



MAGNET TOTAL SOLUTION

KR TECH COMPANY PROFILE

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01. About us

01

Our Company

02

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Design Ability

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Measurement Performance

About us

KR TECH is a leading manufacturer of precision electromagnets, charged particle beam line systems, medical therapy systems, solar industry and particle accelerator magnets for physics research.

President name	Kim, In Sik		
Capital	USD 8million	Foundation date	1995. 12. 1
Sales Amount	USD 5 million dollar	Export portion	40%
factory	2,861m ²	Employee no	25



VISION



Producing Ability

engineers and manufacturers of world leading precision electromagnets, charged particle beamlines, performance and delivery.



Client Satisfaction

innovation and collaboration with our customers, suppliers and partners, we strive to move forward and to lead the global markets in the semiconductor, energy, research and medical industries.



Technical Manpower

we are proud of being one of the world's leading companies within the development and manufacturing of high quality equipment for particle accelerator laboratories, healthcare and industry, and we employome of the most skilled, experienced and dedicate engineers and technicians.

01. About Us

History

2. Established the KR Tech

1. Chosen as a Venture Company

2. Chosen as a Promising Company



1995



2000



2002



2004

4. Atomic Energy
R&D project KCCH

4. Taken out ISO 9001

12. Chosen as a INNO-BIZ
company



History

9. Exported USD 1.5million to Toshiba, Japan as a Chubu Synchrotron.

11. Relocating a new head office building and Factory to Innopolis Daegu of Medical Innovation Foundation in Daegu



2011



2013



2014



2016

10. Exported Cyclotron magnet to Batan Institute ,Indonesia

12. 12 Exported Synchrotron magnet to Toshiba(46sets), Japan as a Ganagawa Cancer Center

2. Exported Superconducting magnet, USD 0.5million to KEK , Japan

11. Exported Medical Quadrupole, Steering magnet (56sets) to Kobe Children Hospital



01. About Us

History

2. Exported Medical Quadrupole,
Dipole magnet to Taiwan

11. Exported X-ray system magnet
to Lumitron, USA



2017



2018



2019



2020

3. Exported Medical Quadrupole
Steering magnet(107sets) to
Yamagata. Univ. Hospital

12. Delivered Quadrupole magnet
(55 sets) to Rare Isotope Science
Project in Daejeon

Delivered 125 sets of 2/4/6-pole
electromagnet to Heavy Ion
Treatment Center of Yonsei
University Hospital
(Severance Hospital)

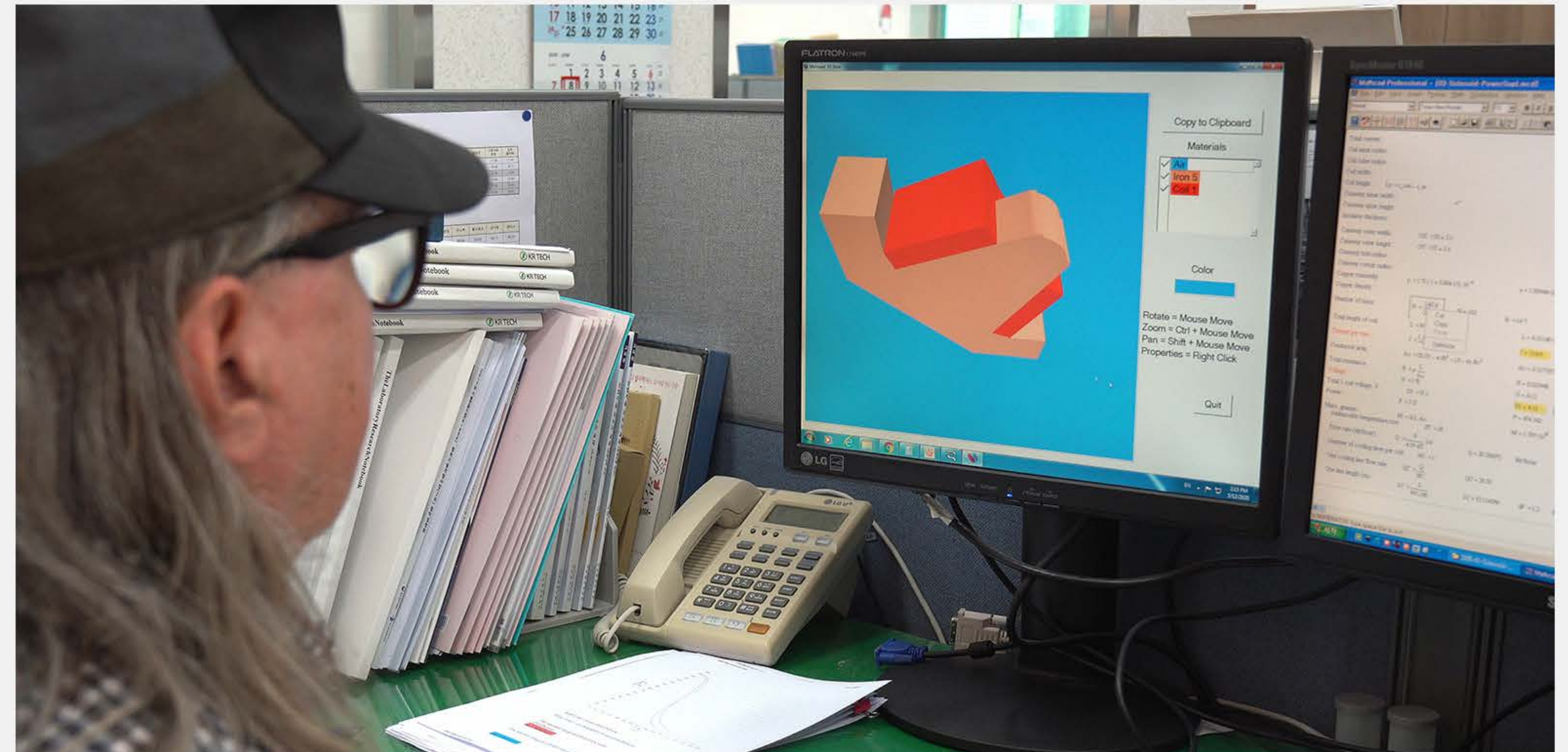


Design Ability

Concept Design

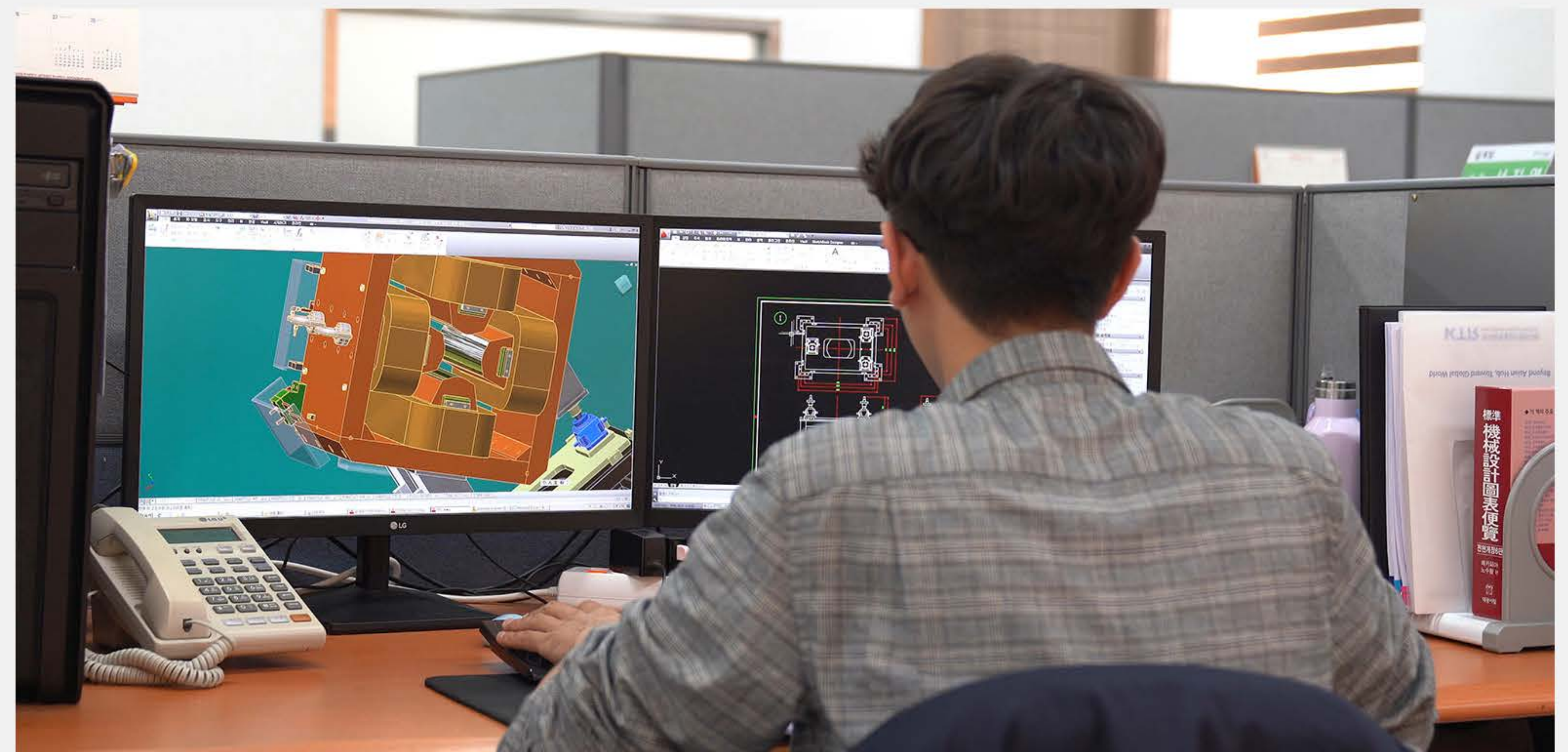
At KR TECH, our Experienced researchers with masters degrees and doctoral degrees interpret the requirements of our customers thoroughly. They have the skills and knowledge necessary to design optimized models to satisfy these requirements.

By using the two codes of ANSYS Multiphysics Maxwell and Mermaid which is produced by Budker Institute of Nuclear Physics, Russia), we build the prototypes that satisfy the requirements of our customers based on the interpretations of the 2D and 3D magnetic fields.



Fabrication Design

After we complete the optimal magnetic field interpretations, we use our inventor programs to design the model with a high level of precision.

