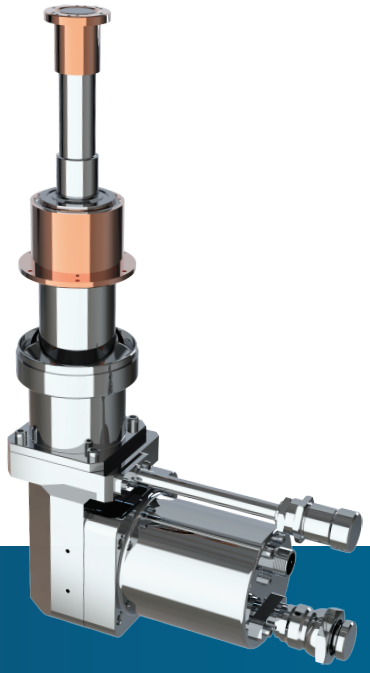
크라이오 에이치앤아이(주)

Cryo H&I

Total Solution Provider of

Cryogenic Technology



Cryo H&I create value for customers using Cryogenic technology



Cryo H&I

www.cryohi.com

크라이오 에이치앤아이(주)

Cryo H&I

Total Solution Provider of

Cryogenic Technology

It is the only G-M Cryocooler manufacturer in Korea that produces high-vacuum Cryopump using cryogenic technology, as well as hydrogen liquefaction devices, cryogenic cooling devices, cryogenic test analyzers, etc.



Cooler (4K ~)



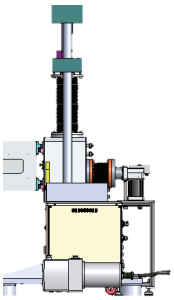
Cryopump



Cryo Stat / Probe station



LN_2 Generator



Cryogenic material tester

Cryogenic Technology



- CoolerCryocooler / cryogenic material tester
- Vacuum field Energy field
- Medical field Refrigeration/Cooling field
- Superconducting field in advanced information and communication
- Basic Physics in Environmental Space

Cryo H&I

www. cryohi.com Tel : +82-31-663-1122

1, Masan 11-ro, Jinwi-myeon, Pyeongtaek-si, 17716, Republic of Korea

Company Greeting

The Leader of Cryogenics! Our goal is firmed.



Cryo H&I is an abbreviation for Cryo Human & Industry and was newly created in 2020 to contribute to the Human industry through Cryogenic technology.

We produce Cryo High Vacuum Pump and is the first company in Korea to apply cryogenic technology using Helium to High Vacuum Pump. Cryogenic technology is currently applied to high-tech industries such as Bio, Environment, Space, Energy, Medical, Superconducting and Logistics including Semiconductor & Display industries.

In particular, Cryo Vacuum Pump technology using cryogenic technology is widely used in semiconductor & display core equipment, space environment test equipment, and medical equipment, and unfortunately, most of them rely on foreign pumps. We, Cryo H&I promise to do our best to become a global small and medium-sized company that provides total solutions for cryogenic technology representing Korea by continuously maximizing research and development and production capacity of cryogenic technology.

Thank you.



Company History

2022
LG디스플레이

2021


2020

2015
산업통상자원부

2012
LG전자

2005
SK 하이닉스

2004
SAMSUNG

2003
GVT, Inc

2001
GENESIS Vacuum Technologies

1991
EBARA

2022. 05.
LG Display Partner Registration

2021. 06.
Instrument investment at 3 Billion
2021. 11.
New plant expansion relocation

2020. 09.
Establishment of Cryo-H&I
(Acquisition of GVT Cryopump Business)

2015. 05.
Ministry of Commerce, Industry and Energy certification of new technology

2012. 06.
LG Electronics Partner Registration
2012. 03.
Development of low-vibration high-capacity cryopump for large-area OLED process equipment

2005.07.
Hynix (currently SK Hynix) partner registration

2004. 10.
Cryopump delivery for semiconductor implant equipment and registered by Samsung Electronics' partners

2003. 05.
GVT Korea was established
- Genesis Vacuum Technology (USA) was relocated

