>> unmodified K2 cabin and the K9M. In the unmodified system, the commander was located in a single K9M command cabin, which served both missile batteries.

The modernised K2 cabin has command workplaces for the unit commander and officers, allowing them to fire missiles and guide these to interception. Using the new hardware, the firing officer is better able to plan the engagement.

New technology is used in the target-tracking channel to make the processes of target search and tracking more accurate, and the modernised system is able to engage targets flying at speeds ranging from 500–1,500m/sec. A new method for measuring target range allows the modernised system to measure target ranges out to 450km, making this measurement continuously without degrading the other functions of the target-illumination radar.

Integrated training hardware and software can simulate air raids and enemy jamming. A new recording system is provided to store the details of combat engagements, while new built-in test equipment will test the system and report any failures.

The K2 command cabin is equipped to receive and exchange information with an automated command system, and with a 3D radar.

At the firing batteries, the K3 launch cabin has been fitted with a new digitised console which exchanges data with the K2 cabin.

WZU 2 has also designed and produced the new K7C control tower, plus a four-channel subsystem which receives tactical data about the air situation from the automated command system.

In the S-200C system, the two firing batteries are completely autonomous, and can operate in stand-alone mode; in co-operation with an automated command post or a 3D surveillance radar giving 360° of coverage; or in co-operation with a command post and 3D surveillance radar. It can also use radar data from external sources operating to NATO standards.

Within the modernised K2 cabin the noise level has been reduced, and the environmental conditions are now controlled.

The modernised S-200C system requires fewer vehicles, so can be deployed or redeployed in less time. It can also be deployed in a smaller area, thus reducing the amount of site-preparation time.

Electrical power consumption is reduced by about 30%, while the amount of cabling used to connect the individual parts of the overall system is reduced by 7,000m. (Reducing the amount of cable by such a substantial amount helped reduce the number of vehicles needed for redeployment.)

Personnel have also been reduced – the combat group from 12 people to five, and the technical staff from 15 to six). ●

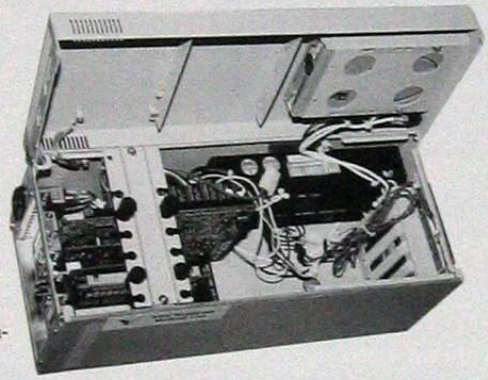
# Belarus company offers SAM guidance upgrades

**The Scientific Industrial Unitary Enterprise TETRAEDER based in Minsk, Belarus, is marketing an improved guidance system which can be used to upgrade existing surface-to-air missile (SAM) systems, writes *Miroslav Gyürösi*.**

**Known as KDU (Kinematic-sesko-diferencialnoye upravleniye – kinematic-differential control), the new system is intended to increase the engagement efficiency of SAMs, providing improved performance against high-speed and manoeuvring targets, including short-range ballistic missiles.**

**KDU guidance provides a more accurate missile flight trajectory towards the target. The dynamic guidance error caused by target manoeuvres can be up to 10 times lower than that produced by earlier guidance methods, while what TETRAEDER describes as 'fluctuation guidance error' in SHORADS systems can be reduced by a factor of two or more.**

**The system also offers 'soft' steering of the missile. Intended to eliminate post-launch and in-flight transient oscillations in the missile's trajectory, this sharply reduces the energy wasted over the whole flight trajectory, considerably extending the interception area of the weapon. It can also shape the guidance trajectory of missiles fired against low-flying targets, raising the flight path to avoid ground clutter and to improve operating conditions for the missile's proximity fuze.**



Miroslav Gyürösi; 0532203

**> This demonstration KDU guidance unit makes use of commercial off-the-shelf hardware**

**TETRAEDER has tested the new guidance system on S-125M (SA-3) and Osa (SA-8), and now offers it as an upgrade for these weapons, and for the Tor (SA-15). The system can replace several existing forms of guidance, so is applicable to other types of missile.** ●

Original and extended engagement zones (for head-on targets)

| | with existing guidance | with KDU guidance |
|---|---|---|
| S-125M (SA-3) maximum interception range | 17km | 30km |
| S-125M (SA-3) maximum interception height | 18km | 22km |
| Osa (SA-8) maximum interception range | 10km | 12.5km |
| Osa (SA-8) maximum interception height | 5km | 7km |
| Tor (SA-15) maximum interception range | 12km | 16km |
| Tor (SA-15) maximum interception height | 6km | 7.5km |

# South Korean army establishes air-defence branch

The Republic of Korea (RoK) Army has established an Air Defense Branch, writes **David C Isby**. Until now, RoK Army air-defence weapons have been operated by personnel from the Infantry branch. The new Air Defense Branch will be responsible for training, developing tactics, issuing requirements, and long-range planning for ground-based air defence.

The creation of the new branch followed the establishment of the RoK Air Defense School in April 2002, and reflects the increasing sophistication of RoK Army air-defence equipment, as well as concerns about terrorist-type air attacks.

The new branch will operate the self-propelled Ch'onma SAM system, Singung (license-built Matra Mistral) SAMs, and air-defence gun systems. Since 1991, long-range SAMs such as the HAWK, Nike-Hercules and the proposed SAM-X have been operated by the RoK Air Force rather than the Army. ●

# India announces successful Trishul tests

**India has announced another successful test of its long-running Trishul (Trident) surface-to-air missile (SAM), writes *David C Isby*. The missile was launched at the DRDO (Defense Research and Development Organisation) interim test range at Chandipur-on-Sea in Orissa state on 24 September.**

**Fired from a mobile launcher, it scored a kill against a light target** >>