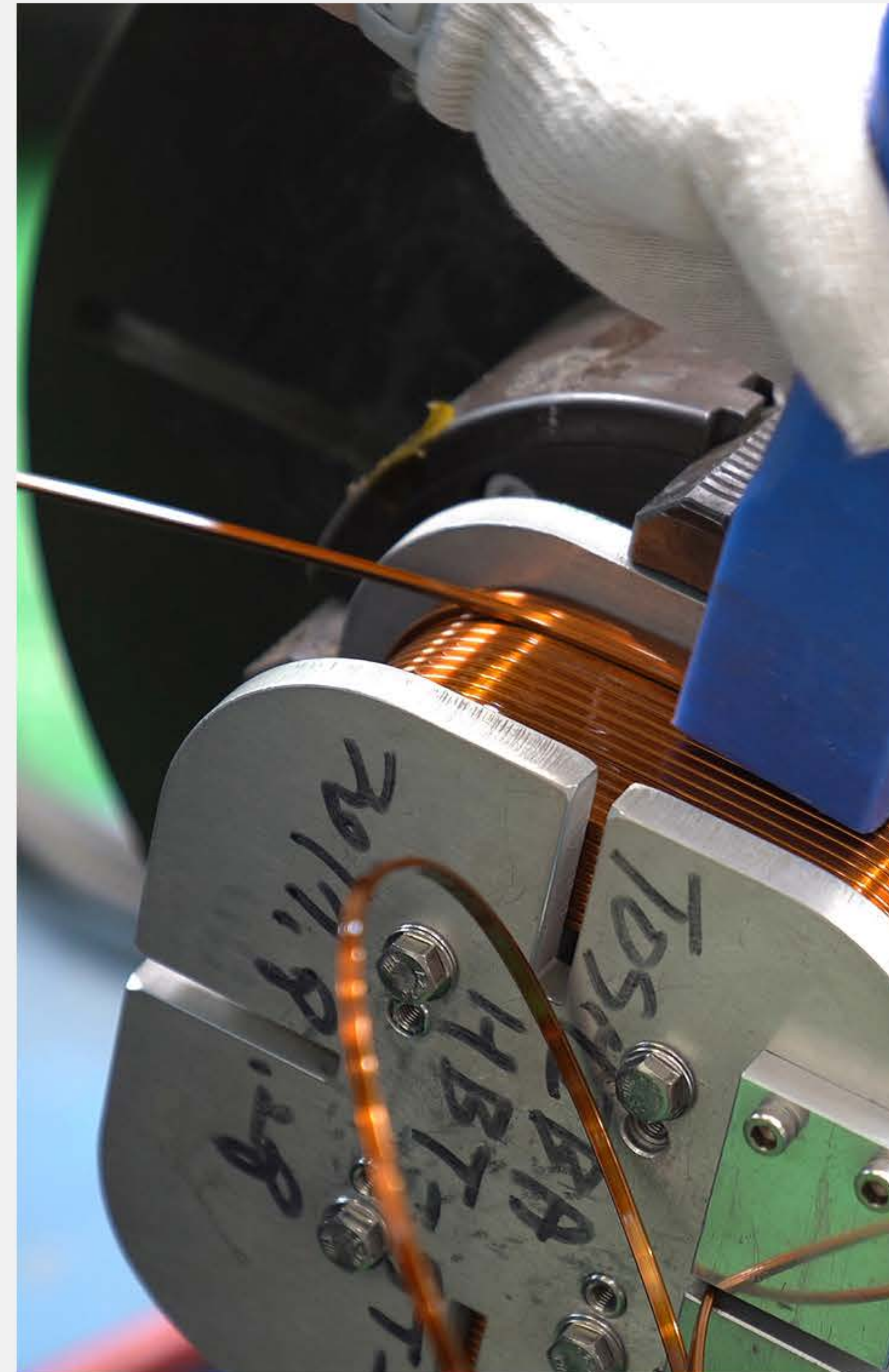


Manufacturing Skill



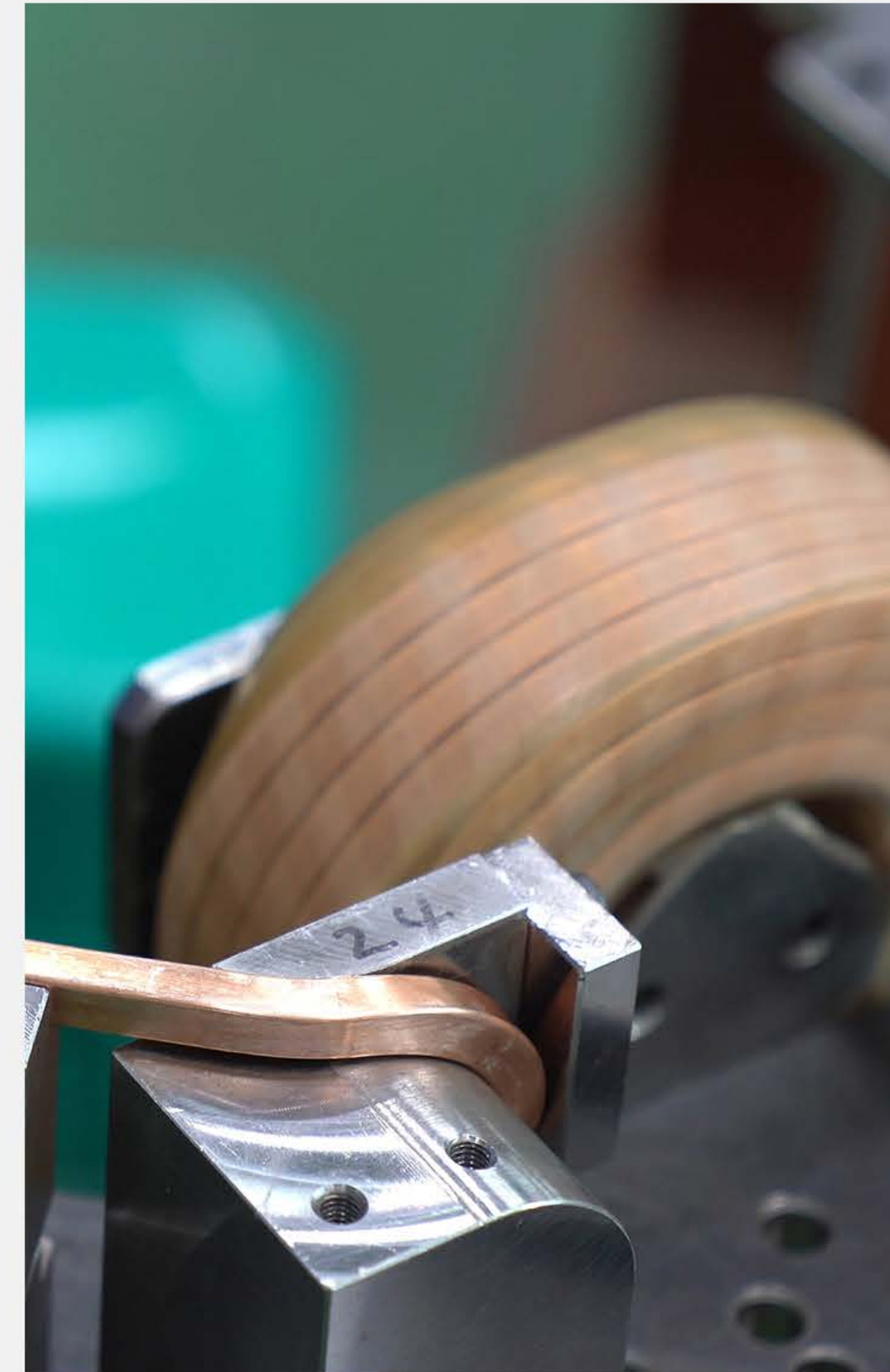
One

Once the design is completed, now it is our skills technicians' turn to build these products.



Two

KR TECH has a variety of winding machine to respond to all kinds of different coils. Our work is done in a neatly organized environment with utmost care.



Three

Moreover, we have all the necessary equipment to build electromagnets.



Four

Our production process is based on precision and care so that we can meet the strict tolerance requirements as we assemble our electromagnets.

01. About Us

Measurement Performance

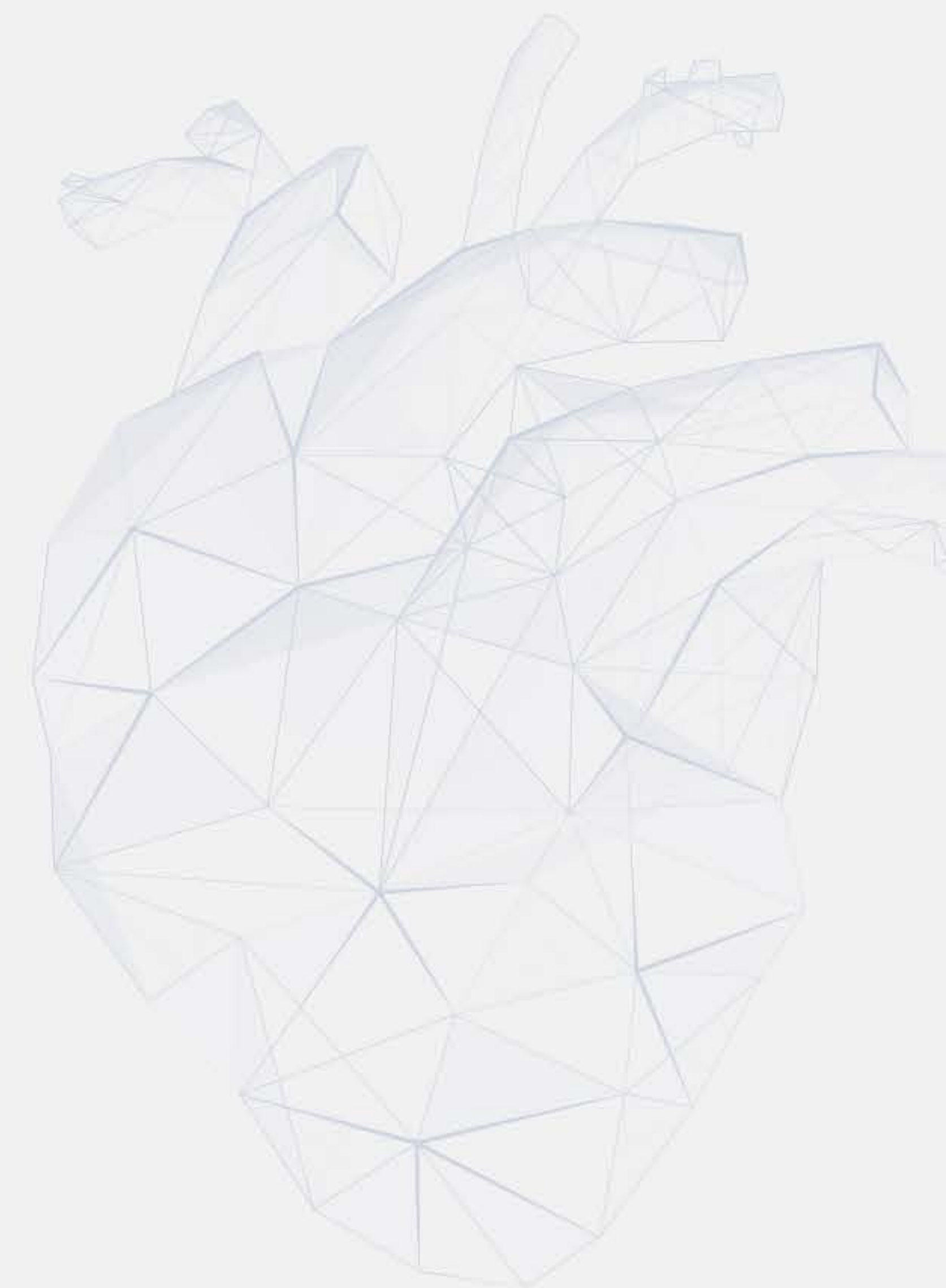
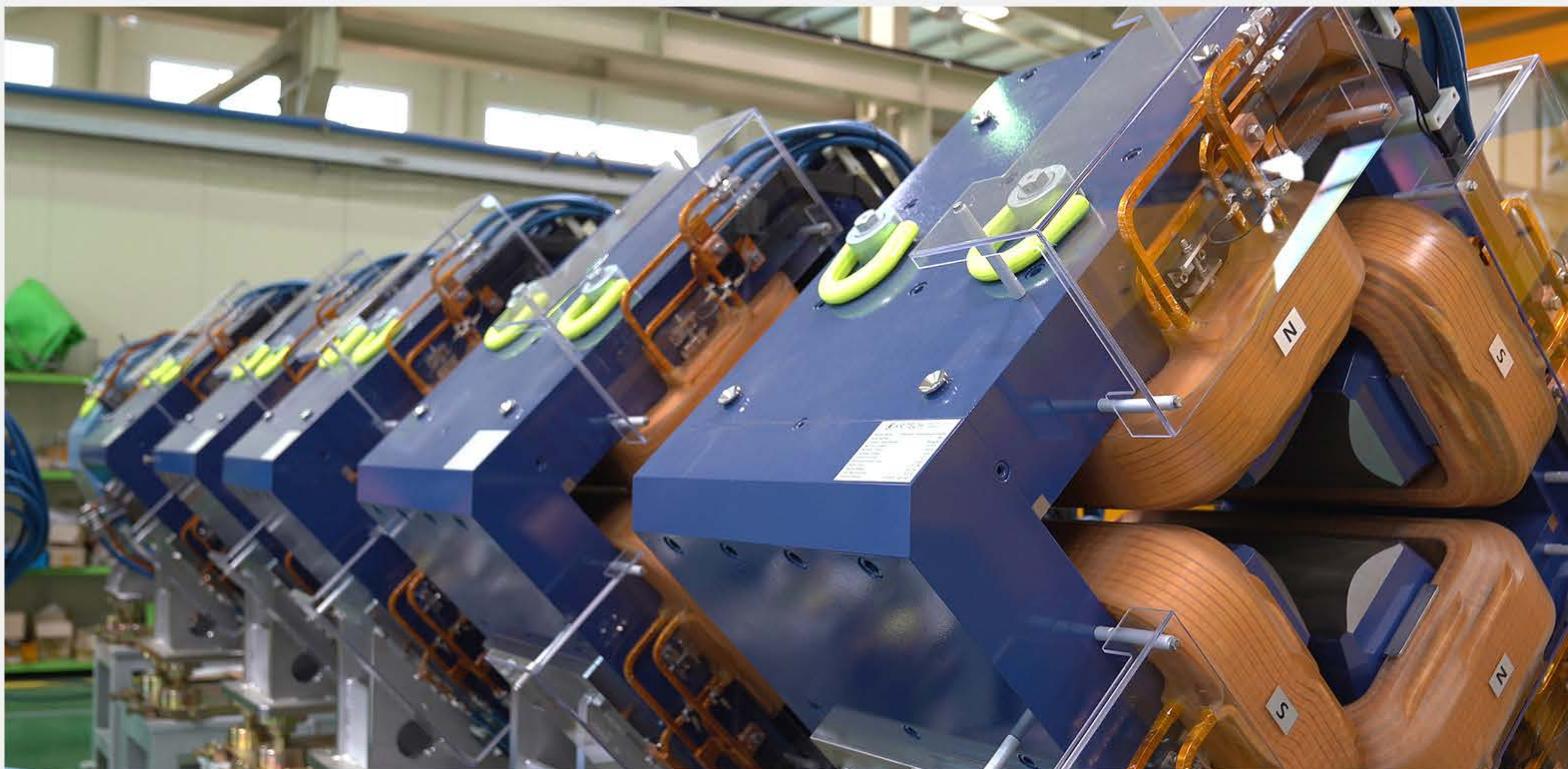
01