2001.11.
Genesis Vacuum Technology (USA) Established
- Acquired EBARA JAPAN Cryopump Division



크라이오 에이치앤아이(주)
Cryo H&I

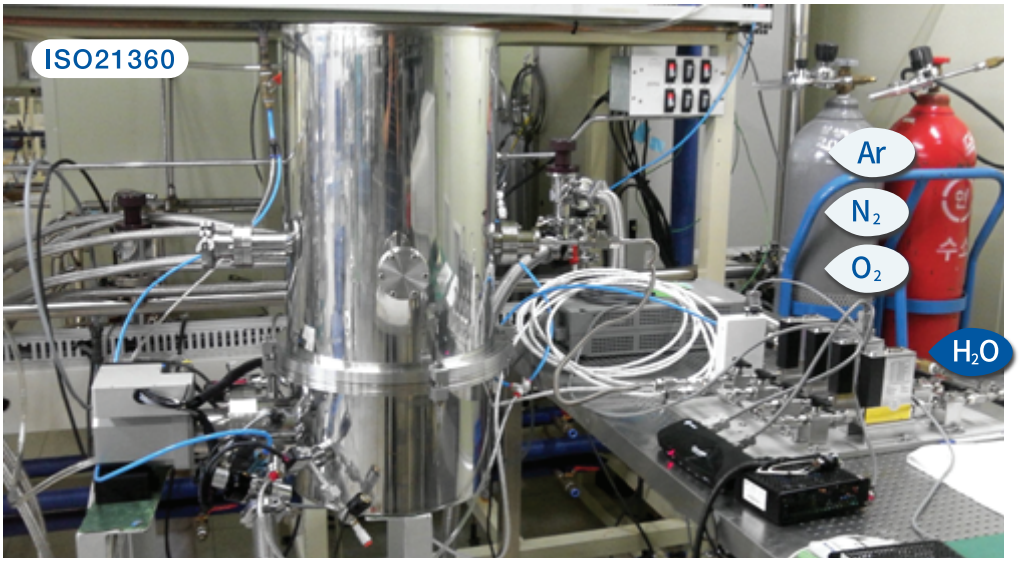
Sales Reference(Cryo pump)

Display panel manufacturer	An equipment manufacturer	A semiconductor manufacturer	A government-funded research institute	University
LG Display	AVACO	SAMSUNG	KRISS 한국표준과학연구원 Korea Research Institute of Standards and Science	VERITAS LUX MEA
SAMSUNG DISPLAY	AP Systems Advanced Process Systems Corporation	SK hynix	IBS 기초과학연구원 Institute for Basic Science	YONSEI UNIVERSITY 연세대학교
京东方 BOE	H&iruja	DB HiTek	ETRI 한국전자통신연구원 Electronics and Telecommunications Research Institute	KOREA UNIVERSITY 1905
华星光电 CSOT	Sunic system	Magnachip	KIMM 한국기계연구원 KOREA INSTITUTE OF MACHINERY & MATERIALS	서울대학교
	SNU PRECISION			홍익대학교 HONGIK UNIVERSITY
	VAS Your Artistic Solution			영남대학교 YEUNGNAM UNIVERSITY 1947
	Selcos			경북대학교 KYUNGPOOK NATIONAL UNIVERSITY
	APPLIED MATERIALS			1954

- The cumulative supply of 3,300 Cryopump units has been made, and it is also in operation on the semiconductor implant line. We will satisfy global customers beyond the localization of Korea.

