Israel school energy storage

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Bar-Ilan University and the Technion - Israel Institute of Technology have won a call published by the Ministry of Energy for the establishment of a national research institute in the field of energy storage. The aim of the institute is to encourage Israel’s energy sector to take a leap forward in response to national strategic challenges, with an eye toward global applications, as well as to train cadres of future experts in the field and facilitate the transfer of innovative technologies from the academic environment to industry.

The institute will be led by a joint steering committee of the Ministry of Energy, the research institutions, and outside parties. The steering committee will be headed by Ministry of Energy Chief Scientist Dr. Gideon Friedman. Prof. Doron Aurbach, Scientific Director of Bar-Ilan University’s Energy and Sustainability Center, and Prof. Yoed Tsur, Director of the Grand Technion Energy Program (GTEP), will head the new national energy institute.

The institute will be established with a budget of approximately NIS 130 million for 5 years, of which the Ministry of Energy will invest NIS 100 million and the winning institutions have pledged to invest an additional NIS 30 million. The Ministry’s investment will enable the purchase of expensive research infrastructure and the establishment of new laboratories.

With conventional technologies, growing energy consumption causes greenhouse gas emissions and climate change. The goal set by the State of Israel for 2050 is a national energy economy free of greenhouse gas emissions. The way to reach this goal is through a transition to renewable energy sources, such as the sun and wind. Energy production from these sources isn"t steady, but fluctuates through the day. Therefore, development of novel technologies for storing energy in large quantities is required. This will be one of the main tasks of the new institute.

The institute will engage in research in the following areas, among others: sodium-ion batteries that can be less expensive and more available than lithium-ion batteries; improving fuel cell performance; producing green hydrogen efficiently and storing it safely and conveniently; solid state batteries free of liquid and safer; metal-air based batteries such as iron and zinc that have a very high energy density; novel cables with increased ability to convey electrical energy and very high power density; and flow batteries that have a large storage capacity.

The field of energy storage is of great importance for the transition of the economy to clean energy. Energy storage will allow an increasing integration of renewable energy, which is only available during part of the day.

Dr. Gideon Friedman, Chief Scientist of the Ministry of Energy: “The field of large-scale energy storage is one of the most important challenges for the strong integration of renewable energies. The new

energy Institute will enable Israel to become a leader in the field, in continuation of the Ministry’s additional efforts in the field of storage. For the first time, an institute is being established that will be led by a steering committee comprised of a combination of members of academia, industry and government.”

The establishment of the research institute represents a significant achievement for the Grand Technion Energy Program (GTEP), which was founded 15 years ago," says Prof. Yoed Tsur, head of GTEP. "The crucial shift to clean energy is not possible without developing new means of storing and converting energy on a large scale. The institute will contribute to the training of future engineers, who will develop solutions in the field. It will also contribute to the generation and testing of novel ideas that could change the national and international energy markets.

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Prof. Doron Aurbach from Bar-Ilan"s Department of Chemistry and Prof. Yoed Tsur from the Technion will head the institute. The scientific steering team will be headed by Ministry of Energy Chief Scientist Dr. Gideon Friedman and will include Prof. Yair Ein-Eli from the Technion, Prof. Malachi Noked and Prof. Lior Elbaz, from Bar-Ilan"s Department of Chemistry and Institute of Nanotechnology and Advanced Materials (BINA).

The institute will be established with a budget of NIS 130 million for five years, of which the Ministry of Energy will invest NIS 100 million and the winning institutions have pledged to invest the remaining NIS 30 million. The Ministry"s investment will enable the purchase of expensive research infrastructure and the establishment of new laboratories.

The institute will engage in research in the following areas: sodium-ion batteries, fuel cell performance improvement, producing and storing green hydrogen, and more.