KR TECH has a hall probe mapping system.
Our development project for the rotating coil measurement system is still in progress.



02

optimized electromagnets are built with comprehensive support from KR TECH, ranging from electromagnetic engineering, designing, manufacturing, and measurement



02. Business Field

01

Room Temperature Magnet

- 1) Medical Applications (Heavy ion cancer Therapy, Cyclotron for PET)
- 2) Science Applications (Accelerator for Heavy ion, proton, electron)
- 3) Industry Applications (Semiconductor Wafer, etc.)

02

Superconducting Magnet

- 1) Medical Applications (Heavy ion cancer Therapy, Cyclotron for PET)
- 2) Science Applications (Accelerator for Heavy ion, proton, electron)
- 3) Industry Applications (Semiconductor Wafer, etc.)

Pohang Accelerator Laboratory



- The Fourth-generation Light Source

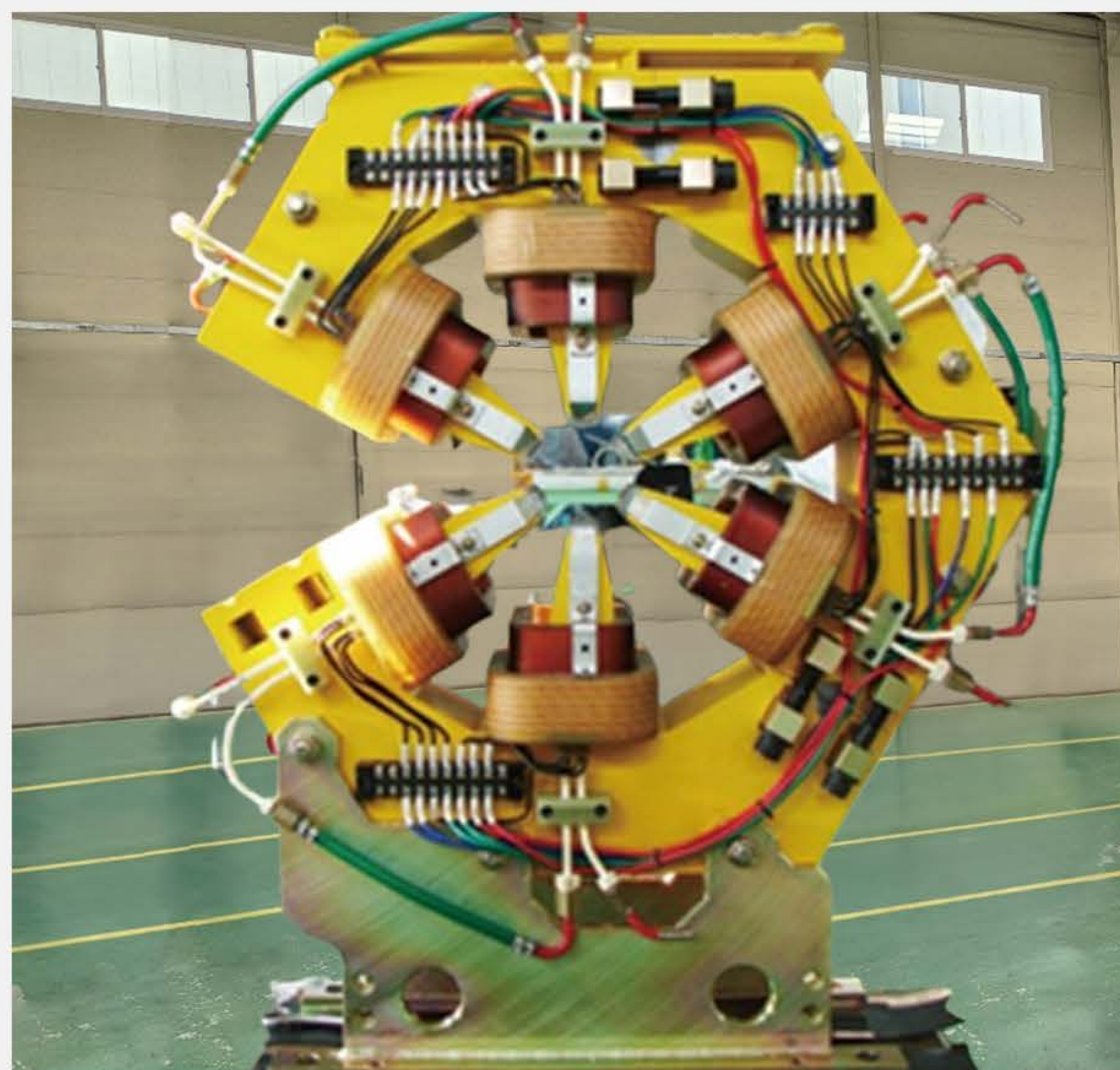
(0.1nm, 10 billion times brighter than the current light source, The third of around of world, like SPring-8)



- **Field gradient :**
25T/m
- **Aperture diameter :**
44mm
- **Effective length :**
20cm
- **Power :**
68A, 15V Quadrupole magnet
33sets, Diple magnet 33sets



- **Field gradient :**
0.8T
- **Pole gap :**
3cm
- **Effective length :**
20cm
- **Power :**
68A, 20V Quadrupole magnet
33sets, Diple magnet 33sets



- **Size :**
900mm x 770mm x 280mm
- **Max. field gradient :**
550 T/m²
- **Bore radius :**
39mm
- **Geometrical pole length :**
180mm 52 sets, 2010 as a
PLS II Project(Upgrade project)

