

ULVAC

CORPORATE INFORMATION

ULVAC CRYOGENICS INCORPORATED



Revolution
in Our Lives



Smarter and Better World



Space, Satellite,
Communication
.....
Cell preservation, Food
.....
Medicine, Health care

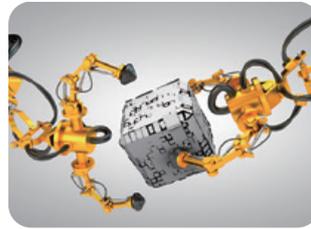


Smart Society

 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



Partnering with our customers for innovation and growth



President, ULVAC CRYOGENICS INCORPORATED

Shin Ju-hoon

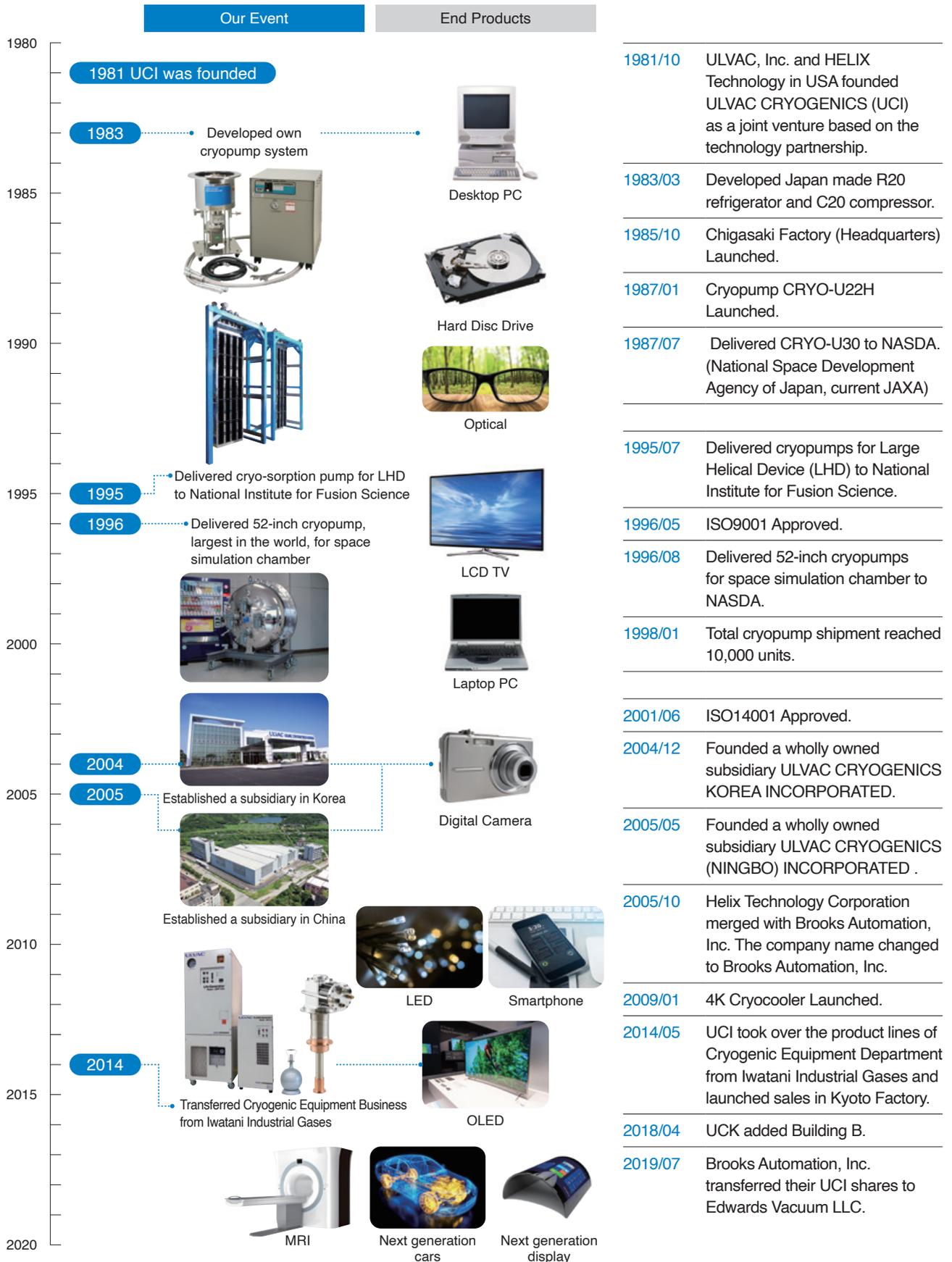
Based on our Credo, “Technology, Creativity, Passion and Trust”, we have been devoted to providing cryopumps with our cryogenic and control technologies to support industries including display, semiconductor electronics or optical instruments.

