GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
RAJYA SABHA
UNSTARRED QUESTION NO. 1086
ANSWERED ON 10.02.2022

TECHNOLOGY FOR ENERGY STORAGE

1086.SHRI K.R.N. RAJESHKUMAR:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:-

(a) whether it is a fact that Government is carrying out research work on developing a technology for storage of energy;

(b) if so, the details thereof along with the achievements made during the last three years;

(c) the steps being taken to inspire and engage students in the said research; and

(d) the outcome thereof?

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) OF THE
MINISTRY OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) Yes Sir. The government is supporting research projects for enhancing the technology for storage of energy. Several academic institutions and Research and Development laboratories viz. Indian Institute of Technology Kanpur (IIT Kanpur), Indian Institute of Technology Bombay (IIT Bombay), Indian Institute of Technology Madras (IIT Madras), Indian Institute of Technology Delhi (IIT Delhi), Indian Institute of Technology Guwahati (IIT Guwahati), Indian Institute of Technology Hyderabad (IIT Hyderabad), Indian Institute of Technology Ropar (IIT Ropar), Indian Institutes of Science Education and Research (IISER) Pune, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI) Hyderabad, Council of Scientific and Industrial Research–Central Electrochemical Research Institute (CSIR-CECRI) etc. are pursuing research work on storage of energy.

(b) During last 3 years, Department of Science & Technology (DST) has supported 92 projects in the domain of energy storage which have resulted more than 150 scientific publications. Four "Materials for Energy Conservation and Storage Platform" (MECSP) have been setup for development of energy storage materials and system at Indian Institute of ScienceBengaluru, Indian Institute of Technology Bombay, Indian Institute of Technology Delhi and Nonferrous Materials Technology Development Centre (NFTDC), Hyderabad. Notable advances have been made in the development of Li-ion batteries, energy storage devices for wearable applications, thermal energy storage using phase change materials, graphene-based super capacitors, flow batteries etc.

Science and Engineering Research Board (SERB), a Statutory Body under the DST has, supported 46 projects to facilitate the research work on developing the technologyfor storage of energy. Advancements are made in the field of metal based air electrodes, electroactive polymernanocomposites, hybrid DC bus power supply, utilization of agricultural waste as an electrodematerial, lead free disordered ferroelectrics, etc.

International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an autonomous Research and Development Centre of DST has developed high power supercapacitor with indigenously developed activatedporous carbon from Petroleum coke.

Council of Scientific and Industrial Research (CSIR)is working on creating supply chain of different indigenously made battery grade raw materials and components required for manufacturing the Lithium ion cells of cylindrical and prismatic configurations for various applications ranging from solar lanterns, power banks, E-bikes, E-scooters and UPS systems.

Ministry of New and Renewable Energy (MNRE) has supported National Centre for PhotovoltaicResearch and Education (NCPRE) at IIT Bombay and development of super-capacitors by Indian Institute of Technology Roorkee (IIT Roorkee) and UttaranchalUniversityunder "Renewable Energy Research and TechnologyDevelopment Programme".

Ministry of Power (MoP) has provided financial support to Off-grid and Decentralized Solar PV Applications Programmeto public service institutionsfor installation of battery backed off-grid solar power plants/ packs.

Indian Oil Corporation Limited under Ministry of Petroleum and Natural Gas (MoPNG)is working in the area of Aluminium-Airbatteries under 'National Program on Advanced Chemistry Cell Battery Storage'(NPACC).

(c) & (d) Students and young researchers are getting engaged in the energy storageresearch through enhanced opportunities for training and capacity building. Students are also inspired to take up research in this domain through open house forums conducted by various laboratories to showcase the outcomes of the projects. As a result of these efforts, more than 300 students are pursuing higher research in storage of energy which is contributing to the development of critical mass of researchers for development of energy storage technology.

Council of Scientific and Industrial Research (CSIR), through its integrated skill initiative programme is providing hands-on practical learning/ training to students in the rural areas of India on market/industry driven courses.

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