

# Headed into orbit

Space technologies ever more reliable, thanks to unique sensors developed by National Academy of Sciences

By Dmitry Sokolov

We might wonder what role a sensor plays in sending rockets into space but the recent Russian 'Proton-M' crash is a prime example. Sadly, it went down with three satellites on board, having lost control due to the incorrect installation of its angular-rate sensor. This tiny, relatively inexpensive component was the nail missing from the horse's shoe.

Other examples are not hard to find, when some unreliable or insufficiently sensitive sensor has destroyed the hopes and efforts of thousands. Any move to raise the sensitivity of sensors is extremely welcome in the space sphere and the National Academy of Sciences has, accordingly, been focusing on this small yet mighty aspect of cosmic innovation. Working with Russian scientists, and financed by the Khrunichev State Research and Production Space Centre (Moscow), the Scientific and Practical Materials Research Centre of the NAS of Belarus is now producing sensors outranking those anywhere worldwide. The devices' sensitivity is 6.5 times higher, while using 2.5 times less power — thanks to fast, heavy ions.

Of course, the ability to run for longer, using less power, has obvious benefits in space. Just as important is the ability of electronics to withstand space radiation and magnetic fields. The new sensors have passed

all tests, including keeping their high sensitivity at very low temperatures.

Another sensor has also recently been setting records in its ability to withstand extremely high temperatures — of several hundred degrees Celsius. The device is the work of the Nanotechnology-SG Union State programme. It can also detect magnetic field changes of just 0.1 percent, making it superior to foreign analogues. Only a few models currently exist, and are enduring final tests at the Heat and Mass Transfer Institute of the National Academy of Sciences of Belarus. Our partner, Russian Corporation NPO RIF, from Voronezh, which produces microelectronic devices and rocket equipment, plans to begin mass production on receiving the necessary technical documentation from Minsk.

In addition, supersensitive sensors are useful for terrestrial aircraft and can be used in medicine: to measure magnetic fields present around organic tissue, and to control magneto-biological reactions and electric signals in the heart, muscles and brain. Sensors can also be used in burglar alarms, and as a means of recording, processing and storing magnetic information. They are useful in furthering automobile anti-block systems and motor control devices, as well as being used in robotics, geological prospecting, seismology, archaeology, astrophysics and other fields of science.



Belarusian sensors to be installed on Russian spacecraft

## Today's idea — tomorrow's orders

Gomel Technological Park making building materials and solid fuel from chemical industry waste

By Andrey Sergeev

Gomel Technological Park aims to help enterprises implement innovative ideas. One of the youngest such parks in the country, having been created just 18 months ago, it is already seeing results. Of course, this is great news for the region, creating prospects for the future.

One of the Park's projects is connected with processing phosphogypsum waste from Gomel Chemical Plant, transforming potentially toxic mountains into profit. A solution to the problem was long sought and has now found form, thanks to Bakur-Group, which is producing building materials from the waste. This year, Gomel Regional Executive Committee provided support through the state innovative fund for the eco-venture.

Dmitry Morozov, the Director of Gomel Technological Park, tells

us, "We're now developing technical processes and deciding on organisational issues regarding manufacture and sale; we may be able to produce 3,600 tonnes of building materials annually."

Of course, the materials must be competitive in terms of quality and price, through the use of modern equipment and technologies. There's no question regarding the safety of the building materials, since all harmful substances are neutralised during processing.

Another eco-project being im-

plemented in the Rechitsa District is connected with lignin waste from the local hydrolytic plant. It's not easy or efficient to burn in its raw form but makes good briquettes

parently good prospects for export potential.

Another resident of Gomel Technological Park — Promavtomatika — is engaged in automating technical processes. Over the past 18 months, it has increased its salaries by more than five-fold, while paying about Br850 million into the budget. Such figures speak for themselves.

Mr. Morozov emphasises, "It's important to note that Promavtomatika is in partnership with some major enterprises within the domestic industry: Belorusneft, the Belarusian Steel Works and Belshina. Gaining such orders is no mean feat, as they have incredibly high standards. If the company manages to keep such contracts, it will demonstrate the quality of its work."



— convenient to transport and use. The Technological Park's Neftespetsservis company is working with Rechitsa (a housing and communal enterprise) to produce the fuel briquettes, with ap-

## Inspired by Italian cheeses

By Igor Smirnov

**Turov Dairy Plant masters production of Ciliegini — small balls of mozzarella, resembling sweet cherries**

Additional equipment for the manufacture of Ciliegini has been installed at the plant, with a trial batch successfully passing all necessary tests in late August. Industrial production of Ciliegini will now begin in early September, with the delicious cheese sold in 100g packs.

A trial of Mozzarella Panini semi-hard cheese is next in line, with two flavours being produced, using natural ingredients added to the traditional mozzarella recipe.

Turov Dairy Plant, located in the Mikhachevichy District of the Gomel Region, is a modern industrial enterprise, processing about 40-45 tonnes of milk a day while its capacities are designed for 600 tonnes. By the end of the year, the enterprise intends to have raised production of Italian cheeses from 150 tonnes (as of 1st June, 2013) to 700 tonnes a month. It focuses on cheese making, and especially Italian soft cheeses: mozzarella, mascarpone and ricotta. Its pizza style mozzarella is most popular at present. As well as domestic sales, it exports to Russia and is now negotiating deliveries to Ukraine, Kazakhstan, Georgia and Azerbaijan.

## Threads of many colours

**SvetlogorskKhimvolokno Polyester Textile Thread Works begins technical modernisation of its dyeing equipment**

The enterprise plans to spend about four million US Dollars on the new project, raising its economic efficiency in producing dyed polyester threads. Modern dyeing equipment is being installed, with processed automated. The latest dyeing lines should ensure that productivity reaches 500 tonnes of thread monthly. The current selection of 310 colours is being extended greatly also.

## Regime of self-service

By Sergey Ivanov

**Five automated car washes being built in Mogilev next year**

The automatic car washes are being built in Mogilev by Modern Systems of Auto Cleaning Society, thanks to an investment agreement signed recently. Each of the car washes will be able to accommodate about five cars simultaneously, and will accept electronic card payments, while being cheaper than ordinary car washes.

Building works are to begin next spring, coming into operation by January 1st, 2015. Over Br11.2 billion are being spent on the venture, while seven new employees are to run the establishments.