**BREAKTHROUGH TECHNOLOGIES IN ENERGETICS**

**The concept of development of electric power industry of Ukraine**

**with the transition from machine-generated turbogenerators**

**to the generation of electricity by special materials MGA (Andrus Molecular Generator).**

 The equipment of the electric power industry of Ukraine and steam production at CHP and boiler houses for heat supply of cities is in a worn out condition, especially at nuclear power plants.  Extending the life of a nuclear power plant is possible for another 10 ÷ 15 years, and then large capital expenditures will be required to replace nuclear reactors and other equipment, which is billions of dollars for each nuclear power plant.

 The economy of Ukraine in the next 15 years will not sustain such a load.  It should be noted that about 50% of all electricity in Ukraine is generated at NPPs, and at the same time they cannot cover peak loads.  For stable operation of nuclear power plants with peak loads, thermal power plants (thermal power plants) and the corresponding national transmission lines - power transmission lines are required.

 The chain of creation of goods for the world market has the following form: academic science → research institutes, laboratories → design organizations → enterprises → world market.  The world academic science of the last decades is in a deep stagnation, which has led to the moral and technical aging of the process of generating electricity throughout the world.

 The impression was created that alternative energy would help to get out of the current situation, but from the point of view of the development of BSA LLC, such an approach would only harm the environment and would not solve the problem as a whole, because  Such an energy industry cannot take the place of sustainable basic electricity producers, such as nuclear power plants and thermal power plants, and there are no less difficulties with them than with old technologies.

Scientific stagnation in the energy sector was recorded by the Director of Science

 V. Andrus 40 years ago, and from that moment began the development of new fundamental scientific foundations in physics, chemistry, astrophysics.  Since the author conducted his research in his spare time and outside research teams, it took a lot of time.

 In 2006, the BSA LLC was established, in which the Fundamentals of Neutron Sciences (Volume I, 1000 p.) Were born.  On the basis of these, the “Electric chain reaction reactor with a thermal power of 50 MW was developed -

 ECR-50” (<http://neutronscience.com.ua/wp-content/uploads/2018/03/Business-plan-ERCR-50-2018.pdf>), MGA (Andrus Molecular Generator) (<http://neutronscience.com.ua/wp-content/uploads/2018/03/Business-plan-MGA-2018.pdf>) and“ The multiplier of electrical power based on MGA ”(<https://youtu.be/N447flDIb28>, and  also AUTHOR'S COMMENT TO VIDEO (<http://neutronscience.com.ua/wp-content/uploads/2019/05/AUTHORS-COMMENT-TO-THE-VIDEO.pdf>).  As you can see, the entire chain of appearance of goods on the market was solved in one team.

 Brief information about the company.

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| --- | --- |
| Company name  | BSA Ltd |
| Description |  Scientific and industrial production of technologies and equipment for clean energy. |
|  Industry | Energy and Environment  |
| Date of foundation of the company |  May 2006 |
| Web site | <http://neutronscience.com.ua>  |
|  A country | Ukraine |
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 In ECR -50, a chain reaction (heat release) occurs in the cermets of fuel elements (fuel elements) under the action of high frequency radiation, which can be turned off by stopping the supply of electricity.  No radiation - no chain reaction.  By summing the ECR -50, it is possible to obtain power up to

 3000 MW.

 In the MGA and the Multiplier, the generation of electricity occurs in the interaction of special materials and the magnetic field lines of the Earth as a result of oscillations of the latter.

 As you can see, the necessary results - the generation of electricity - can only be achieved with the help of materials - this is the material electric power industry!

 What gives new devices?

 1. Confirmation of the correctness of the Neutron Sciences, the rejection of the atomic model in the form of a nucleus with electrons and the transition to the model of chemical elements in the form of 6 or 8 miconechny "hedgehogs" (see Fig. 5 1. Alphabet of matter (briefly)) with the ensuing consequences  .

 2. The ability to almost completely abandon the well-known methods of generating electricity that are harmful to the environment (by the way, official science still does not know what generation is).

 3. The ability to switch to new harmless ways of generating electricity with simple electronic circuits without machines and mechanisms, without using nuclear and hydrocarbon fuels.  In general, it is a fuel-free electric power industry !!!

 4. The ability to produce equipment and products completely in Ukraine, because  There are enterprises suitable for this purpose in Kiev and Kiev region, in Kharkov, etc.

 5. Small cells (cells) MGA, almost without changing the size, will receive power from tens of watts to hundreds of megawatts.

 6. The ability to have equipment prices significantly lower than that of nuclear reactors and generating equipment (steam turbines, turbopumps, turbine generators).

 7. The ability to gradually abandon power lines and transformers and switch to individual power supply of both production and residential consumers is decentralization of power industry.

 8. The ability to replace lithium-ion batteries in electric vehicles with MGA and completely abandon petroleum products.  MGA can work 10 years or more.

 9. The ability to transfer all the energy to the production of energy and steam from materials without intermediate machines and mechanisms.  This will be the century of material energy and new scientific development in all areas of human activity !!!

The time periods necessary for the transfer of Ukraine to the material energy

 1. BSA LLC receives the minimum investment of ($ 60,000,000 in the first year, $ 40,000,000 in the second year, $ 30,000,000 in the third year), totaling $ 130,000,000 ($ 60,000,000 for ECR-50 and $ 70  000 000 for MGA and Multiplier, including the purchase of a microscope worth $ 27,000,000) and in a maximum of three years, issued by technologists and working samples of products - ECR -50, MGA and Multiplier - this is 2022 ÷ 2023.

 2. The national nuclear power generating company Energoatom allocates funds of BSA LLC in the amount of $ 700,000,000 ÷ $ 1,000,000,000 to manufacture and replace the first atomic reactor with a thermal capacity of 3000 MW and MGA up to 50 MW - this is 2023 ÷ 2025.

 3. In the next two to three years, the remaining 14 atomic reactors will be replaced by electric ones.  In total, we have 15 electric reactors - this is all that is in Ukraine, and we provide with high reliability the generation of 50% of all electricity without the use of fuel.  The difference in the cost of generating a kilowatt-hour by reducing the cost (not using nuclear fuel) will significantly reduce the cost of re-equipment of nuclear power plants.

 4. After the transfer of nuclear power plants to electric reactors ECR -50, it is necessary to abandon the construction of a thermal power plant and fully switch to generating electricity based on MGA.

 5. The ultimate goal should be the universal production of electricity at MGA with an individual bias - production, household, etc.  Power lines and transformers to them will practically disappear.

 6. By 2040, Ukraine may have 80% of the material energy + 20% alternative.

 7. Production of MGA with capacity from 3 W (for gadgets) to 300 kW (heavy electric vehicles) can raise the economy of Ukraine to an unprecedented level.

 Sincerely, Valery Andrus

 Scientific Director of BSA LLC

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