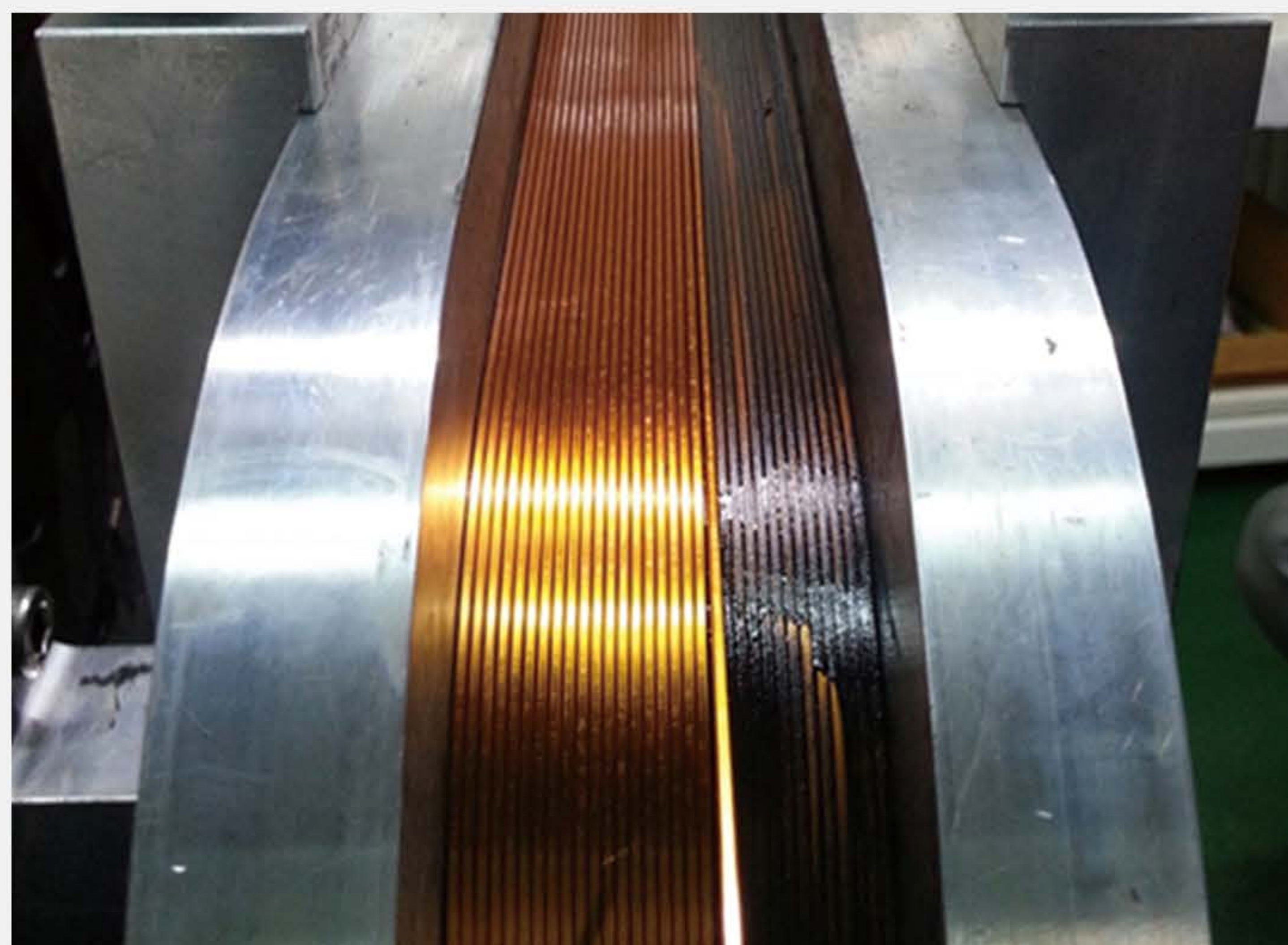
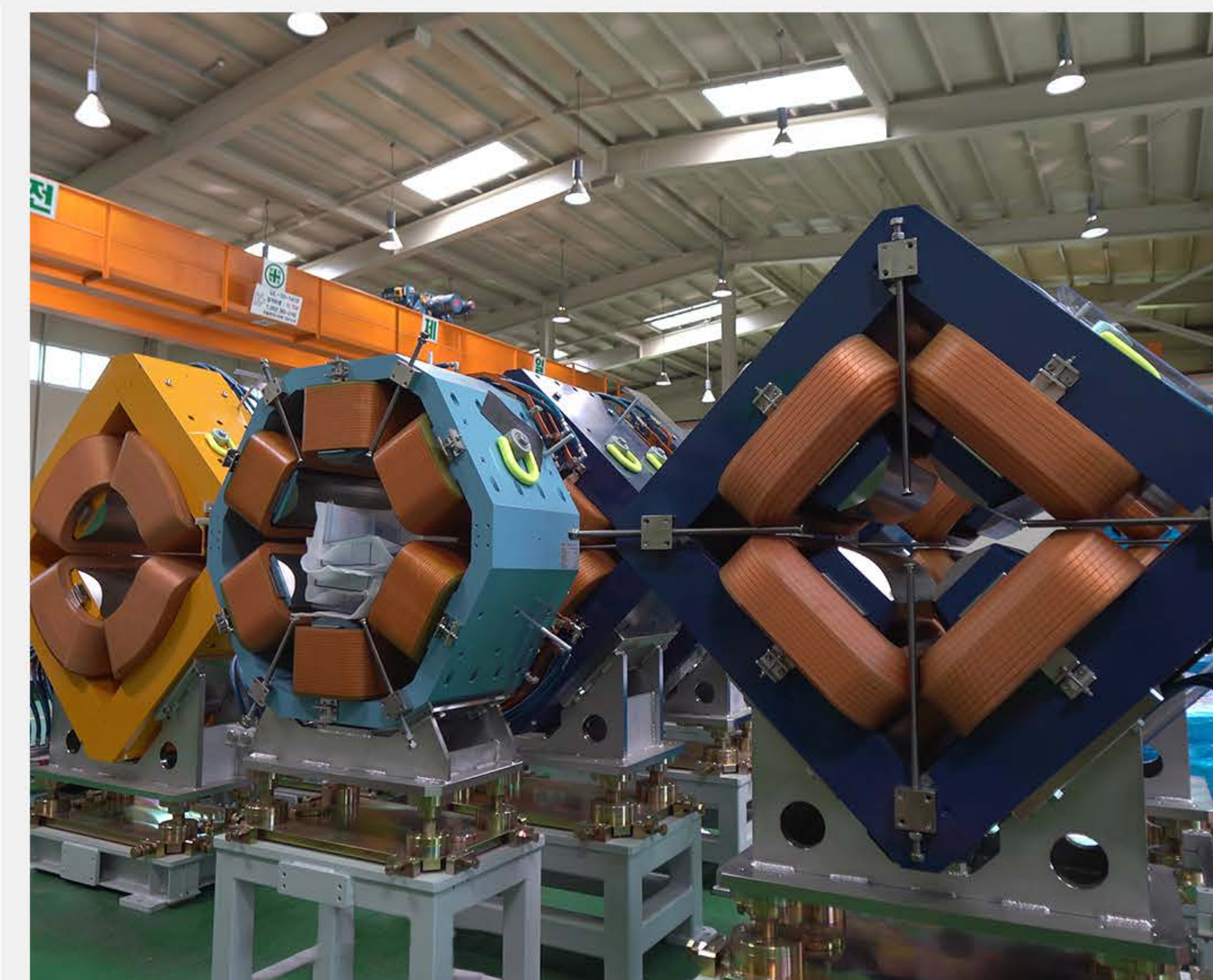


- **Size :**
1m(H) x 0.58m(Dia.)
- **Quantity :**
8 sets, 2011

Rare Isotope Science Project, Institute for Basic Science



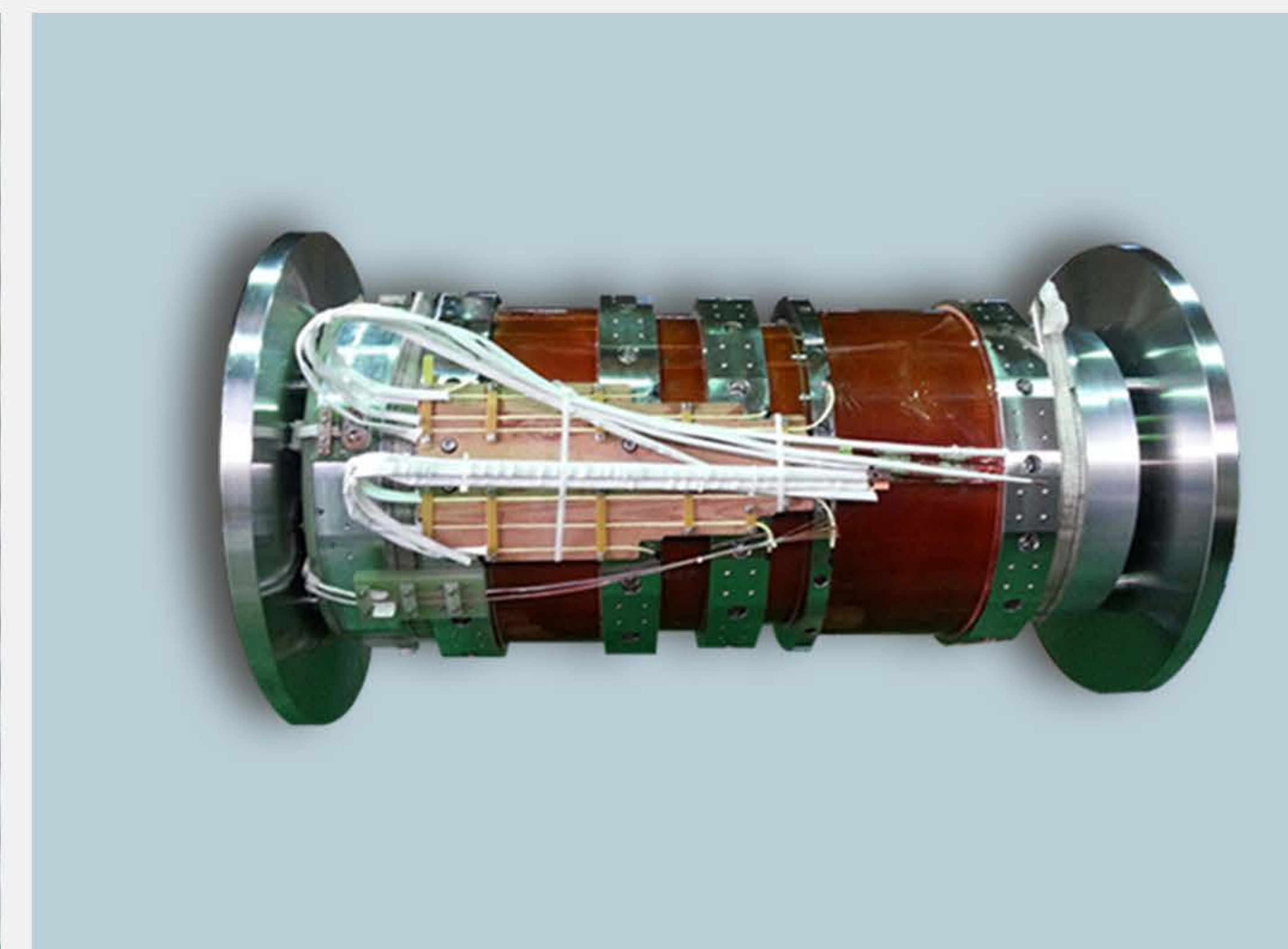
- **Size :**
1200 x 560 x 1020mm
- **Field gradient :**
33T/m
- **Power :**
195A, 20V
- **Weight :**
1600kg
Quadrupole magnet 55set



