W. Heger, prof., dr. (University of Applied Sciences, NB Germany), **V.Sidorenko** prof., dr. Kryvyi Rih Tehnical University, Ukraine), General Surveyor **V.Kovtyn** (Ukrgeodezmark, Kiev Ukraine)

ADD-ON GYROSCOPE GYROMAX™ AK-2M - MODERN TECHNOLOGY OF GERMANY

Main words: *gyroscope adaptors, software, gyromax control*

Since 1996 the GeoMessTechnik Heger (GMT Heger) develops, manufactures and repairs gyroscopic instruments for international clients. As an engineering service gyro measurements of medium and high accuracy are offered. Company headquarters is situated in Neubrandenburg (NB), Germany approximately 110km north of Berlin.

TECHNOLOGY GYROMAX.

The best known is the product of the GMT Heger GYROMAX™, an add-on gyroscope with an accuracy of<= 20 arcsec 6mgon in finding the geographic north. The actual device is GYROMAX ™ AK-2M. The measurement time is about 30 min, sighting to the target included.

Pict. 1. Gyroscope GYROMAX™ AK-2M

GYROMAX AK-2M.

The areas of use for the GYROMAX™ AK-2M are universities, mining, tunneling and the military. Many universities have the measurement system for Training and Research (University of Luxembourg, University of Stuttgart, University of Johannesburg, etc.). For underground orientation in the coal, gold, platinum and copper mines a variety of devices have been adapted.

GYROMAX in underground use. Conceptually, the GYROMAX™ AK-2M can be used by each operator of the once very popular WILD/GAK I. The worldwide replacement of this equipment is done from GMT Heger in cooperation with Leica Geosystems national dealers. Other total stations by TOPCON / SOKKIA and ZEISS / TRIMBLE / NIKON can be adapted. There were many custom adaptations realized for various applications. Very important is cooperation with local merchants and service centers. For Ukraine and Russia it is UKRKOVID NVP GROUP situated in Kiev.

GYROMAX CONTROL. For some years the software GYROMAX CONTROL is used for automation and simplification of the measurement. It provides a calculation and recording software. The total station, can either be connected by cable or wireless via 'bluetooth'. The gyro measurements are automatically calculated and all corrections are included in the process. This can be done by computer or PDA, manual inputs are also possible.

GYROMAX CONTROL (RPDA with total station).

New Remote Control Unit: RCU 10.

From 2010 there is a new RCU that is smaller and more lightweight and also less power consuming.

GYROMAX in Ukraine.

In 2008 “Ukrgeodezmark” company of PSC “Kyivmetrobud” for orientation tunnels for building underground, hydrotechnic, transport tunnels and others tunnels in Ukraine implemented modern gyroscopic adapter **GYROMAX AK-2M**. Gyroscopic adapter operates on the basis of engineering total station GTS-722 with integrated operating system **Windows CE.Net™**. Total station GTS-722 combines achievements of electron technologies of Topcon Corporation (Japan).

Pict. 2. GYROMAX AK-2M on the basis of total station GTS-722

The main advantages of **GYROMAX AK-2M** compare with traditional methods rotational definition of grid angles (azimuths) are required accuracy, high efficiency, mobility and repetition in use. Scientific-production UKRKOVID NVP GROUP company is representative of GeoMessTechnik Heger. Jointly with "DOKA" and "Ukrgeodezmark" companies execute service works and development of implement technology of hydroorientation on the basis of **GYROMAX AK-2M.** The result of those works is high-precision connection of tunnels (up to 100 mm) by building underground and hydrotechnic tunnels permitted rates. GMT Heger and UKRKOVID NVP GROUP companies make plans about implementation of **GYROMAX AK-2M** gyroscopic adapter in Russia.

The GMT Heger has done gyro measurement courses for over 10 years worldwide and in Neubrandenburg, Germany. A gyro course is information and training about gyroscopic north seeking instruments of operators and engineers.

GMT Heger company, scientific-production center UKRKOVID NVP GROUP and DOKA Ltd in cooperation with Technical University of Kryvyi Rih makes implementation, research, training of operators and engineers, training of the staff and service that promotes successful development of modern gyroscopic technology. Ukrainian delegation with representatives of Technical University of Kryvyi Rih headed by prof. Sidorenko VD in 2010 visited the University of Applied Sciences in Neubrandenburg (Germany), met with rector and professors of the University, examined the production and technology of GYROMAX and outlined further cooperation in scientific research and its implementation in Ukraine.

Pict. 3. Ukrainian scientists in University of Applied Sciences NB, Germany

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