sensor head on the telescopic mast are mounted between the truck cab and the cabin.

The design of the combat module makes it easy to integrate the weapons selected by the customer. These can be rapid-firing guns of 12.7–23 mm calibre with aimed ranges of 1,200–1,500 m or more, short-range (from 500 m to more than 5,000 m) surface-to-air missiles, or anti-tank missiles with a range of up to 5,000 m. If the customer wishes, these weapons can be types already in the national inventory.

An electro-optical unit containing two daylight cameras with wide and narrow fields of view respectively, a thermal camera and laser rangefinder are mounted on a folding mast. These are the same sensors that Tetraedr uses in the OES-1T sensor unit of its upgraded Osa-1T self-propelled surface-to-air missile system. The main difference between the two is that the housing used on the A3 is a different shape to that of the OES-1T, and the location of individual sensors within the casing is different.

SPECIAL REPORTS



The first customer for the A3 system chose to have the combat module – seen here armed with anti-tank and manportable air defence system (MANPADS) missiles – mounted on a wheeled trailer. *Miroslav Gyürösi: 1331265*



Tetraedr is studying self-propelled versions of the combat module based on platforms such as the MZKT-6922 wheeled chassis. *Tetraedr: 1331266*

Each combat module has the ability to detect, track and identify a target with or without targeting information from the command post; determine the threat level; select the type of weapon to be used; open fire; evaluate the results, opening fire again if necessary; and send a report to the command post. The entire process can be completed autonomously, or under the control of the command post.

As all six combat modules are networked via the command post, if one is unable to handle the engagement, the task can be assigned to another.

The combat modules also have an ability to operate in what Tetraedr calls 'nedotroga' mode. There is no direct English-language equivalent of the term but it implies isolation — circumstances in which the module has lost contact with the command post and the other combat modules. In such circumstances, the module would become fully autonomous and attempt to destroy anything that enters the area it has been ordered to defend and which looks like a threat. This 'last-ditch' combat mode incorporates unspecified measures to ensure that it does not waste ammunition by engaging false targets such as birds or wind-blown vegetation.