Ulvac Cryogenics was founded in 1981 for cryopump business with the vacuum technology from Japan Vacuum Engineering Co., Ltd. (currently ULVAC, Inc.) and refrigeration technology from CTI Cryogenics Department of Helix Technology in U.S. (currently Edwards Vacuum LLC). Now we have our production base in Japan, Korea and China and have been delivering our products to many different types of production facilities or research institutions, keeping the number one share in the global market for many years.

In addition, cryogenic technology is expected to be one of the core technologies indispensable for medical industry, quantum computing or space industry in the future, bringing us new business opportunities in more fields.

Through our sustained effort for innovation, we are committed to provide optimal products in a timely manner to improve customer satisfaction, aiming to be the business partner with contributions to the customers’ business and achieve growth of both our customers and ourselves.

HISTORY



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

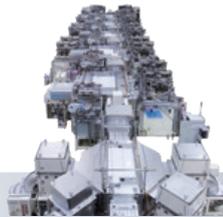
Our cryopumps are employed in a broad range of applications for both industries and academic research of cutting-edge OLED displays, lighting, semiconductors, power devices, sensors or optical films.



Sputtering Equipment for Semiconductor Production



Display



OLED Manufacturing Equipment



LED Element



Crypumps



Batch Type High Vacuum Deposition Equipment



Semiconductor



LCD Manufacturing Equipment



Memory IC



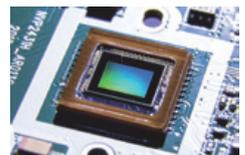
Power Device



Crypumps installed on Manufacturing Equipment



Thin Film



CMOS Image Sensor

Vacuum Equipment

Displays and Semiconductors



Trillions of Chips will Change our Lives in the Future.