ECR 4 pole, 6 pole, 8 pole Coil



ECR Quadrupole Superconducting coils



ECR Hexapole Superconducting Magnet

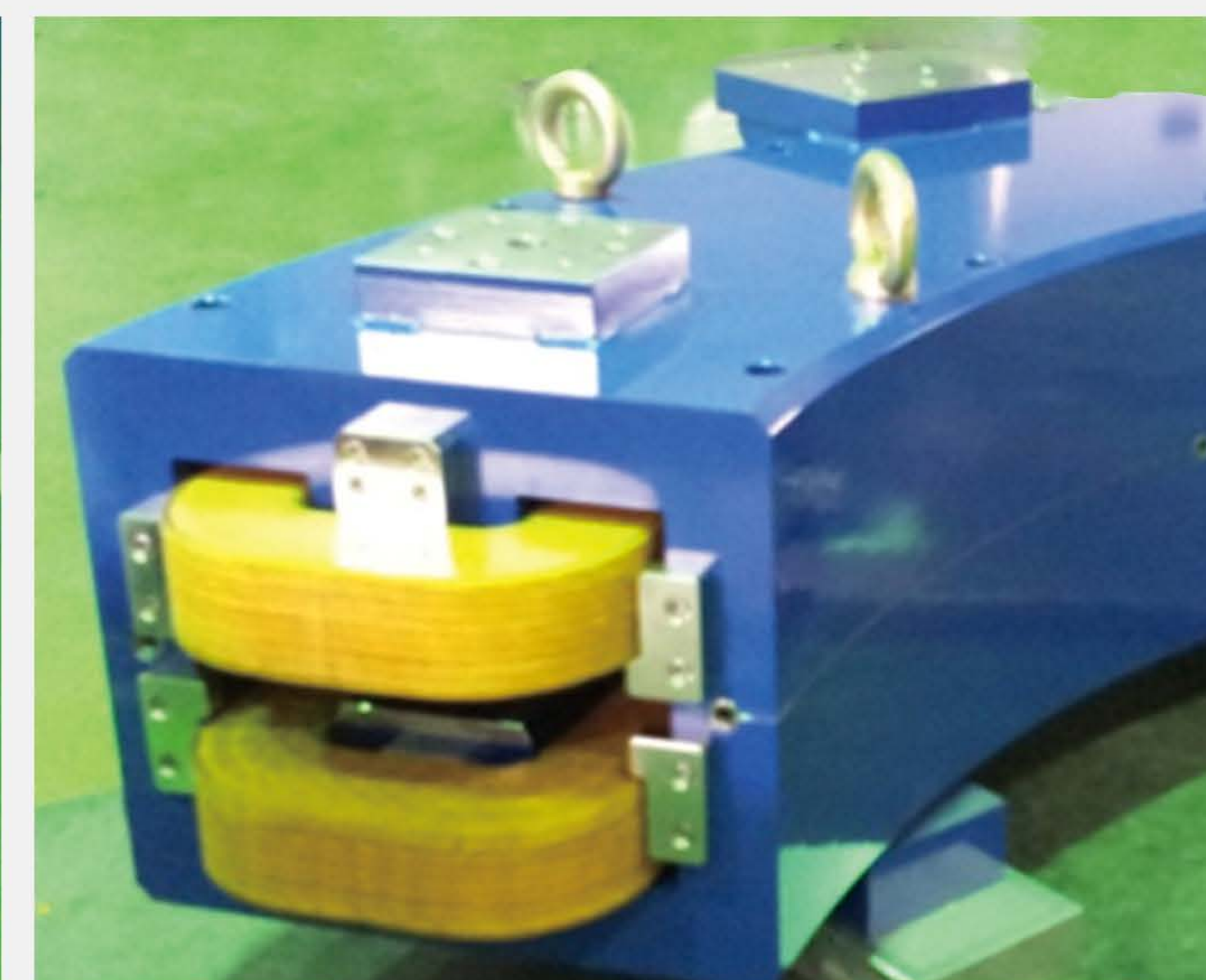
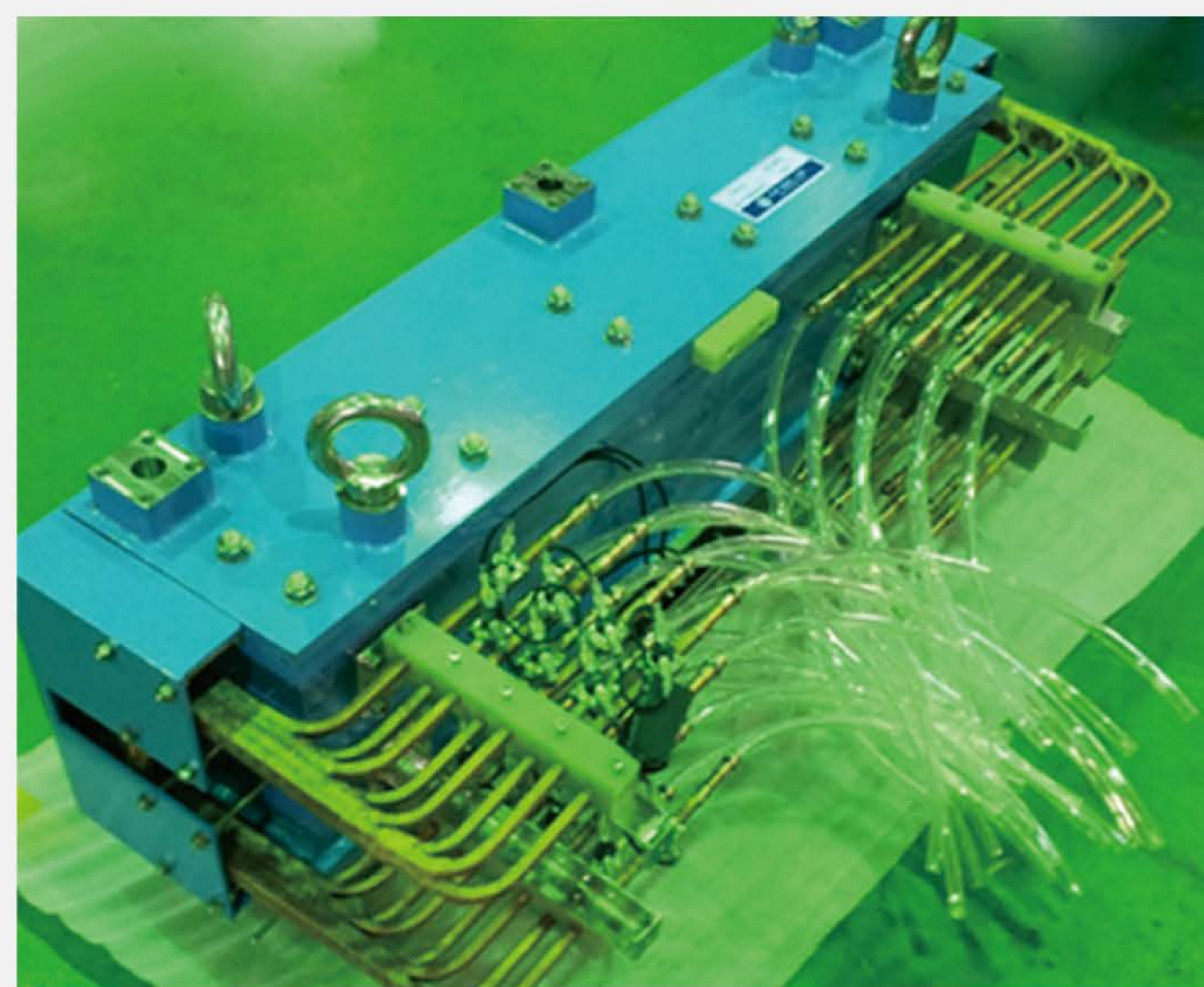
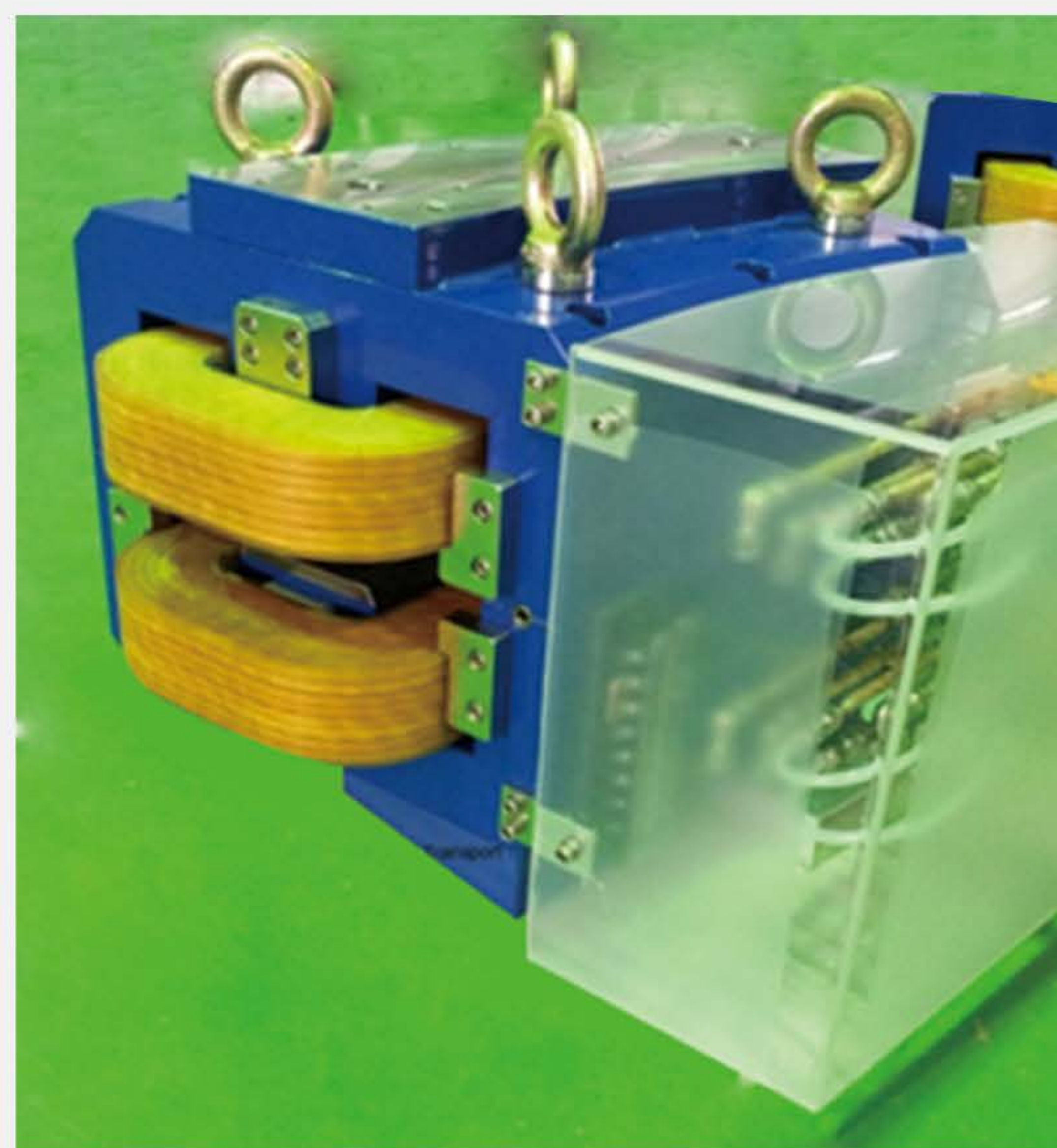
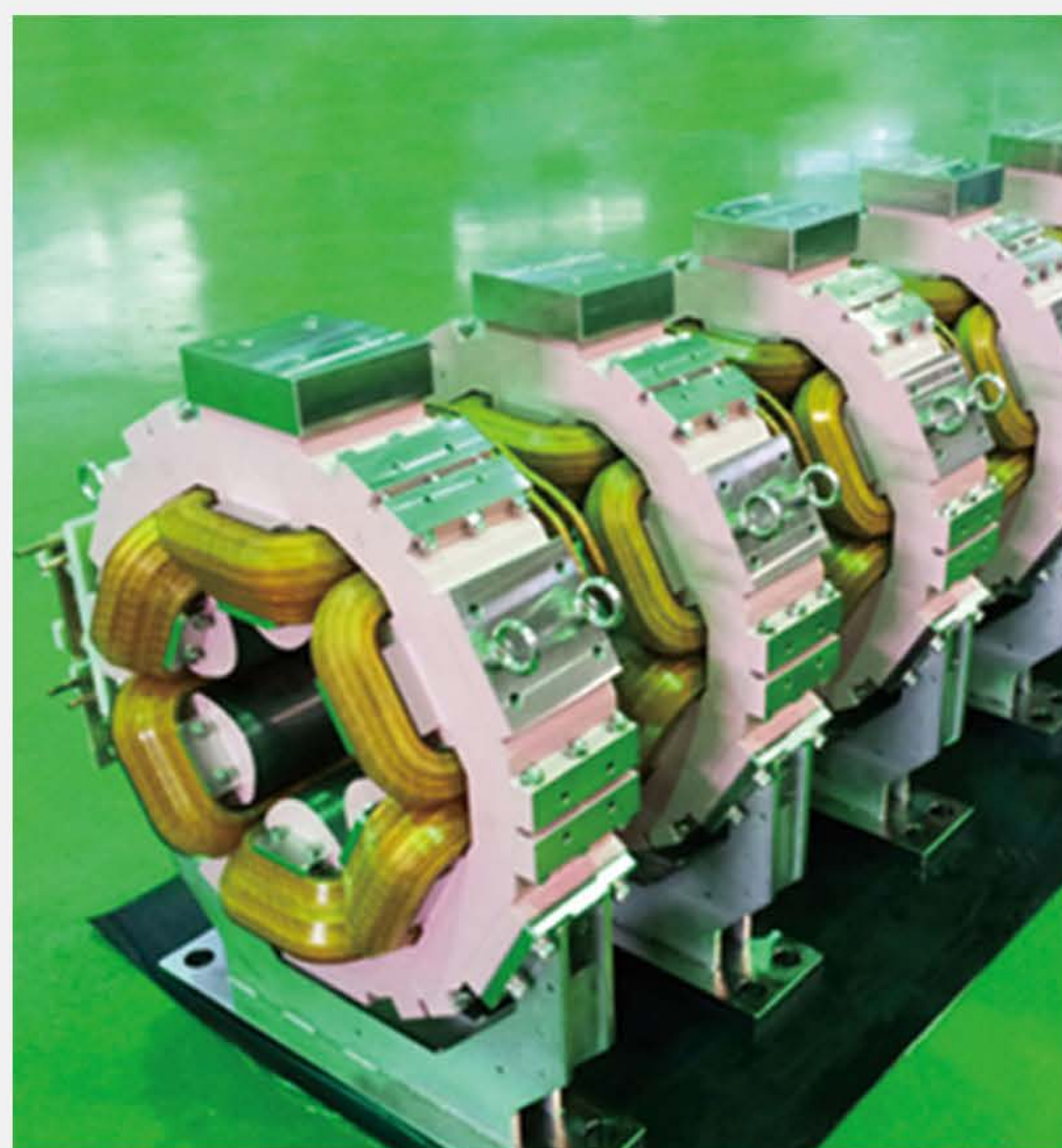
Kanagawa Cancer Center



