Seoul battery management systems

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Hyundai Motor Group (the Group) today announced the inauguration of its Joint Battery Research Center with Seoul National University (SNU). This collaborative effort between the Group and SNU aims to advance battery technologies and foster industry-academia cooperation to establish global leadership in the battery field.

The opening ceremony of the Joint Battery Research Center took place at Seoul National University"s main campus and was attended by esteemed guests, including Euisun Chung, Executive Chair of Hyundai Motor Group; Yong Wha Kim, President and Chief Technology Officer of Hyundai Motor Group; Heung Soo Kim, Executive Vice President and Head of Global Strategy Office of Hyundai Motor Group; and Chang Hwan Kim, Senior Vice President and Head of Battery Development Center of Hyundai Motor Group.

From Seoul National University, Hong Lim Ryu, President of Seoul National University; Yoo Suk Hong, Dean of Seoul National University College of Engineering; Seung Hwan Ko, Associate Dean of Research Affairs of the College of Engineering; Jong Chan Lee, Head of the School of Chemical and Biological Engineering; and Jang Wook Choi, Head of the Joint Battery Research Center and Professor at the School of Chemical and Biological Engineering attended the inauguration ceremony.

The Joint Battery Research Center began to take shape in November 2021, when the Group and Seoul National University signed a memorandum of understanding (MoU) for the "establishment of a joint battery research center and mid- to long-term joint research" based on the consensus on realizing carbon neutrality and creating a battery research ecosystem.

To foster close cooperation among researchers, the new research facility will secure a dedicated space for battery-only research within the expanded Institute of Chemical Processes of Seoul National University, spanning three floors (901 m2). It will consist of seven laboratories and conference rooms for battery development, analysis, measurement, and process. This is the first time that a research facility specializing in electric vehicle (EV) batteries has been built within Seoul National University.

With the opening of the Joint Battery Research Center, the Group will work with top battery experts in Korea to lay the groundwork for research and development of battery-related technologies. The Joint Battery Research Center aims to focus on advanced research into leading next-generation battery technologies that can dramatically increase EV driving distance and shorten charging time, as well as research on battery condition monitoring technology and innovative process technology.

Specifically, a total of 22 joint research projects will be carried out in four divisions, including lithium metal

batteries, solid-state batteries, battery management systems (BMS) and battery process technology. A total of 21 professors and master"s and doctorate-level talents from eminent Korean universities will participate in the research. 14 of the 22 research projects will be related to lithium metal and solid-state batteries, focusing their core capabilities on developing next-generation batteries.

In the field of lithium metal batteries, research will be conducted on high-durability lithium-electrolyte material element technology and shape analysis to minimize deterioration, while in the field of solid-state batteries, research will be conducted on sulfide-based anode materials, electrode/electrolyte coating methods and ultra-high energy density cathode active materials.

A key feature of the Joint Research Battery Center will be its focus not only on theoretical research, but also research and development that considers mass production. In the case of general industry-academia research, additional time and cost are inevitable to apply the results to mass-produced products.

To that end, the Joint Battery Research Center has the same level of research infrastructure as the state-of-the-art equipment applied to the Hyundai Motor and Kia R& D centers, such as precision battery analysis equipment, high-precision rheometers, cell manufacturing equipment, and impedance measuring devices, so that the university"s research results can be quickly applied to products.

Furthermore, the Group has appointed Professor Jang Wook Choi, an esteemed expert in battery science, as the head of the Joint Battery Research Center. Professor Choi will oversee the overall research projects and management of technology development.