Smart Speaker



End Product

Smart Society

IoT
Internet of Things

5G
5G Mobile Communication System

AI
Artificial Intelligence

Self Driving System

Data Center

Mobile Communication System

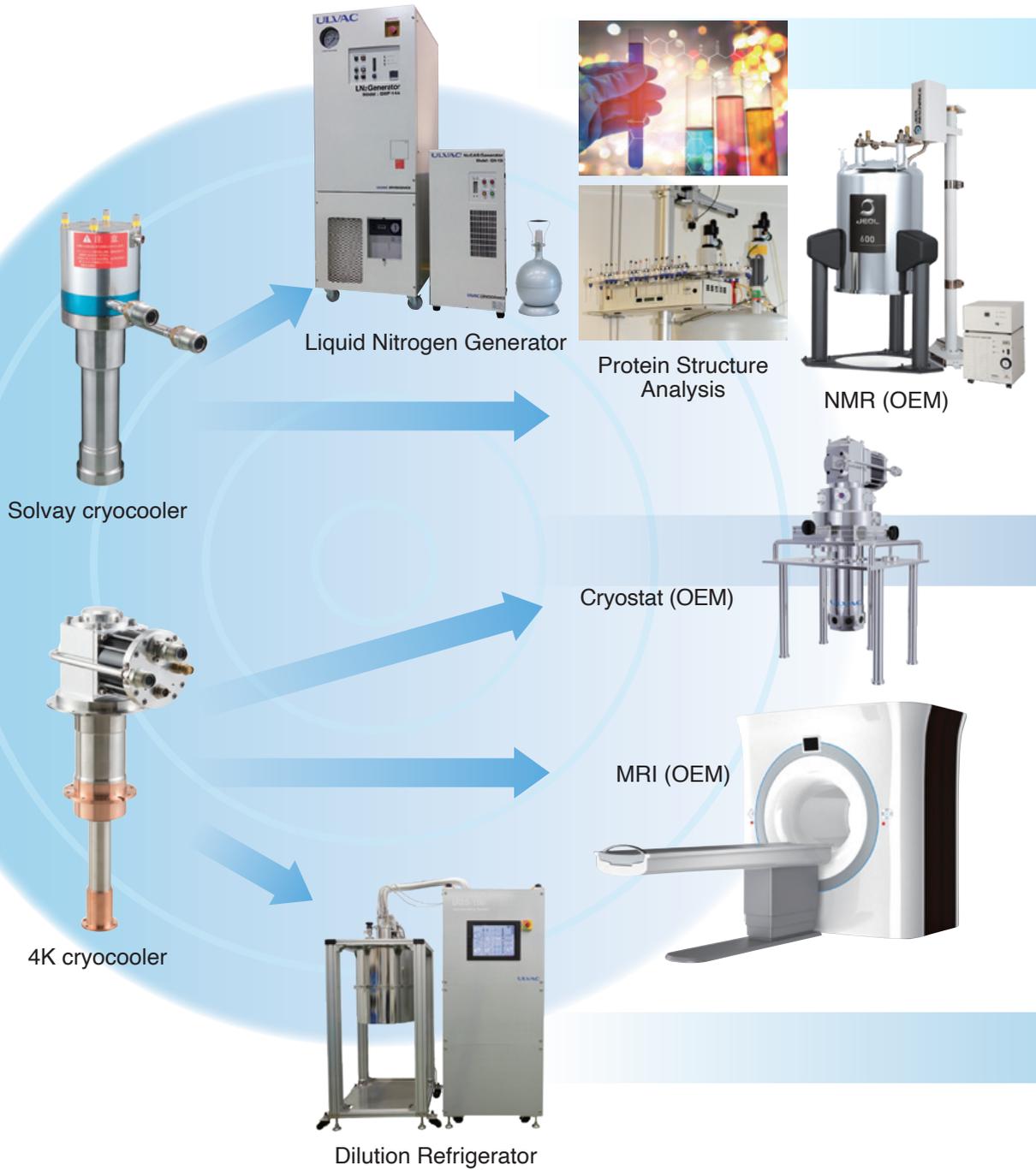


Society and Lives from Now

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.

Cryogenic Equipment and Our Lives

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

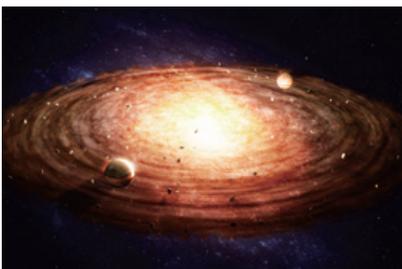
~ 4K (-269°C)



Basic Research
• Electrical Property Measurement
• Optical Quartz

Space Observation, Research

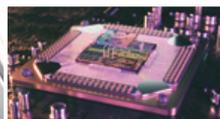
<0.10K (-273.05°C)



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



● : Service Locations

● : Sales and Services Base

EUROPE

■ Germany
ULVAC GmbH



ULVAC CRYOGENICS INCORPORATED

■ Headquarters
1222-1 Yabata, Chigasaki, Kanagawa 253-0085, JAPAN
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+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



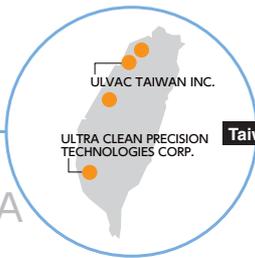
NORTH AMERICA

■ USA
ULVAC Technologies, Inc.



South Korea

China



Taiwan

ASIA

SOUTH AMERICA

Key hub of production and customer services in China



ULVAC CRYOGENICS (NINGBO) INCORPORATED

ASIA

- 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

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