Kanagawa Cancer Center



- Sextupole magnet, Septum magnet, Bump, Dipole, Quadrupole magnet



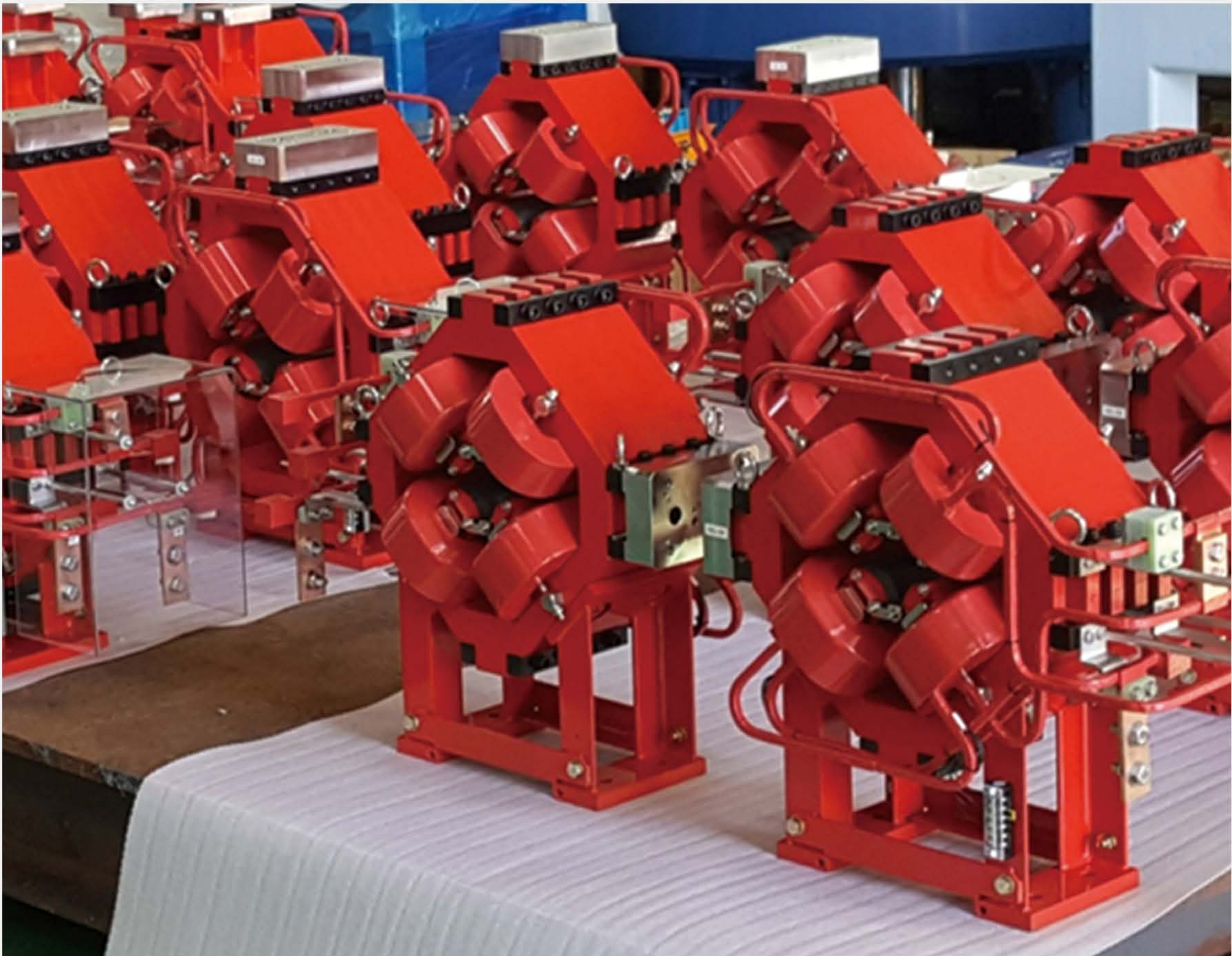
Rare Isotope Science Project, Institute for Basic Science



- Quadrupole magnet 40sets, Steering magnet 15sets, 2016



-	-	-
Max Field :	Size :	Power :
0.053T	330 x 330 x 146mm	6.27A, 7.27V

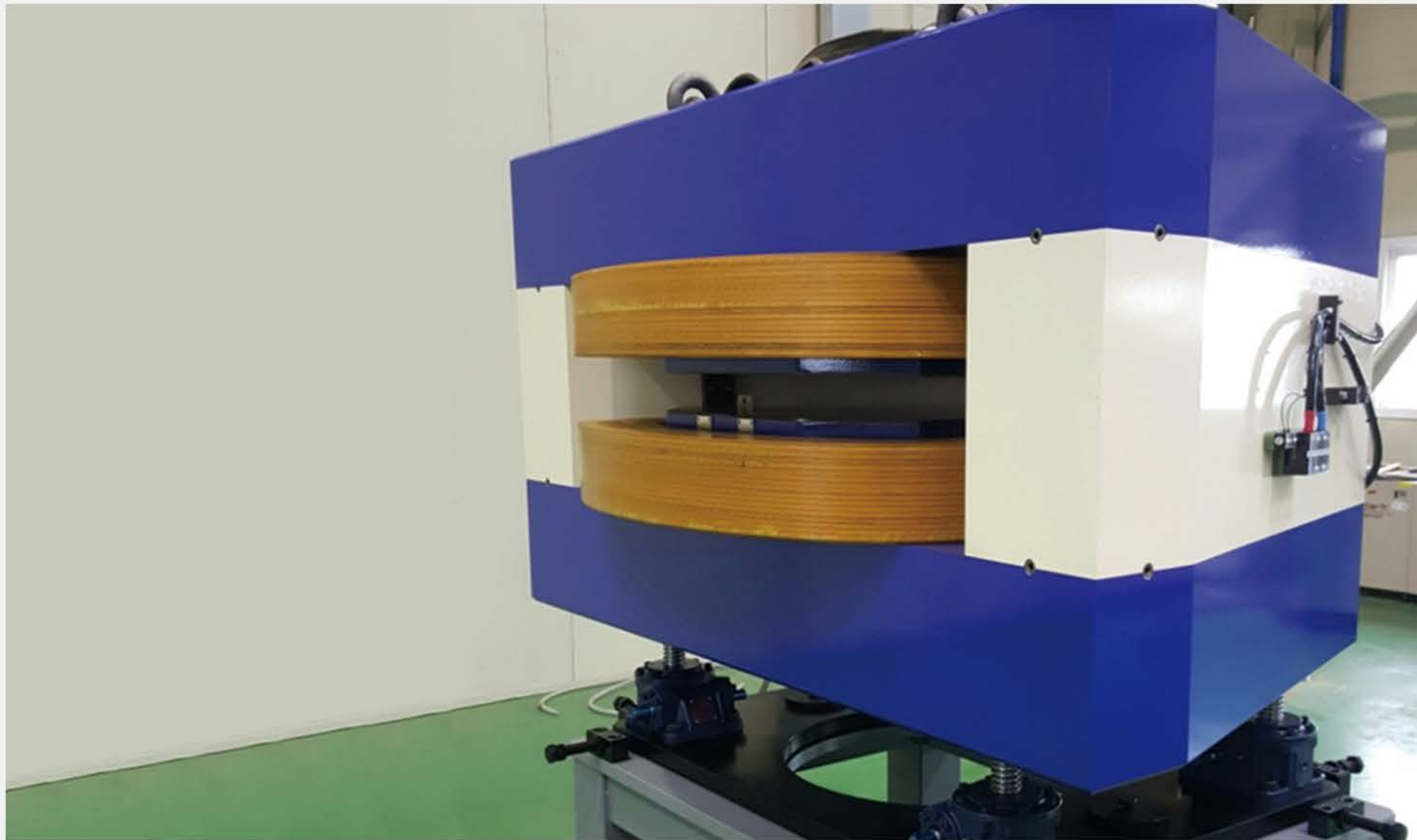


-	-	-	-
Field gradient :	Aperture diameter :	Pole length :	Power :
21T/m	55mm	175cm	330A, 6.7V