크라이오 에이치앤아이(주)
Cryo H&I

Cryogenic R&D Center

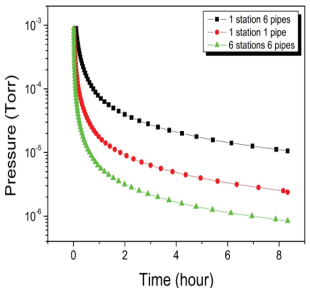


Cryopump baseline station

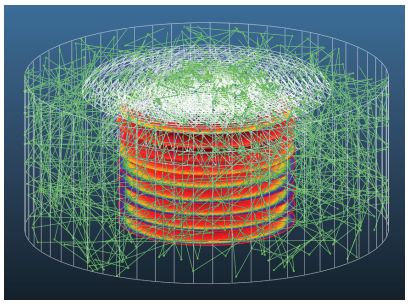


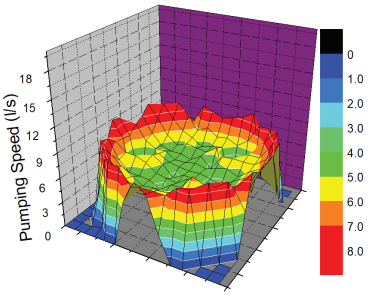


Process Development





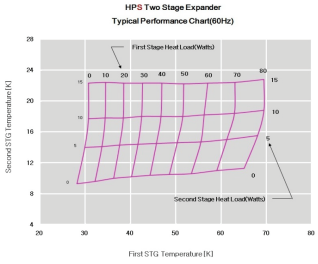




Monte-Carlo VacTran Program

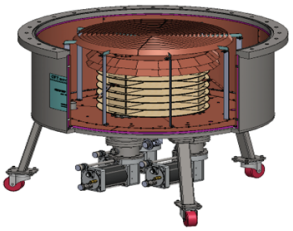
Customer orientation

Customizing customer needs, simulation, continuous R&D investment to improve performance, and developing new products to strengthen competitiveness



Build Cryogenic Test Bed

Verification of industry-academic research achievements related to cryogenic and provision of test solutions for research tasks



Academic activities

한국초전도저온학회
The Korean Society of Superconductivity and Cryogenics

한국초전도산업협회

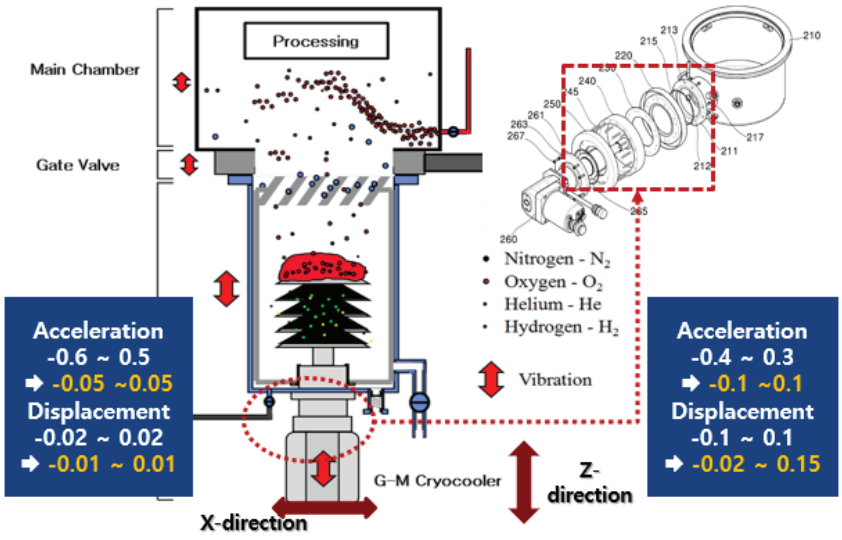
한국수소및신에너지학회

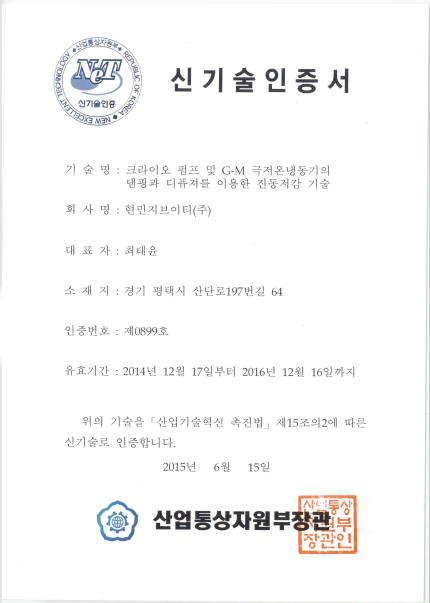
사단법인 한국진공학회
The Korean Vacuum Society

Key Patents

Holds a key patent for noise/vibration reduction ▶ certification of new technology

Patent 10-1289394 Damping flange assembly for reducing vibration and cryopump having the same





신 기 술 인 증 서

기 술 명 : 크라이오 펌프 및 G-M 극저온냉동기의 댐핑과 디퓨저를 이용한 진동저감 기술

회 사 명 : 현민지브이티(주)

