



SEIE's marine environmental monitoring technologies allow for remote ocean surface detection.

## ELECTRONICS AND INFORMATION ENGINEERING CONNECTING THE WORLD

Originating in 1959 in the Department of Radio Engineering, HIT's School of Electronics and Information Engineering (SEIE) is a leader in research and education of communications engineering, electronics and information engineering, remote sensing, electromagnetic field and wireless technologies.

Led by Yongtan Liu, a member of both the Chinese Academy of Sciences and the Chinese Academy of Engineering, a radar and signal processing expert, SEIE researchers have been exploring marine environmental monitoring and information processing technologies for more than 40 years. Their efforts have led to novel marine radar capable of detecting targets at very long ranges, under all weather conditions, and at all times, allowing for remote ocean surface detection and exploration of vast areas. For his contribution, Liu won the State Preeminent Science and Technology Award.

Another SEIE breakthrough is in wireless communications, with a system demonstrating excellent manoeuvrability and rapid response capacity for data transmission. SEIE researchers have also developed China's first trunked communication system, enabling access by many users via shared spectrum. They are now exploring innovative communication systems for space-air-ground integrated networks.

## ENERGY ENGINEERING FUELLING THE FUTURE

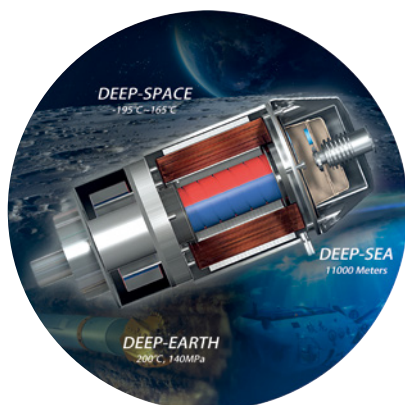
HIT's School of Energy Science and Engineering (SESE) uses cutting-edge methods to meet national strategic needs. It has developed leading expertise in thermal and power engineering, flight vehicle power engineering, and nuclear reactor engineering.

At the HIT Plasma Propulsion Lab (HPPL), headed by Daren Yu, SESE researchers have been investigating electric propulsion technology, which creates thrust by expelling ions. A key breakthrough is a magnetic focusing Hall thruster, which uses a specially designed magnetic field to control electron conduction and ion acceleration. With enhanced performance, the thruster was used on a satellite, and recently won the National Science and Technology Progress Award.

Another SESE team, led by Heping Tan, has developed a solar thermochemical reactor that converts sunlight into chemical energy. They have also developed numerical methods for radiative transfer, expanding new directions for computational thermal radiation. Their integration of thermal radiation with space-based optical detection has found uses in aerospace engineering.



Magnetic focusing Hall thruster developed by HPPL



The special electrical machines for extreme environments

## ELECTRICAL ENGINEERING LEADING THE ERA OF ELECTRICAL INTELLIGENCE

With a focus on basic science and engineering applications, HIT's School of Electrical Engineering and Automation (SEEA) addresses national strategic needs in aerospace, high-end manufacturing, transportation, and clean energy.

SEEA is particularly known for its research on electric driving in extreme environments. By improving design methods of electrical machines and control technologies of drives, SEEA researchers have developed special electrical machine systems with high precision, a large speed range, and high resistance to extreme environments. The electrical machine systems have been used in manned spaceflight, deep-space, deep-sea, and deep-Earth explorations, high-end computer numerical control (CNC) machines, and industrial robots, and have won the second prize of China's State Technological Invention Award.

SEEA has also supported China's major infrastructure construction with its research and development of high-precision automatic devices, highly reliable electric appliances, and advanced electromagnetic control facilities. SEEA will keep working at intelligent manufacturing, smart energy and smart city for broad societal benefits.