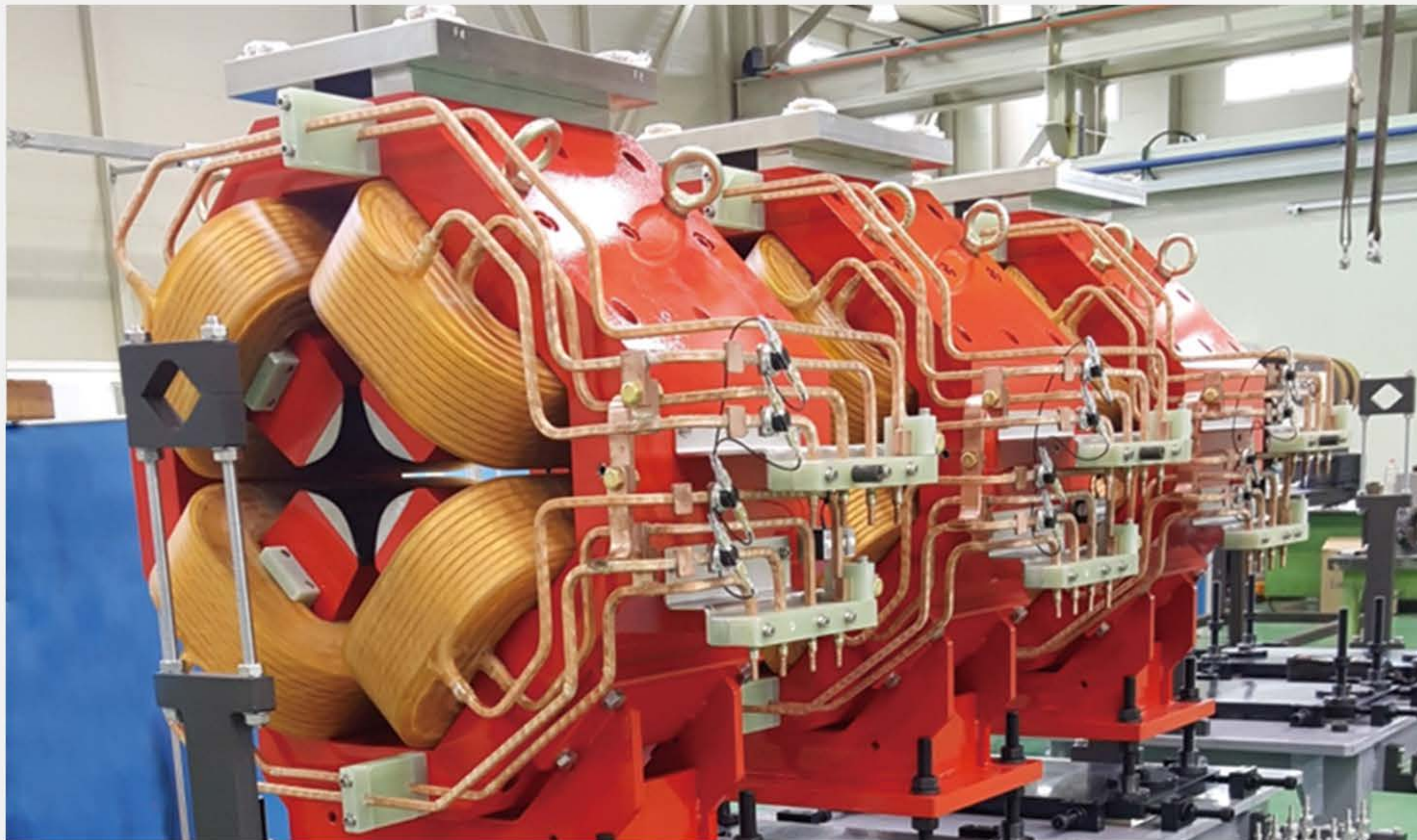
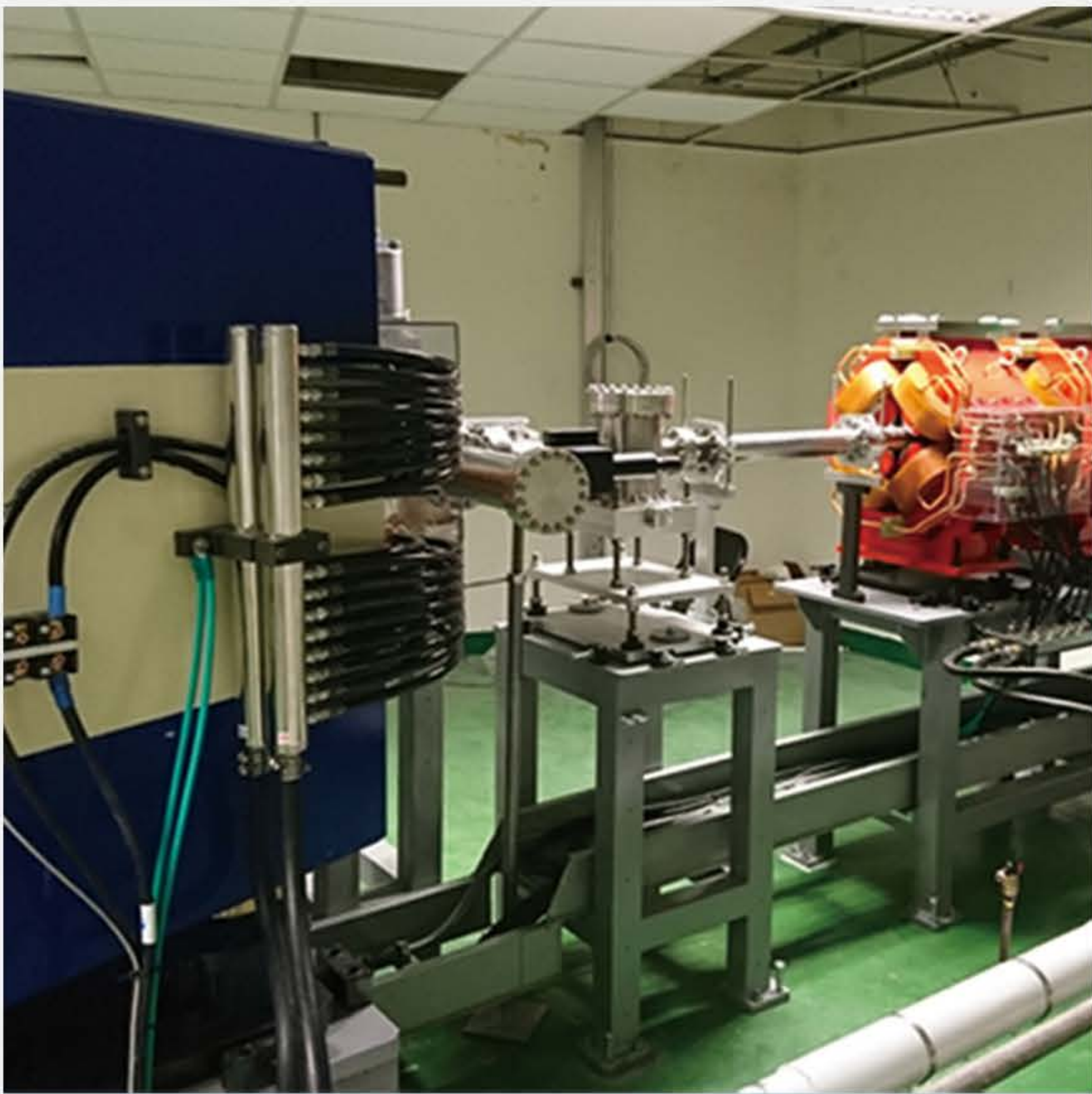
Proton & Radiation Therapy Center - Chang Gung Memorial Hospital, Taiwan



Quadrupole magnet 1set, Bending magnet 5sets, 2017



- **Field :**
1.2 Tesla
- **Weight :**
12tons
- **Power :**
136A, 92V
- **Date :**
February 20, 2017
- **Size :**
1800 x 1400 x 1850mm



- **Field gradient :**
15 T/m
- **Effective length :**
300mm
- **Bore diameter :**
70mm
- **Power :**
95A, 20V
- **Size :**
678 x 416 x 768mm
- **Date :**
February 20, 2017



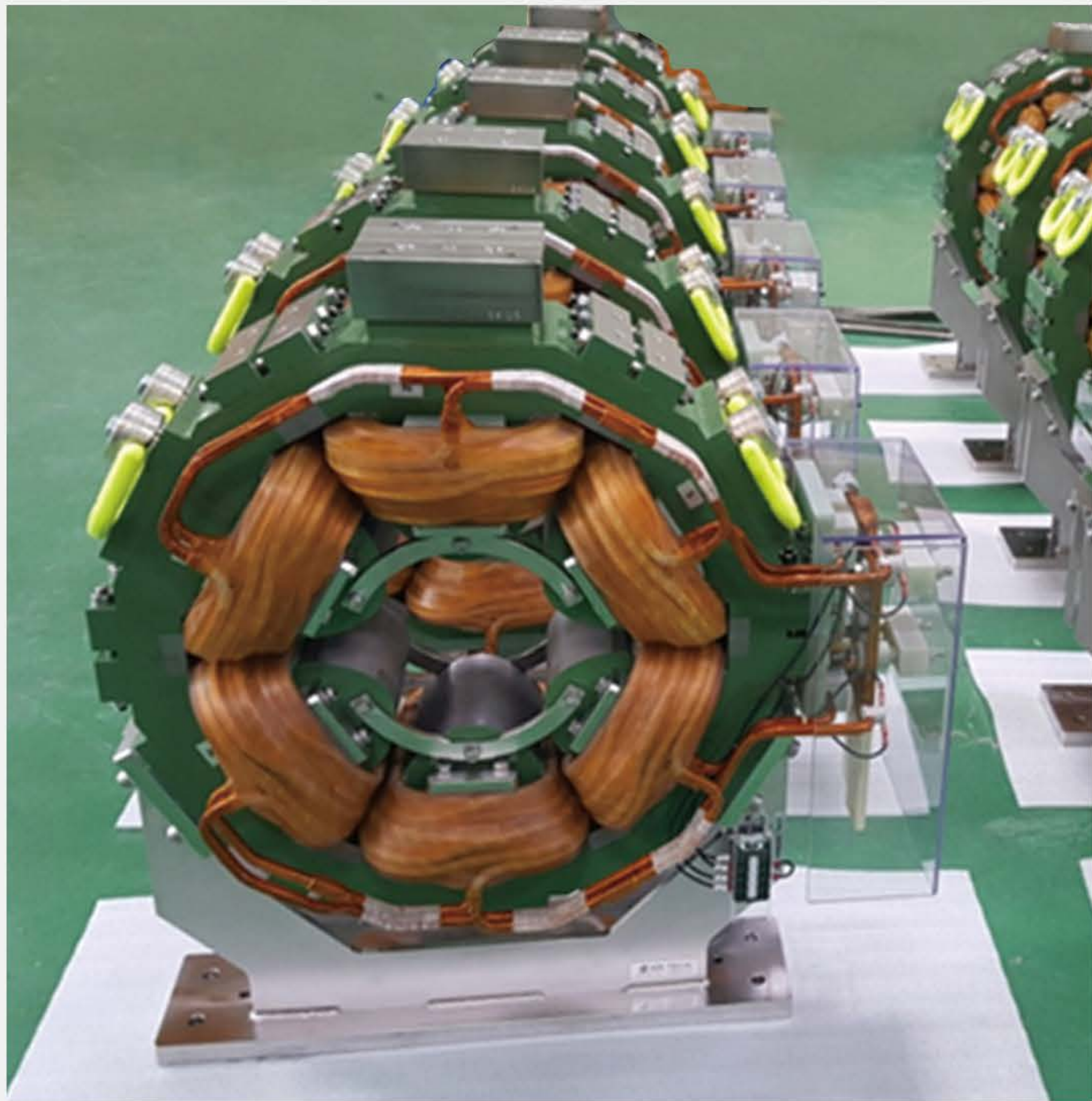
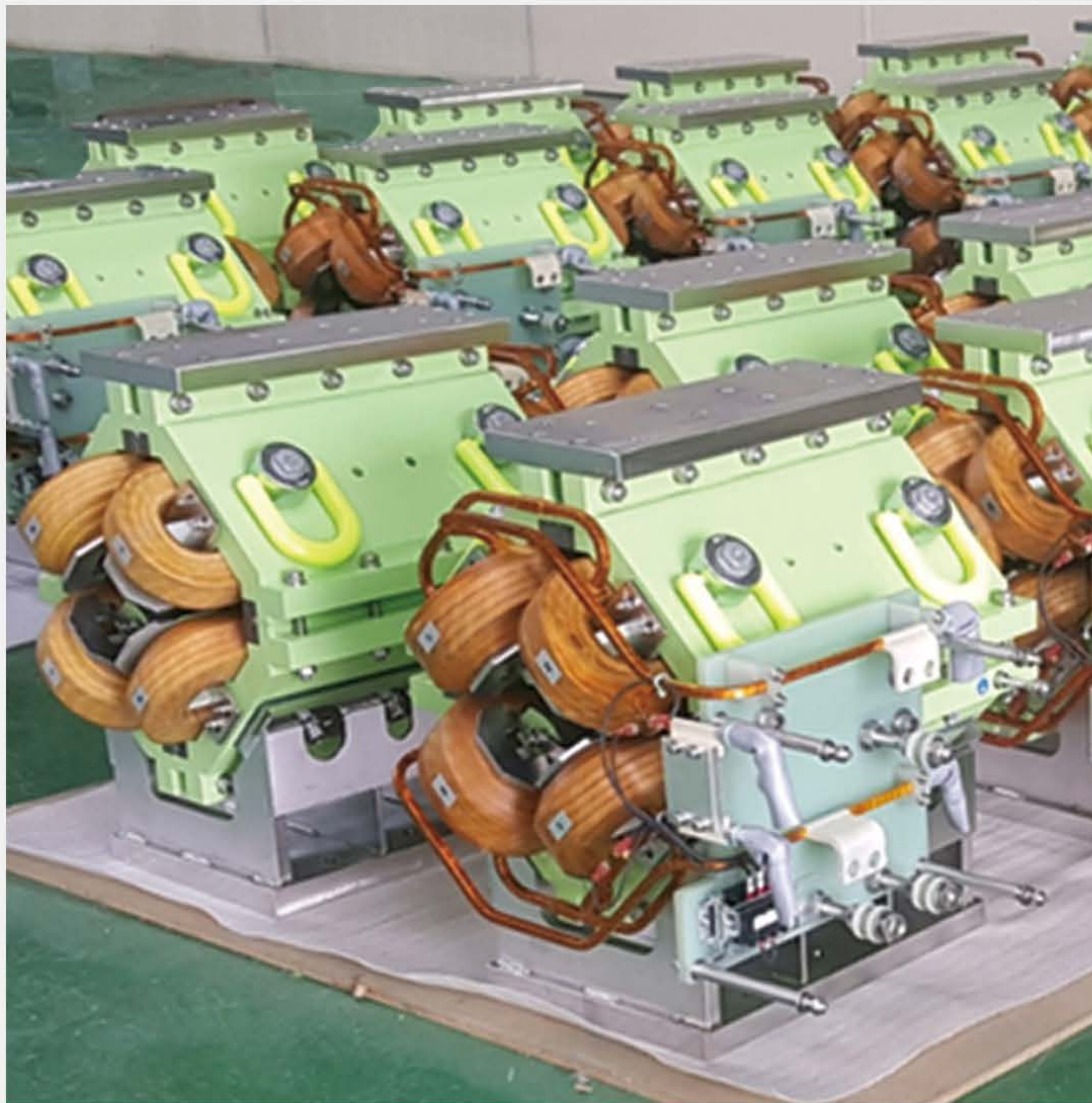
Heavy Ion Cancer Therapy – Yamagata University Hospital



