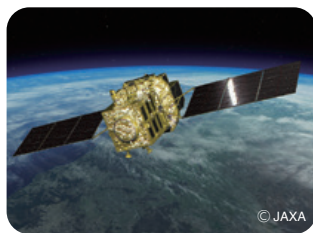


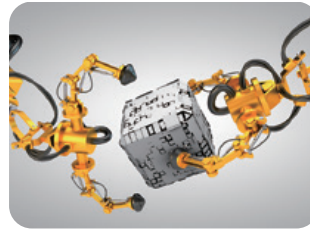
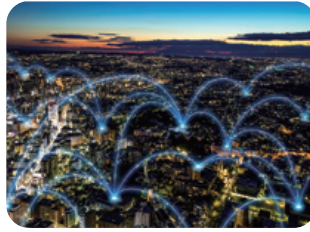
ULVAC

CORPORATE INFORMATION

ULVAC CRYOGENICS INCORPORATED



Smart Society
.....
Fundamental Technologies
.....
IoT, AI, Robot
.....
Big Data



with Our Cryogenic Technology

Have you been aware of where cryogenic technology works?

Our cryogenic products play important roles in many different fields ranging from eyeglasses, LED, TV, smartphones advanced medical treatment, cell preservation to space development.

We continue our effort so that our technology make even more positive contributions in the new era of 5G to achieve better lives.

Transportation, Logistics
.....
Next Generation Energy



Contributing to the advancement of industry and science through the fusion of vacuum and cryogenic technologies



President and Chief Executive Officer **Junya Kiyota**

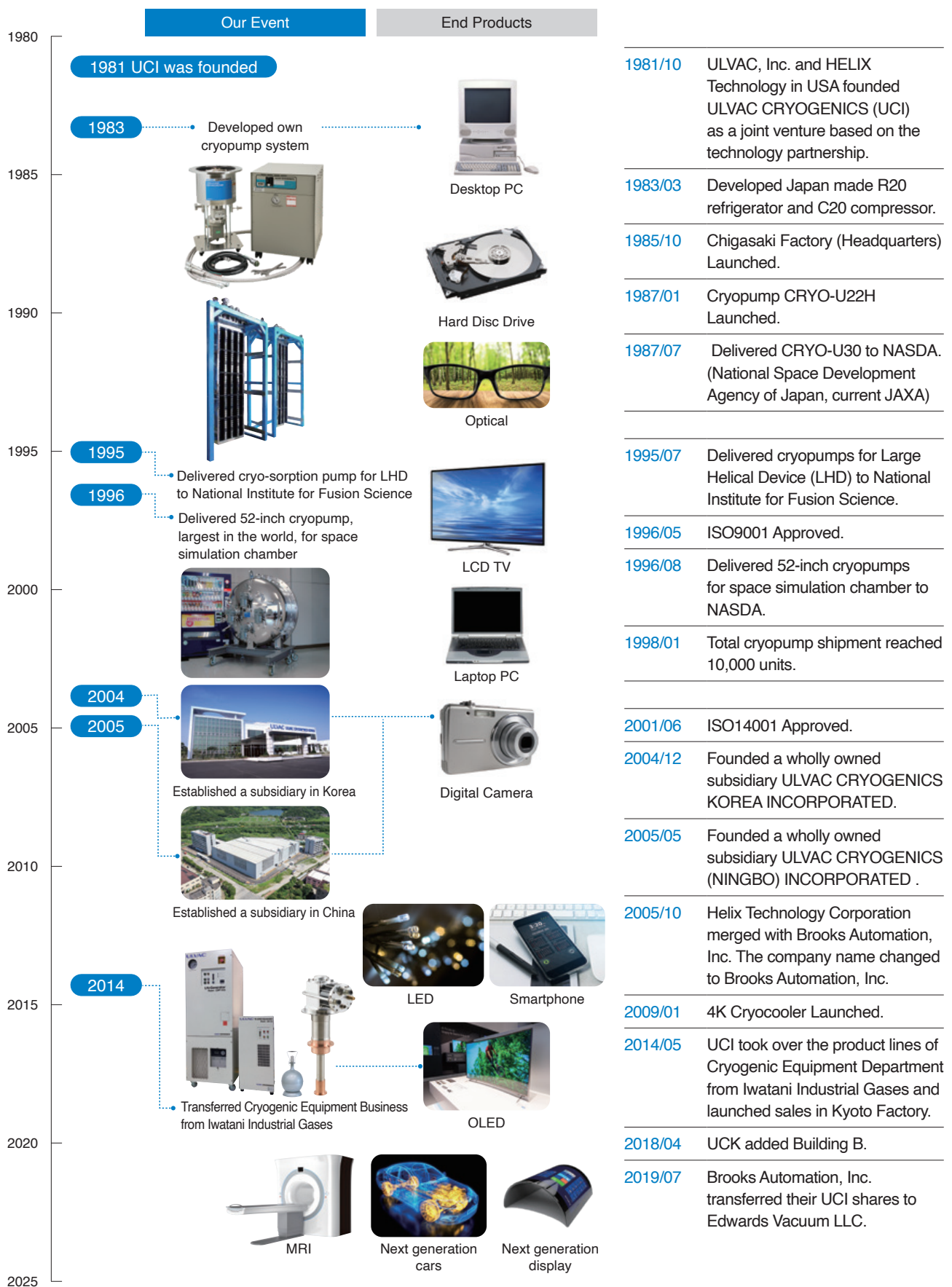
ULVAC is the world's only comprehensive vacuum technology manufacturer. Since its founding in 1952, we have consistently valued the venture spirit of "contributing to the advancement of industry and science through vacuum technology."