대 표 자 : 최태윤

소 재 지 : 경기 평택시 산단로197번길 64

인증번호 : 제0899호

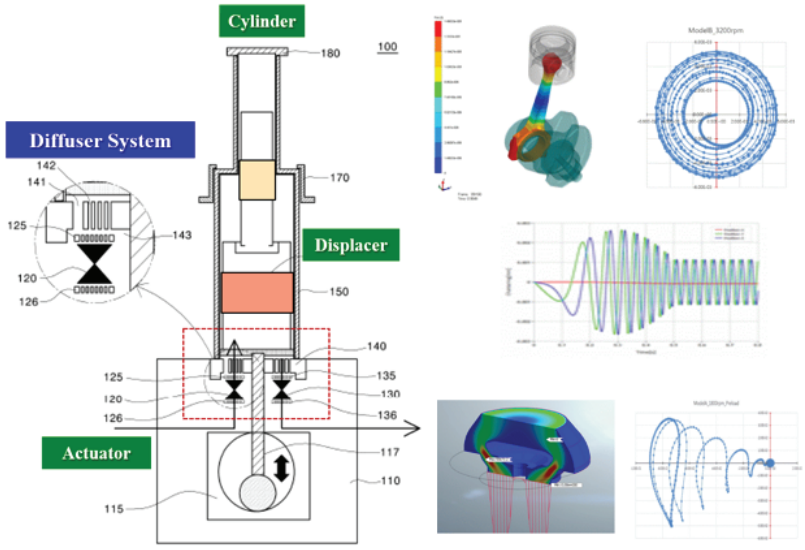
유효기간 : 2014년 12월 17일부터 2016년 12월 16일까지

위의 기술을 「산업기술혁신 촉진법」 제15조의2에 따른 신기술로 인증합니다.

2015년 6월 15일

산업통상자원부장관

Patent 10-1384575 Cryocooler for reducing noise and vibration and cryopump having the same



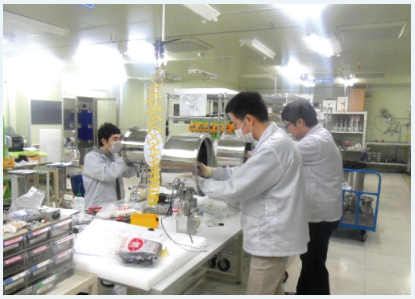
Manufacture



Cryocooler Test



Cryopump Assembling



Cryopump Test



Refrigerant Inspection



Process Inspection



Shipment Inspection

Smart Production System

Smart production systems such as Cyocooler (GM Cryocooler), Pump unit, and compressor.

Production Capacity of Cryocooler: 200 EA / month(Compressor: 120 EA)

Quality control

Achieve customer satisfaction with high-quality products through 20 years of self-produced technology and thorough quality control. Operation of quality management environmental management system by SO 9001 14001



G-CERTI *certificate*

다음과 같이 인증합니다.

크라이오에이치앤아이(주)

경기도 평택시 진위면 진위2산단로 31-17

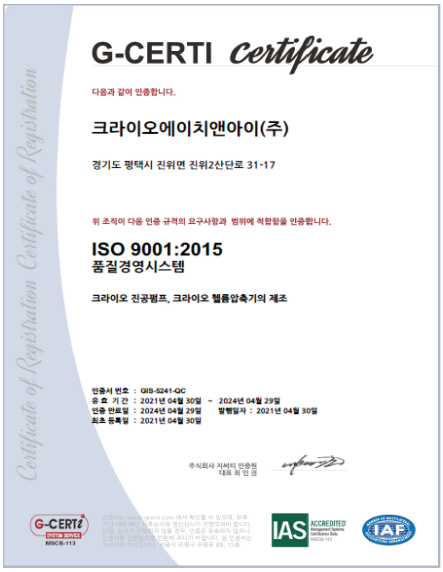
위 조직이 다음 인증 규격의 요구사항과 범위에 적합함을 인증합니다.

ISO 14001:2015
환경경영시스템

크라이오 진공펌프, 크라이오 헬륨압축기의 제조

인증서 번호 : GIS-S241-EC
유 효 기 간 : 2021년 04월 30일 ~ 2024년 04월 29일
인증 만료일 : 2024년 04월 29일 발행일자 : 2021년 04월 30일
최초 등록일 : 2021년 04월 30일

Certificate of Registration



G-CERTI *certificate*

다음과 같이 인증합니다.

