PHLburg Technologies, Inc.

1275 Drummers Lane
Suite 101
Wayne, PA 19087

Telephone: 610-688-6800
Fax: 610-975-5800
Website: phlburg.com

November 2007

IN THIS ISSUE:

MESSAGE FROM NEIL B. GODICK

This month we report on a wide breadth of Russia's high tech technologies. Russia has adopted a technology policy to develop those technologies that will enable it to compete in seven world markets. Included in these industry targets are: electronics, health sciences, energy (and I do not mean oil and gas), and communications. Some of the technologies reported here are in response to Russia's policy shift.

We do not intend for these reports to solve any need our readers may have. We do intend to keep everyone current on technology developments in Russia. If you would like any additional information on any of the developments reported – send us a note

Renewable Energy

Development of combined renewable power sources

According to the Roskosmos press service, OAO NPP Kvant, a Moscow company has developed a standard range of combined power-generating installations using renewable power sources – photoelectric converters and wind generators.

The installations are ecologically friendly and effective energy modules working 24 hours a day without disturbing the environment. Their large-scale application may solve the problem of obtaining sufficient amounts of power for standalone buildings and structures (farms) not connected to the power grid. They can be used to develop uninterrupted power supply devices for emergency and backup power sources for facilities with stationary industrial energy-supply equipment that requires uninterrupted power (computation centers, telecommunication nodes, medical institutions and other specialized facilities).

Each installation includes solar panels and a wind generator. The electricity they produce can be supplied directly to consumers, as well as to an energy storage system. The energy storage system includes a battery block for short-term (a day) emergency electric power. A longer life (up to a week) system can accumulate energy in the form of hydrogen and oxygen produced by an electrolyzer with subsequent storage in special gas cylinders. If necessary, the stored gases can be converted into electricity by fuel cells.

Robotics

Androidney Roboty

In 2008 Russia will initiate production of robotic systems capable of performing selected jobs, including working in mines. The company that plans to produce them is Androidnye Roboty ("android robots"). It is currently offering models capable of simulating human movements. According to CNews, these androids are already used for teaching in secondary schools and as elements of an entertainment program.

Electronics and software for the AR-100 robots are provided by OmegaDigital, a St. Petersburg company, while the hardware is supplied by CAM factory (Moscow). AR-100 robots are made from plastic and aluminum, there are 35 cm high and weigh 1.5 kg. The cost of a single robot is 28,700 rubles (approximately $1,000-$1,200). The model is capable of simulating all basic human movements. A larger robot, AR-400, currently being designed is intended to serve primarily as a presenter device or as an information stand. There are also plans for producing sophisticated cyborgs that could be used in entertainment and education; they would also be able to perform various jobs.

Materials Science

Refractory metal nanopowders

Novosibirsk Academy Township's information service reported that, the Center of Electrotechnologies, Novosibirsk State Technical University has developed a metallurgical device to produce nanopowders of refractory metals. Such powders are used to make elements of the electronic circuits. The weight of these elements is several times lower than that of their most miniature analogs.

Health Sciences

Biomarkers

Russian scientists have developed a diagnostic method for the body immune status that enables determination of a disease literally "in the bud". The technology was developed by a team at Immunculus Medical Research Center, P.K. Anokhin NII of Normal Physiology, RAMS headed by Prof. Aleksander Poletaev.

Over the last 20 years of research, Prof. Poletaev and his colleagues have detected about 50 marker autoantibodies. These antibodies can indicate the body's health status. Autoantibodies are, as it were, a mirror reflection of those protein antigens that are typical for certain organs and systems and thus indicate their status. A collection of such autoantibodies produces a picture of the body health status as a whole.

Myoma Treatment

A unique system for "myoma evaporation" by focused ultrasound, without cuts or anesthetics, is being used in Russia at the Clinical-diagnostic Center № 1, N.I. Pirogov. Focused ultrasound destroys the myoma directly inside the woman's body. There is no need for

anesthetic as the patient does not feel any pain or unpleasant sensation. Ultrasonic pulses generated by a special device are directed at small fragments of a tumor and heat the diseased cells from inside. As a result they are destroyed. Ultrasound is supplied in pulses, each 10-12 seconds long on the average, while the physician is scanning the tissues, viewing the heating area and watching the process. Each focused ultrasound action is followed by cooling. Each pulse can cause evaporation of an area from 1x2 mm to 10x30mm. It can eliminate tumors of any shape up to 9-10 cm in diameter.