Our company was established in 1981 as a member of the ULVAC Group, through a joint investment between Nippon Vacuum Technology Co., Ltd. (now ULVAC, Inc.) and Helix Technology Corporation of the United States (now Edwards Vacuum LLC), for the purpose of integrating vacuum technology and cryogenic technology.

Since then, we have conducted business in the combined fields of vacuum and cryogenic technology. In particular, our cryopumps for vacuum thin-film deposition equipment have been adopted by many customers, and we have expanded our operations at global manufacturing sites, including in Japan, South Korea, and China.

Currently, in addition to technological development aimed at creating synergies with the semiconductor and electronics businesses that the ULVAC Group is focusing on, we are also working on the development of cryocoolers for ultra-low temperature applications as a new challenge in the field that spans both vacuum and cryogenic technologies.

We will continue to value the venture spirit we have inherited from ULVAC and remain committed to faithfully responding to the growing needs of the global market.



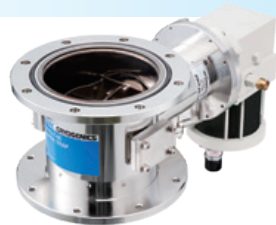
- 1981/10 ULVAC, Inc. and HELIX Technology in USA founded ULVAC CRYOGENICS (UCI) as a joint venture based on the technology partnership.
- 1983/03 Developed Japan made R20 refrigerator and C20 compressor.
- 1985/10 Chigasaki Factory (Headquarters) Launched.
- 1987/01 Cryopump CRYO-U22H Launched.
- 1987/07 Delivered CRYO-U30 to NASDA. (National Space Development Agency of Japan, current JAXA)
- 1995/07 Delivered cryopumps for Large Helical Device (LHD) to National Institute for Fusion Science.
- 1996/05 ISO9001 Approved.
- 1996/08 Delivered 52-inch cryopumps for space simulation chamber to NASDA.
- 1998/01 Total cryopump shipment reached 10,000 units.
- 2001/06 ISO14001 Approved.
- 2004/12 Founded a wholly owned subsidiary ULVAC CRYOGENICS KOREA INCORPORATED.
- 2005/05 Founded a wholly owned subsidiary ULVAC CRYOGENICS (NINGBO) INCORPORATED .
- 2005/10 Helix Technology Corporation merged with Brooks Automation, Inc. The company name changed to Brooks Automation, Inc.
- 2009/01 4K Cryocooler Launched.
- 2014/05 UCI took over the product lines of Cryogenic Equipment Department from Iwatani Industrial Gases and launched sales in Kyoto Factory.
- 2018/04 UCK added Building B.
- 2019/07 Brooks Automation, Inc. transferred their UCI shares to Edwards Vacuum LLC.

Cryopumps

We provide cryopumps that respond to the requirements ranging from producing familiar products such as desktop PCs, eyeglasses, TV sets, cameras or automobiles to cutting-edge research facilities.

- 1) Cryopumps for vacuum deposition equipment or sputtering to manufacture eyeglasses, TV sets or smartphones.
- 2) Cryopumps for ion-plating or DLC coating which are used for car components or processing tools.
- 3) Cryopumps for JAXA that support space development with technology or leading-edge research facilities that are working for next generation energy.

