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KIMM Establishes Research Facility for the Localization of LNG and Cryogenic Equipment

- Performance test facility established at the Gimhae LNG · Cryogenic Technology Center -
- Contributing to the localization of small and medium-sized enterprises in Korea and
securing industrial competitiveness -

- For the first time in Korea, the Korea Institute of Machinery and Materials (President Sang Jin Park, hereafter referred to as the KIMM) under the Ministry of Science and ICT, has established a research facility for the localization of LNG and cryogenic equipment. This paves the way for the localization of LNG and cryogenic equipment within Korea.
- In March, Principal Researcher Keun-Tae Lee of the LNG · Cryogenic Technology Center completed the construction of a comprehensive LNG and cryogenic equipment performance test

facility. This marks the first development of a performance evaluation system in Korea for all components of cryogenic equipment, including pumps, valves, heat exchangers, compressors, and the refrigerators.

- The LNG and cryogenic equipment performance test facility conducts experiments for evaluating the performance and reliability of various equipment related to LNG and cryogenic temperatures. The research team has established efficient and systematic testing procedures and secured soundness and reliability of test results. Since 2016, the institution has obtained qualifications as an internationally accredited testing institution from the Korea Accreditation Organization (KOLAS). By the end of this year, it plans to pursue registration as an accredited institution by the Korea Register of Shipping.

KIMM KOLAS Accreditation Status:

- ▲ 2016: Acquired accreditation as LNG and cryogenic pump testing institute
- ▲ 2017: Acquired accreditation as a testing institute for valve precision, internal pressure, and flow coefficient measurements for LNG and cryogenic valves
- ▲ 2019: Acquired accreditation as a testing institute for LNG and cryogenic heat exchangers
- ▲ 2021: Certification in progress as a testing institute for LNG and cryogenic compressor and refrigerators

- The LNG and cryogenic equipment performance test facility handles cryogenic and flammable fluids below -153°C. Due to the dangers in handling such substances, it is essential to comply with strict safety regulations and operate the test facility with stability. Accordingly, the research team is conducting performance evaluation experiments in compliance with strict safety regulations, such as the Korea Gas Safety (KGS) Codes of the High-Pressure Gas Safety Control Act and Process Safety Management (PSM) of the Occupational Safety and Health Act.
- This newly established research facility is capable of testing the performance of LNG and cryogenic equipment, such as pumps, valves, heat exchangers, compressors, and refrigerators, developed by domestic companies. Such LNG and cryogenic equipment are being used in various fields, including shipbuilding and offshore; onshore plants; energy and power transport; and military and space.

- In addition, technology in the field of LNG and cryogenic equipment and systems provides support for small and medium-sized companies in need of such assistance. Domestic companies receive technical support from professional researchers and can even receive KOLAS certification by using LNG and cryogenic research facilities.
- Since 2018 to 2020, domestic companies have received more than 40 performance tests on the LNG and cryogenic equipment, using the test facilities – on LNG and cryogenic pumps, valves, and heat exchangers – established at the Center throughout the years.
- The newly established research facility is expected to contribute greatly in localizing technology and securing industrial competitiveness for Korean small and medium-sized enterprises (SMEs) related to LNG and cryogenic temperatures, particularly for businesses that have been experiencing difficulties in securing experimental facilities, as well as a shortage of professional research personnel.
- This facility is also expected to help prevent any leakages of technology, which often occurs when products researched and developed by domestic companies seek accreditation from specialized agencies overseas. At the same time, the facility can be used to solve budget and time issues associated with receiving overseas accreditation.
- Principal Researcher Keun-Tae Lee stated that this achievement is meaningful in that it serves as a cornerstone for the development of cryogenic technology in Korea. He also added that, in the future, his team aims to cooperate with related industry-academia-research institutes in an effort to contribute to the independence of domestic cryogenic technology. Furthermore, he hopes to promote the development of national industries and the discovery of new growth engines.

[List of Attachments]

- Attachment 1: KIMM LNG · Cryogenic Technology Center (Photo)
- Attachment 2: LNG and cryogenic equipment performance test facility (Photos)

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The Korea Institute of Machinery and Materials (KIMM) is a non-profit government-funded research institute under the Ministry of Science and ICT. Since its foundation in 1976, KIMM is contributing to economic growth of the nation by performing R&D on key technologies in machinery and materials, conducting reliability test evaluation, and commercializing the developed products and technologies.

This research endeavor was conducted with support from the Ministry of Science and ICT's "Construction of LNG and Cryogenic Mechanical Technology Testing and Certification Facilities" project.

Credit : The Korea Institute of Machinery and Materials (KIMM)

Usage Restrictions of Multimedia (Attachment File) : The sources of photos and research results from KIMM must be specified.

- Attachment 1: KIMM LNG · Cryogenic Technology Center (Photo)



Description: The image shows a panoramic view of the KIMM LNG · Cryogenic Technology Center located in Gimhae, Korea. This testing center is the first of its kind in Korea to have obtained international accreditation as a testing institute for LNG and cryogenic valves.

- Attachment 2: LNG and cryogenic equipment performance test facility (Photo)

