

Clever geo-radar ‘opens eyes’

A road is a convenient place to hide any traces of negligence. After the asphalt is laid, it’s a challenge to define the quality of the materials or work.

By Dmitry Patolichev

Unsurprisingly, after scientists used their new geo-radar, which enabled them to look beneath the surface of a road section under repair and then showed the results to the foreman, the latter proclaimed, “Guys, we do not need you here!” Such a response was expected, as the smart device precisely measures the uniform thickness of the road, and of the layers of sand and gravel. Gravel amounts can also be well determined. Of course, such irrefutable facts could leave workers without a bonus, or create more serious problems for them. With this in view, it’s no wonder that workers welcome the radar devices with caution.

“Subsurface radars — which operate in the microwave spectrum (like our device) — are produced by many countries and are widely used to control quality in construction, industrial production, customs affairs, geology and archaeology,” explains Yelena Maximovich, a candidate of technical sciences and a leading research officer at the ra-

dio-tomography laboratory of the Belarusian National Academy of Sciences’ Applied Physics Institute. “This theme is topical and, unsurprisingly, has been realised as part of a state programme focused on scientific studies. Much attention was paid to the development of sensor parts and signal processing. Using a grant from the Belarusian Republican Foundation of Fundamental Research, we’ve joined our colleagues from the Russian Academy of Sciences’ Institute for Physics of Microstructures to solve the problems dealing with detection of an object and restoration of its form. Most globally sold radars are impulse — making it possible to easily lose signal passing from one antenna to another (which reduces noise). However, we use a wide range variable frequency which enables us to ensure a higher depth resolution, paying no attention to antenna characteristics.”

The accumulated experience has proven its advantages already: our scientists have won a tender to detect and identify antipersonnel metal-free mines (via the International Scientific-Technical Centre). Such mines are truly dangerous, as they cannot be detected by modern mine detectors. Moreover, these standard detectors often produce a vague picture, making it difficult to identify objects on a monitor. Also, it is only experienced operators who reliably define the objects they are seeing.

To avoid sweeping statements, Ms. Maximovich demonstrates the results of field tests. “Look here,” she points at the monitor. “Here we can see not only the mines, but also stones and cans filled with wet sand (added as masking). Can you distinguish a mine?” I easily found it and, no doubt, such a task is even simpler for an operator-specialist.

Importantly, the radar makes it possible to move at a walking speed. Its microprocessors promptly display the subsurface structure. Of course, mine detection is vital, especially in areas where fighting has occurred recently. The USA and Europe annually host international conferences for scientists to share



Geo-radars will help to repair Belarusian roads

their most advanced signal processing methods and devices. The International Scientific-Technical Centre accumulates serious projects of

post-Soviet scientists. However, if the Belarusian military does not show interest in this experience, then the scientists do not insist. After all, the

army has more relevant tasks.

Devices of the kind make it possible also find underground cables and metal and plastic pipes. Sometimes these pipes are detected in places and depths which differ from official plans. As a result, excavators and horizontal directional drilling tools often hit these, causing their failure. Similar problems arise in the walls of old buildings.

Since a geo-radar detects both the depth and location of a pipeline, its use would help avoid many expensive problems. Specialists of Minsk’s City Executive Committee understand this and are very interested in the development. “A microwave radar, or microwave tomograph, is a universal tool, especially regarding biological tissues” notes Ms. Maximovich. “We’ve conducted tests on models which showed that our methods make it possible to detect muscle and fat tissues. Moreover, differences between these tissues are easily seen. Accordingly, we have no doubt that the correct application of these methods could detect contrasting tissues, for example, mammary tumours. Twenty year of development and experience of foreign specialists confirm this well. They believe that microwave radars could become a complementary tool, alongside x-rays and ultrasonography, to diagnose tumours. We believe that, one day, all these developments will be widely used.”

Profitable shopping

By Olga Pasiyak

Foreigners can now enjoy tax-free shopping at Minsk’s State Department Store. Since October, stickers have been displayed at every cash desk, advertising VAT refunds for those visitors from outside the Customs Union.

To claim a refund, customers must spend at least Br800,000 in one day (in France, the minimum spend is 175 Euros, while Lithuania allows refunds on purchases of just 60 Euros). An information centre on the ground floor has been set up to process the 15 percent VAT return.

Svetlana Pristupa, the Deputy Director for Trade Settlements at the State Department Store, explains that only a few people have used the service so far but that statistics will be available monthly, with the move sure to prove increasingly



Foreigners save on purchases from TsUm

popular. The shop is now advertising the benefits to foreign guests, and by November 1st, three other department stores will have joined the system: TsUm (Central Universal Department Store); Na Nemige; and Belarus trading house. Beltamozhservice is also to follow suit, notes Tamara Tikhonova, who heads Minsk City Executive

Committee’s Department of Trade Settlement for the Main Management of the Consumer Market.

The Ministry for Trade approved the innovation at major shops in September, joining almost 60 countries worldwide, who have been making tax refunds for some decades. The idea was first introduced in Belarus on January, 1st, 2013.

Exact hit for online multi-user gaming

Belarusian ‘World of Tanks’ online game recognised best at Golden Joystick Awards 2013

‘World of Tanks’ has won the Golden Joystick award

for ‘Best Online Game’ for the second year in a row. The Golden Joystick Awards are determined through online voting by gamers from all over the world.

‘World of Tanks’ is a

mass multiplayer online game, dedicated to armoured vehicles from the mid-20th century, where fans of iron giants fight from all corners of the world.

Friendship clock is chiming still

By Andrey Vasilyev

The Clock of Friendship near the Theatre of Musical Comedy was presented by Japan to mark the last anniversary of twin-city relations between Sendai and Minsk

The clock shows Belarusian time on one side and Japanese on the other. A recent visit by a Japanese delegation to Minsk, on the 40th anniversary of our twinning, viewed the clock not only as a reminder of their native Sendai but of our honest relationship,

based on trust.

The Japanese delegates enjoyed an eventful cultural programme, as well as a visit to the 9th Minsk City Clinical Hospital and to Polimaster industrial enterprise. Besides seeing the usual sights, they toured Sendai Garden Square: a park in the centre of Minsk, where sakura trees were planted six years ago. Although no blooms were flowering, the tree’s beautiful scarlet autumn foliage was a delight. In fact, the Japanese guests came bearing more gifts: evergreen azaleas, which flower with



bright colours each spring. Their continuous growth could not be a more fitting symbol for our mutually beneficial relationship.