Super Trap (cryogenic water-pump)



Single-stage GM Refrigerator



100K
(-173°C)

Cryopump



Two-stage GM Cryocooler



10K
(-263°C)



Production site

0K (kelvins) means Absolute zero, at which all molecular motions stop.

0K = -273.15°C (Absolute zero)

0.01K = -273.14°C

4K = -269.15°C

77K = -196°C

Cryogenic Equipment

We have been selling cryogenic equipment products for analytical instruments or R&D so far, and now we are entering into many new fields including;

- 1) LN₂ generator for fertilizing treatment or cell preservations.
- 2) 4K GM cryocooler for producing silicone, semiconductor material, or for MRI, advanced medical device.
- 3) Quantum computers are now drawing attention as the next generation computers. We are also working to develop dilution refrigerators for quantum computers.

77K
(-196°C)

Single-stage Solvay Cryocooler



LN₂ Generator



NMR (OEM)*



4K
(-269°C)

Two-stage 4K GM Cryocooler



MRI (OEM)*



Cryostat (OEM)



<0.01K
(-273.14°C)

Pulse-tube Refrigerator + Dilution Technology

Dilution Refrigerator



*NMR : Nuclear Magnetic Resonance

*MRI : Magnetic Resonance Imaging

Our cryopumps are employed in a broad range of applications for both industries and academic research of cutting-edge OLED displays, lighting, semiconductors, power devices, sensors or optical films.



Sputtering Equipment
for Semiconductor Production



Display



OLED Manufacturing Equipment



LED Element



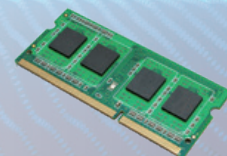
Crypumps



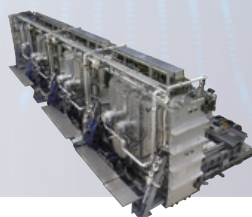
Batch Type High Vacuum Deposition
Equipment