크라이오에이치앤아이(주)

경기도 평택시 진위면 진위2산단로 31-17

위 조직이 다음 인증 규격의 요구사항과 범위에 적합함을 인증합니다.

ISO 9001:2015
품질경영시스템

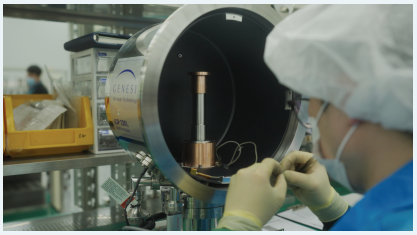
크라이오 진공펌프, 크라이오 헬륨압축기의 제조

인증서 번호 : GIS-S241-QC
유 효 기 간 : 2021년 04월 30일 ~ 2024년 04월 29일
인증 만료일 : 2024년 04월 29일 발행일자 : 2021년 04월 30일
최초 등록일 : 2021년 04월 30일

Certificate of Registration

크라이오 에이치앤아이(주)
Cryo H&I

After-sales Service Center

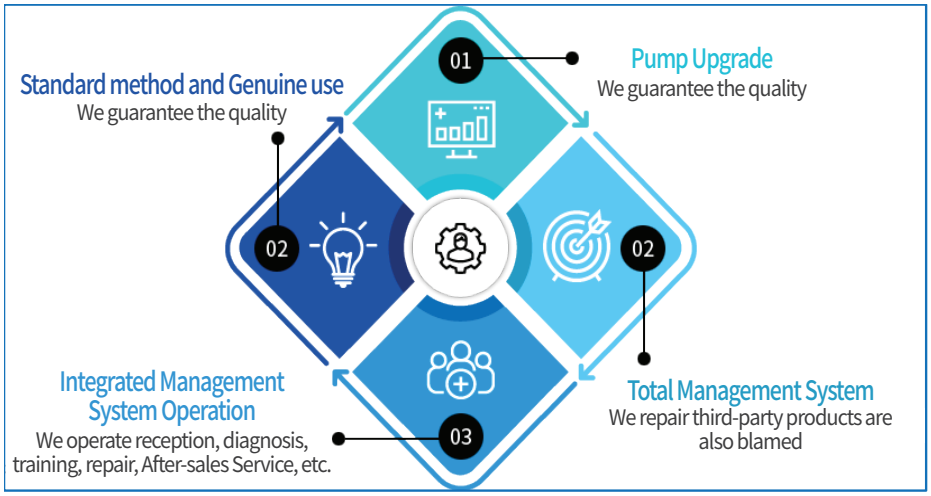




Quick response to CS

Respond quickly and accurately with a "customer problem is also our problem" attitude

Overhaul

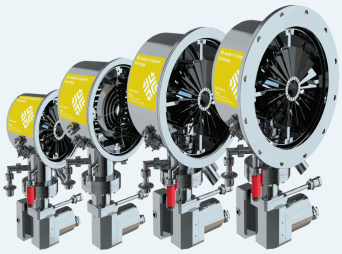




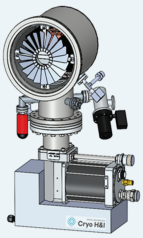

- As a manufacturer, we maintain capacity and comply with the delivery date through long-standing know-how and the establishment of a repair-line.
- Maintain the same inspection process and performance as the new product.
- Create value for customers through normal methods and reasonable amounts.
- We will respond to customer One-Stop repairs by securing third-party product parts.

GENCRYO Pump Series

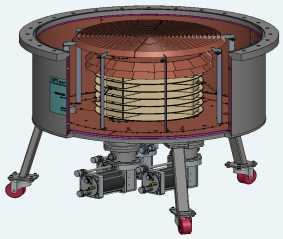
Horizontal and Vertical types are available in some forms, and can be customized to produce a caliber of 900mm




Gen Series



On-Board Type

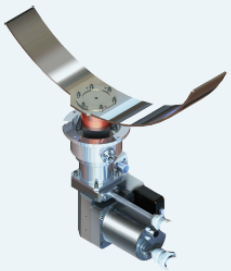
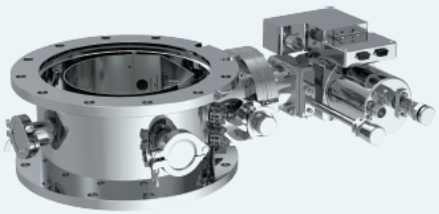


