

Tula-based KBP Completes New Pantsyr Air Defense System

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The Tula Instrument Design Bureau (KBP) is completing its development of a new combined cannon/gun anti-aircraft system called Pantsyr-S1. The first of these systems are to be delivered to the United Arab Emirates by year-end.

According to Arkady Shipunov, who left the position of KBP's general director in late September, the Pantsyr's export backlog already has reached \$2.6 billion. In addition to the United Arab Emirates – which financed the system's development and became its launch customer – Syria and Algeria also have placed orders. Shipunov said that negotiations on the delivery of additional systems are being held with five more countries in North Africa, Southeast Asia and Europe.

KBP started its development of the Pantsyr system in 1990 for Russia's Air Defense Forces. The system is designed to protect mobile forces and units, strategic military and industrial sites, as well as surface ships. It also is to provide cover for S-300 long-range anti-aircraft missile systems, and is to engage light-armored targets and infantry. Taking these goals into account, the Pantsyr system was based on the Tunguska cannon/missile system, which already is used by the Army's air defense, and the Ural-5323.4 8x8 high-mobility vehicle was chosen as the new system's platform.

By 1994, KBP had produced a Pantsyr prototype, which has passed testing and was demonstrated in August 1995 during the air show in Zhukovsky near Moscow. However, due to the economic crisis in Russia, state financing of the system's development was stopped.

Work on Pantsyr resumed only in the second half of the 1990s. Its "second life" really kicked off in 2000 with a \$734 million contract from the UAE. Pantsyr became one of the first Russian weapon systems whose development was financed by a foreign customer. According to the terms of the contract, KBP was to have completed the Pantsyr's development in two years and deliver 50 systems to the UAE by 2005.

Despite certain technical and organizational difficulties, the Pantsyr's development was proceeding successfully. The long-range 57E6-E guided missile was developed for the system, while a 2A72 cannon used on the first prototype was replaced with double-barrel, rapid-fire 30-mm 2A38M anti-aircraft guns. Primary subsystems and elements of were developed, including the target detection radar, and a wheeled and track chassis options were chosen. Only one problem remained: creation of a



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line-of-sight station for target tracking and anti-aircraft missile guidance.

The Pantsyr initial version used the 1L36 Roman dual-band multipurpose radar tracking station, developed in 1995 by the Russian Fazotron-NIIR radar company. The station was designed for the control of land- and ship-based air defense system. Ten years later, the company developed a new radar for Pantsyr – the IRS2-E with a phased-array antenna. However, KBP decided that the Fazotron-designed radars didn't have the required performance.

Looking for a new radar, KBP offered to the customer to modify the project, asking for additional time to complete its development. The UAE agreed to prolong the contract, and the initial systems are now scheduled to be delivered in 2006, with the rest to follow in 2007-2009.

The latest Pantsyr version features a new multi-function tracking radar with a millimeter range phased-array antenna developed by KBP. This system will allow a significant increase in the Pantsyr-S performance. The new radar can detect airborne targets out up to 28 km. The number of targets that can be tracked simultaneously was increased from two to four. The track initiation area ranges from 200 to 20,000 meters; the height was increased from 10,000 to 15,000 meters. The system can now engage targets moving with speeds of up to 1,000 m/sec. In addition, KBP claims that the new air defense system will feature high resistance to electronic countermeasures.

Another radar system for the Pantsyr-S1, the IRS1-1E, can detect airborne targets to a range of up to 36 km, and was developed by Moscow-based VNI-IRT. The Voronezh Communications Scientific Research Institute and Sozvezdie Corp. have created an automated communications system for data exchange between the air defense system's combat vehicles. Data transfer systems were developed by the Center of Fiber-Optic Data Transfer Systems.

Initially, the system was to be based on a tracked chassis (the Belarus-manufactured GM352M1E) and 8x8 wheeled chassis (MZKT-7930 or KamAZ-6350), or deployed as a stationary air defense system. Pantsyr systems for UAE will probably be installed on both the KamAZ-6350 and GM352M1E. Pantsyr's primary components will be manufactured by the Tula-based Tula-mashzavod and Kovrov-based KEMZ companies.

Successful Pantsyr-S1 missile tests were conducted on the Kapustin Yar test range in mid 2006. Currently, the extensive test program is nearing completion, and the system will soon be delivered to the UAE, followed by final demonstration tests in order to confirm the technical characteristics. If the development and delivery of Pantsyr-S1 to the UAE is successfully completed, the customer can place an additional order for 28 more units to be delivered in 2009-2010.

At the same time, KBP is expanding the export market for its new anti-aircraft system. According to recent information, a contract for 36 units was signed with Syria, valued at approximately \$200 million. In addition, the Russian media has reported that a contract for Pantsyr-S1 deliveries was signed with Algeria, and negotiations with China and Greece are underway. The two latter countries already have Russian S-300 long-range anti-aircraft systems, for which the Pantsyr was designed to protect. It is expected that Pantsyr-S1 will enter service with the Russian army after qualification testing is completed.

The system's current order \$2.6 billion backlog represents almost half of KBP's total export orderbook, which is estimated at \$6 billion. Unlike most Russian defense companies, KBP has the right to independently export its products, which also includes anti-aircraft and anti-tank missile systems, artillery and small arms. ■