Semiconductor



Memory IC



LCD Manufacturing Equipment



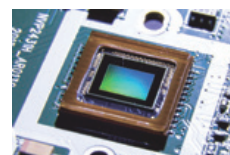
Power Device



Crypumps installed on
Manufacturing Equipment



Thin Film



CMOS Image Sensor

Vacuum Equipment

Displays and
Semiconductors



Smart Speaker



End Product

**Trillions of Chips will
Change our Lives
in the Future.**

Smart Society

IoT
Internet of Things

5G
5G Mobile Communication
System

AI
Artificial Intelligence

Self Driving System

Data Center

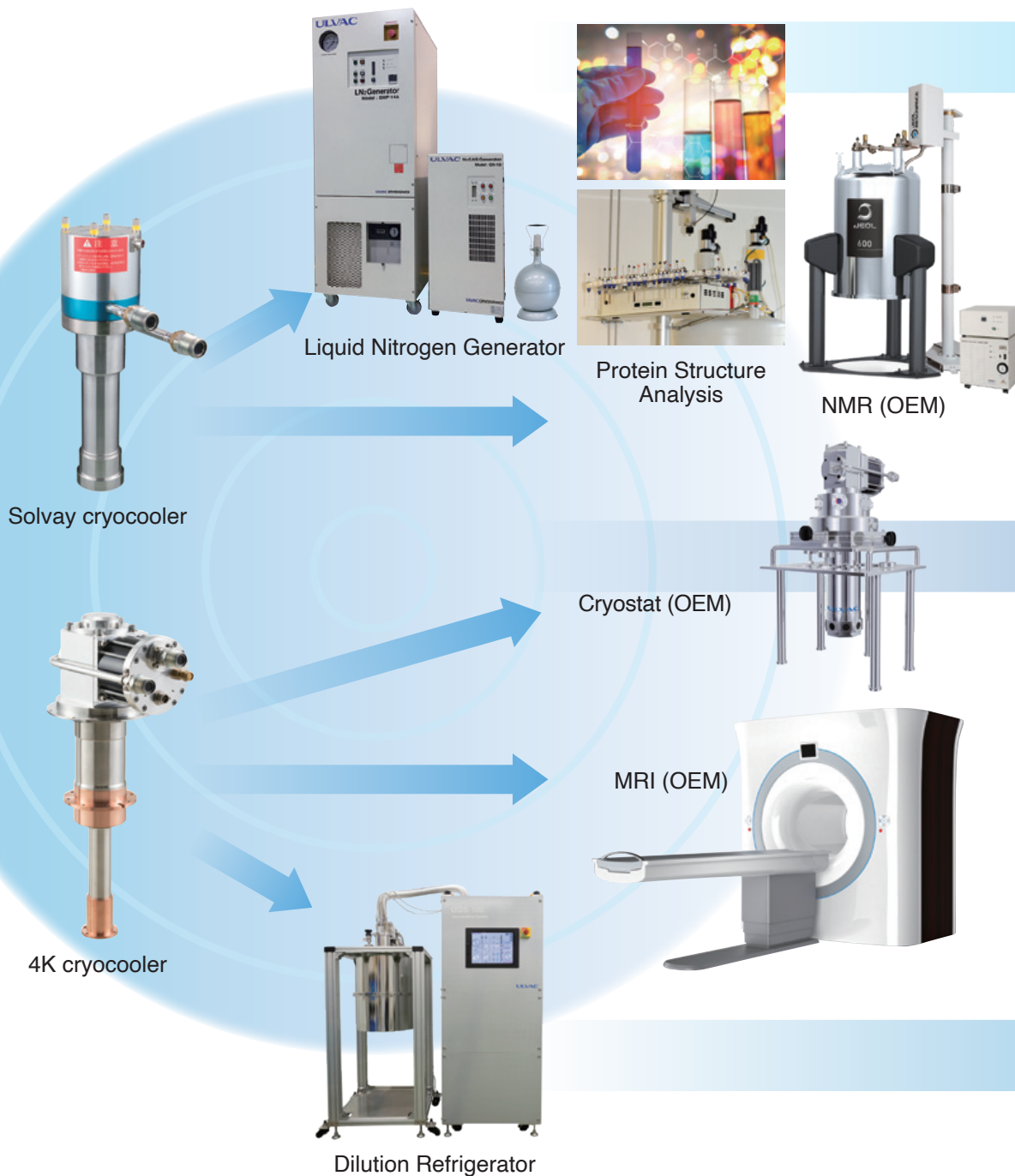
Mobile Communication System



Society and Lives from Now

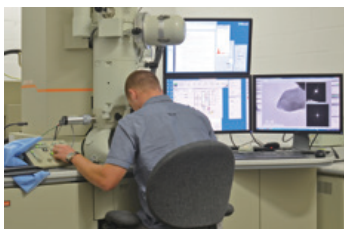
Our vacuum technology of cryopumps plays an important role for faster communication, higher energy efficiency, automation in transportation and logistics or more efficient farming by supporting device production.

In such a special condition as ultra-low temperature, many substances show splendid properties that they never show at room temperature. Cryogenic technology is the key for the development in leading-edge technology fields including superconducting, new technology, or new medicine.



Applications

77K (-196°C)



Improve Sensitivity of
Analysis Equipment



Reproductive Medicine/
Cell Preservation

Measurement of physical properties at ultra-low temperature

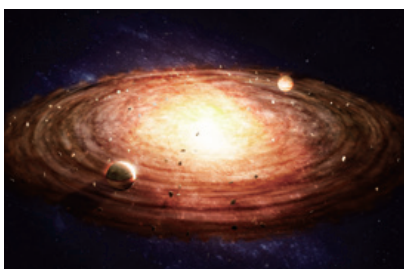
~ 4K (-269°C)



Basic Research
• Electrical Property Measurement
• Optical Quartz

Space Observation, Research

<0.10K (-273.05°C)



Basic Research

Next Generation Computer

<0.01K (-273.14°C)



Quantum Computer



Donation to Chengdu Research Base of Giant Panda Breeding in China

– Contribution to Protect Rare or Endangered Animals –

We donated our Liquid Nitrogen Generator that produces liquid nitrogen from the air to Chengdu Research Base of Giant Panda Breeding in China. Besides the use for preserving sperms, eggs or stem cells of pandas, it works for preserving and breeding of other endangered animals.

Liquid nitrogen is indispensable for preserving cells for which higher demand is expected from now. We are pleased that we can make positive contributions to preserve endangered animals in the world with our vacuum and cryogenic technologies.