GEN90S-35인치

- Semi-conductor has a variety of Line-Up (6" to 35") for Display Industries
- SPACE / 35" supply for large facilities

GENCRYO Trap Series

Inline / Plate / Regen.Type Cold Trap and Cryogenic Water Pump (CWP) can be produced depending on the type

Various Types of Water Trap



Hybrid type of Cryopump & TMP

- Complementing the weaknesses of Water trap
- TMPs for water (H_2O) pumping
- Derive various solutions to applications using GM Cryocooler Delivering products to customer specifications

GENCRYO

Compressor Series

**Compressor technology is one of the core technologies of Cryocooler,
Its high-capacity/low-voltage helium cooling compression technology enables cooling below 10K (-263 degrees)**



GC06



GC05



GC66P



GC10

- He Compressor Line Up for High Pressure
- Excellent durability and multi-combination operation allow for various configurations.

Optional Parts

It addresses a variety of needs in performance improvements and system operations.



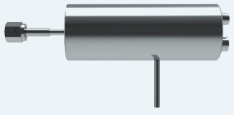
Multi-digital Temperature Monitor



Flexible Helium Hose



Multi-system Manifold



Purge Gas Heater

GENCRYO

Cooler Series

Cryogenic technology is one of the core technologies of Cryocooler, and Gifford-McMahon Cryocooler technology can be used to control temperatures to cryogenic of 8K (-265 degrees) and can be applied in cryogenic experiments as well as cryogenic pumps



GET313D GET535D GET855D GET8100D GEE80S GEE150S GEE200S

- Various line-ups are built depending on the heat capacity of the first and second stages.

4K Cooler / Probe Station / Cryostat



Technical cooperation with ARS in the U.S. Provide optimal products for customer needs

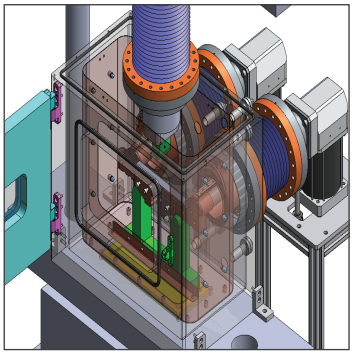
Stirling Cryocooler



Korea Institute of Machinery Technology Transfer Completed

Cryogenic Material Tester

It is a device that uses a G-M Cryocooler to test changes in the physical properties of new material new functional specimens at cryogenic below 20K (-253°C), and efficiently diagnoses material properties applied to cryogenic environments such as Hydrogen liquefaction.



전자·산업
2022년 7월 6일 수요일 전자신문 14

크라이오에이치앤아이, '극저온 금속소재 시험장비' 국산화

안규백 조선대 교수팀과 공동 개발
영하 253도서 금속소재 압축·인장 평가
고가 액화 헬륨·극저온 냉동기 수입 대체
액화수소 저장·이송용기 소재 개발 기여
우주항공·의료·양자컴퓨팅 응용 기대감



크라이오에이치앤아이가 영하 253도 극저온 환경에서 금속소재 시험이 가능한 장비를 개발했다. 극저온 시험 장비 국산화로 액화수소 저장 기술 개발에 속도를 낼 것으로 전망된다.

크라이오에이치앤아이는 반도체·디스플레이용 극저온 진공펌프를 제조하는 회사다.

크라이오에이치앤아이가 개발한 장비는 영하 253도 환경에서 금속소재 압축·인장 특성을 평가하는 기기다. 안규백 조선대 스마트이동체융합시스템공학부 교수팀과 공동 개발했다.

극저온 시험장비는 액화수소 저장·이송 용기 소재 개발에 활용될 전망이다.

청정에너지원으로 꼽히는 수소는 영하 252.7도로 냉각하면 액화수소가 된다. 액화수소는 기체 상태에 비해 부피가 800분의 1에 불과하다. 액화수소 상태로 저장·이송해야 비용을 크게 절감할 수 있다.