Donation

Liquid Nitrogen Generator



Rice Paddy Project



Cleaning Local Beach

CSR Activities

Our People



ULVAC CRYOGENICS KOREA / ULVAC CRYOGENICS (NINGBO)



ULVAC CRYOGENICS KOREA (UCK)

Founded on December 2004

UCK Dominates Display Market in Korea with 99% Share

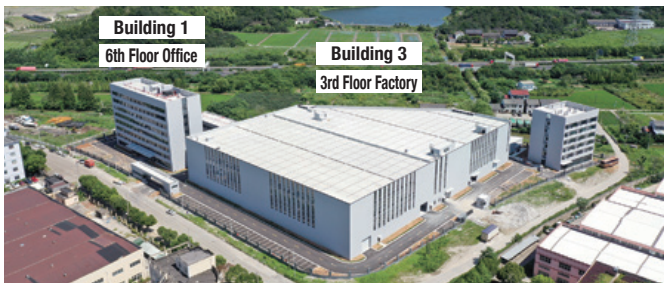


2 hours drive from Incheon Airport
or Gimpo Airport

● UCK's operation includes processing parts, manufacturing, sales and servicing of vacuum and cryogenic equipment with strict quality management. Based on technical and manufacturing experience and know-how of Ulvac Cryogenics, UCK delivers highly reliable products to customers. UCK has 99% share in the display market in Korea, and is now expanding into semiconductor or new fields of cryogenic equipment. UCK is working hard to further improve customer satisfaction by strengthening competitiveness and customer services through its new smart factory and by launching RMC (Re-Manufacturing Center).

● Business Area

Manufacturing, assembling, sales and services, import and export of cryopumps and cryogenic equipment.



ULVAC CRYOGENICS (NINGBO) (UCN)

Founded on October 2005

UCN Launched for manufacturing and sales of cryopumps in China



3.5 hours drive from Shanghai Hongqiao International Airport
2.5 hours drive from Hangzhou Xiaoshan International Airport

● UCN serves as an important production base of cryopumps in China that offers production, repair and maintenance service. Along with the expansion of cryopump sales and overhaul, UCN works closely with ULVAC Group's maintenance providers to deliver prompt and precise support services in all over China. UCN also works hard to expand sales in growing semiconductor industry and cryogenic equipment market which is indispensable for basic research.

● Business Area

Manufacturing, assembling, sales, servicing, import and export of cryopumps and cryogenic equipment.

Global Network to Deliver Reliable Customer Services

Ulvac Cryogenics has production and development base in Japan, Korea and China and responds to the customers' requirements in precise and prompt manner in rapidly growing Asian market.

We also work very closely with ULVAC Group companies in the world to provide reliable services with proven technology to the customers around the world.



Kyoto Office



JAPAN

● : Sales and Services Base

EUROPE

■ Germany
ULVAC GmbH

● Germany



ULVAC CRYOGENICS INCORPORATED

■ Headquarters
1222-1 Yabata, Chigasaki, Kanagawa 253-0085, JAPAN
Phone: +81-467-85-0303 (Main)
+81-467-85-8884 (Sales)
+81-467-85-9366 (Service Engineering)

■ Kyoto Office
Akebono Bldg 97, Nakajimahoribatacho, Fushimi-ku, Kyoto, 612-8452
Phone: +81-75-605-5590

Largest production capacity in UCI Group



ULVAC CRYOGENICS KOREA INCORPORATED



NORTH AMERICA

■ USA
ULVAC Technologies, Inc.



South Korea

China



ULVAC TAIWAN INC.
ULTRA CLEAN PRECISION TECHNOLOGIES CORP.

Taiwan

ASIA

SOUTH AMERICA

ASIA

Key hub of production and customer services in China



ULVAC CRYOGENICS (NINGBO) INCORPORATED

- China
 - ULVAC CRYOGENICS (NINGBO) Inc.
 - ULVAC (Shanghai) Trading Co., Ltd.
 - ULVAC (Suzhou) CO., LTD.
 - Hong Kong ULVAC Co., Ltd.
- South Korea
 - ULVAC CRYOGENICS KOREA INCORPORATED
 - ULVAC KOREA, Ltd.
- Taiwan
 - ULVAC TAIWAN INC.
 - ULTRA CLEAN PRECISION TECHNOLOGIES CORP.
- Singapore
 - ULVAC SINGAPORE PTE LTD
- Philippines
 - ULVAC SINGAPORE PTE LTD, Philippines Branch
- Vietnam
 - ULVAC SINGAPORE PTE LTD, Vietnam Representative Office
- Indonesia
 - ULVAC SINGAPORE PTE LTD, Indonesia Representative Office
- Malaysia
 - ULVAC MALAYSIA SDN. BHD.
- Thailand
 - ULVAC (THAILAND) LTD.
- India
 - ULVAC SINGAPORE PTE LTD, India Branch

ULVAC CRYOGENICS INCORPORATED

www.ulvac-cryo.com



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Service Engineering Department
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ULVAC CRYOGENICS KOREA INCORPORATED

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