영하 253도 이하 환경을 견디려면 저장 용기 내구성이 높아야 한다. 대기업을 중심으로 액화수소 저장 탱크 개발에 나서고 있다. 극저온에 적합한 소재 연구를 위해 액화 헬륨 또는 극저온 냉동기를 고가로 수입해야 했다.

크라이오에이치앤아이 관계자는 "시험장치 국산화는 물론 극저온 소재 개발에도 기여할 것"이라고 설명했다.

크라이오에이치앤아이는 영하 265도 이하까지 도달할 수 있는 극저온 냉동 기술을 보유하고 있다. 컴프레서와 실린더가 헬륨가스를 반복적으로 압축·팽창시키며 초저온 냉각 환경을 구현한다.

크라이오에이치앤아이는 극저온 냉동 기술이 우주항공, 의료, 양자컴퓨팅 등 미래 핵심 산업에도 응용될 것으로 기대했다. 각각 액화연료, 콜드체인, 냉각 장비 등에 극저온 기술을 필요로 한다.

크라이오에이치앤아이는 현재 초저온 냉각 기술을 진공펌프에 결합한 극저온 진공펌프를 생산하고 있다. 기체 분자를 차갑게 해 운동 에너지를 없앤 후 펌프로 분자를 제거하여 진공 상태를 만든다. 극저온 진공펌프는 반도체와 디스플레이 증착 공정에 주로 활용된다.

크라이오에이치앤아이는 이번 시험장치 기술 확보를 바탕으로 극저온기술 응용제품 개발에 집중한다. 지난해 평택으로 공장을 이전하고 연구개발(R&D) 역량을 강화하고 있다.

양원균 크라이오에이치앤아이 연구소장은 "다양한 분야에 적용할 수 있는 냉동장치 기술을 개발해 국내 최고 극저온 냉동기 회사로 거듭날 것"이라고 말했다.

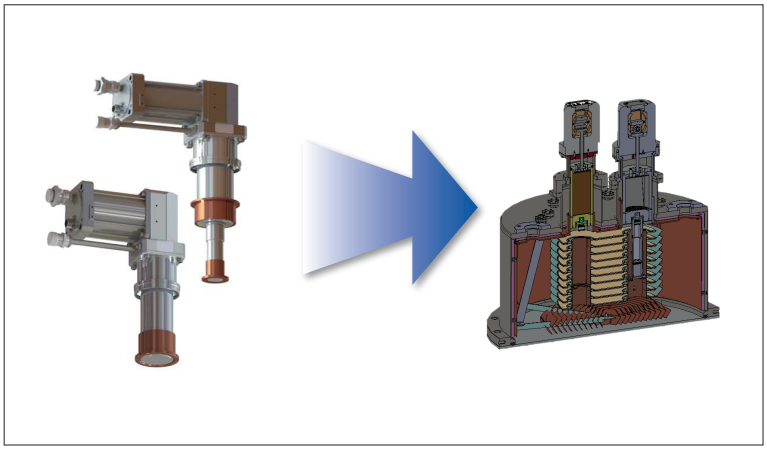
송윤섭기자 sys@etnews.com

GenCryo LN_2 Generator with Circulator



The LN_2 Generator allows you to easily and reliably produce and receive LN_2 directly without purchasing it. LN_2 Generator is used in various fields that require cryopreservation and Cryogenic technologies such as medical, livestock, pharmaceutical, research, food industry, and semiconductor processes.

Cryocooler/Liquid Hydrogen Storage System for Liquefied Hydrogen



Liquefied Hydrogen Storage System

Efficient structural design for liquefied storage and transport of storage tank and Cryocooler with minimal temperature loss

Cryocooler for Liquefied Hydrogen

- Development of a high-capacity Cryocooler for Hydrogen liquefaction
  Two-stage Cryocooler for Hydrogen liquefaction

Application

The field of vacuum Cryo Pump



- Vacuum Coating
- Space Chamber
- Sputtering
- Encapsulation
- Ion implantation
- Particle Accelerator
- Nuclear Fusion
- Surface Analysis



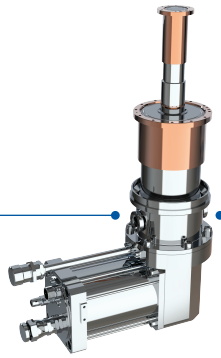




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- **Superconductivity** – Magnetic Refrigerator, Accelerator
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