Heavy Ion Cancer Therapy - Yamagata University Hospital



- Quadrupole magnet 38set, Steering 32sets



Size :	Field gradient :
530 x 560 x 500mm	14.5T/m
Power :	Weight :
260A, 11V	260kg

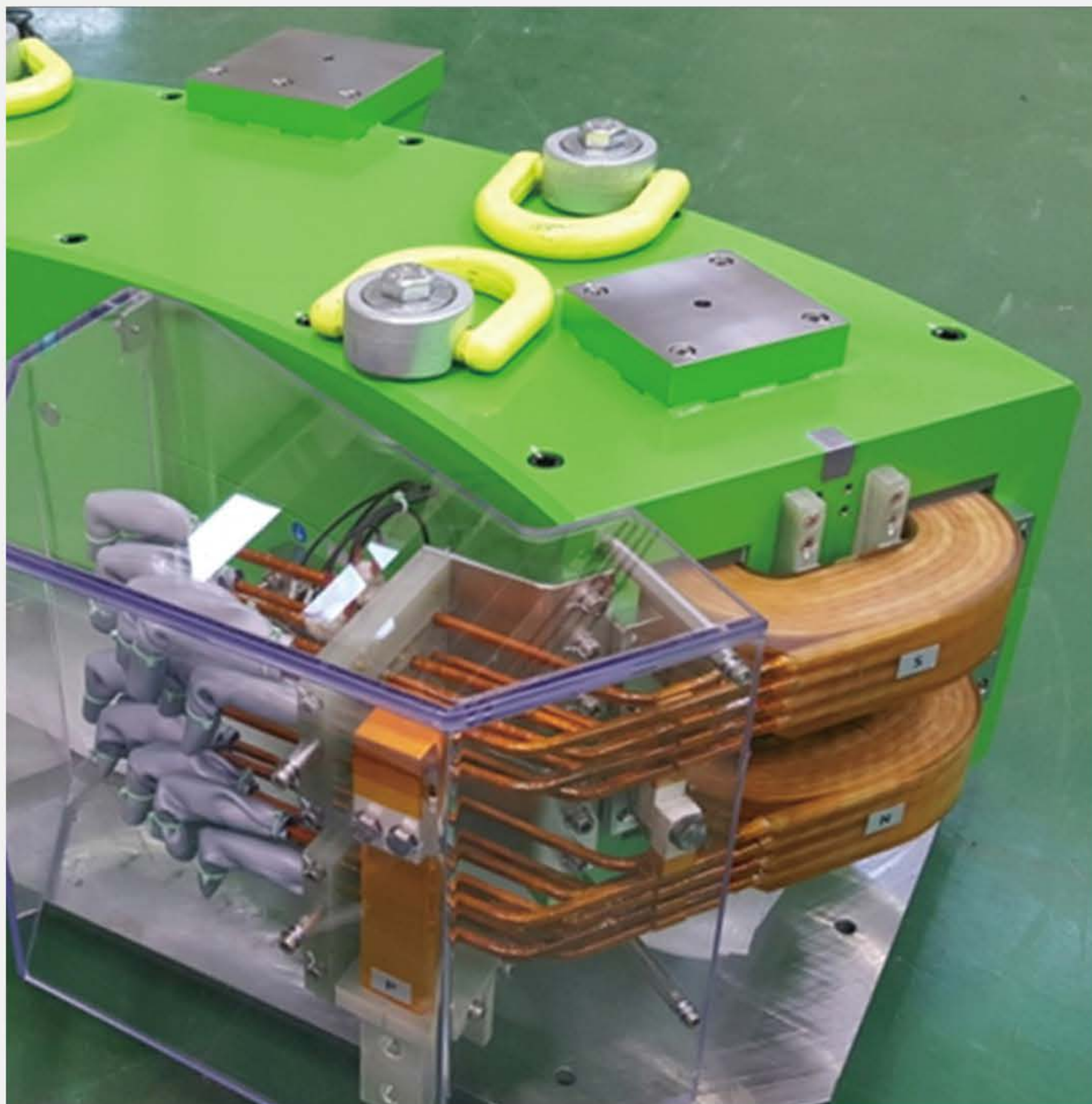
Size :	Field :
370x 190 x 370mm	0.115T
Power :	Effective length:
12A, 7V	143mm

Size :	Field gradient :
760 x 270 x 800mm	7T/m ²
Power :	Weight :
2150A, 4.8V	320kg

Heavy Ion Cancer Therapy – Yamagata University Hospital



- Quadrupole magnet 38set, Steering 32sets



- **Size :**
1300 x 800 x 500mm
- **Field gradient :**
0.8T/m
- **Power :**
166A, 45V
- **Weight :**
770kg

- **Size :**
600 x 140 x 550mm
- **Field Strength :**
133gauss
- **Power :**
260A, 11V
- **Weight :**
85kg

- **Size :**
440 x 280 x 530mm
- **Field gradient :**
6.9T/m
- **Power :**
19A, 6.1V
- **Weight :**
120kg

National Nuclear Energy Agency of Indonesia, batan



- Cyclotron - RI Production for PET



13MeV Magnet

200A, 50V ,45kW, 77.3MHz, 18ton

- In,outdia. :

1m /1.5m

- Size :

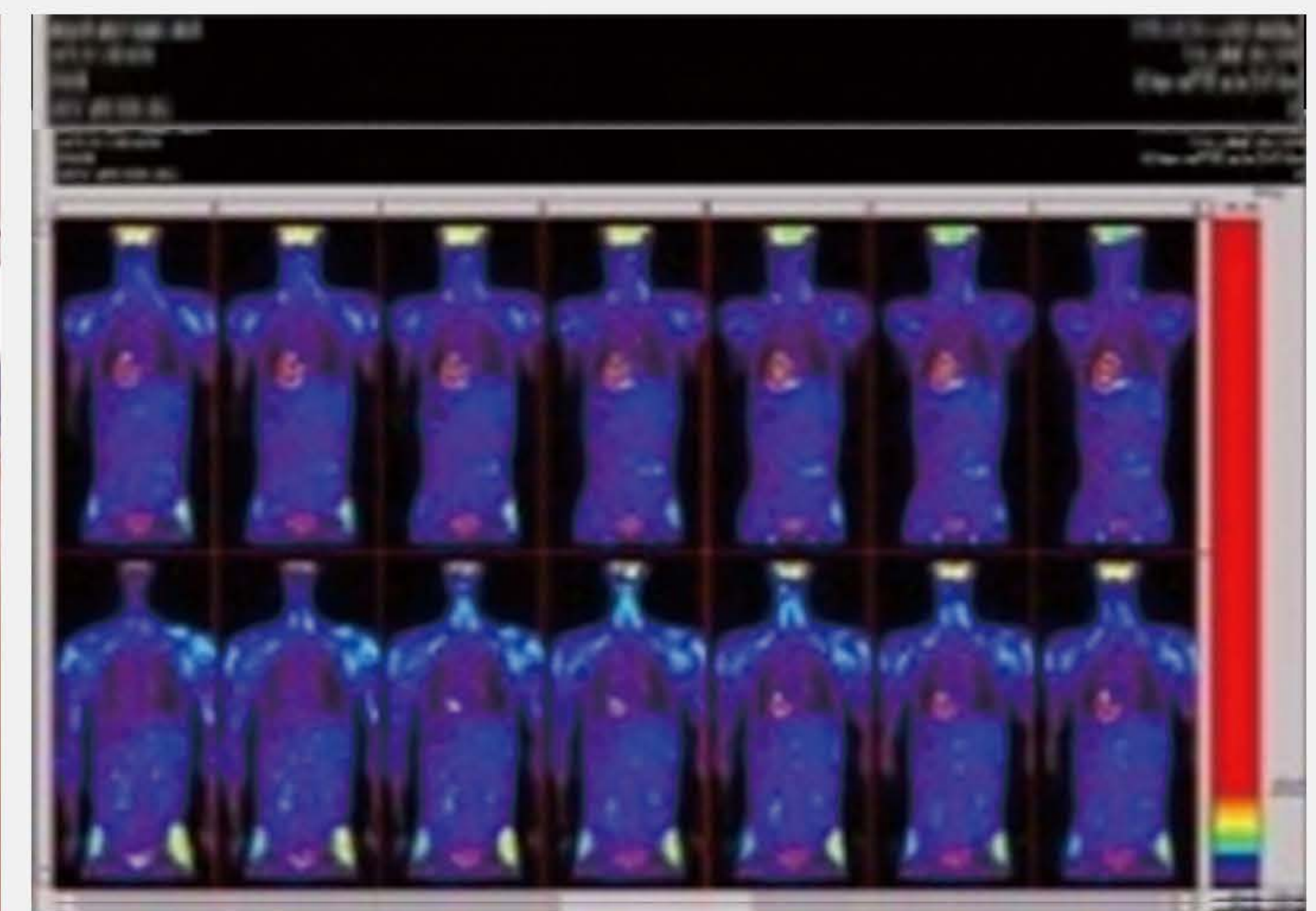
1.6m(T),1.3(W)

- Coil weight :

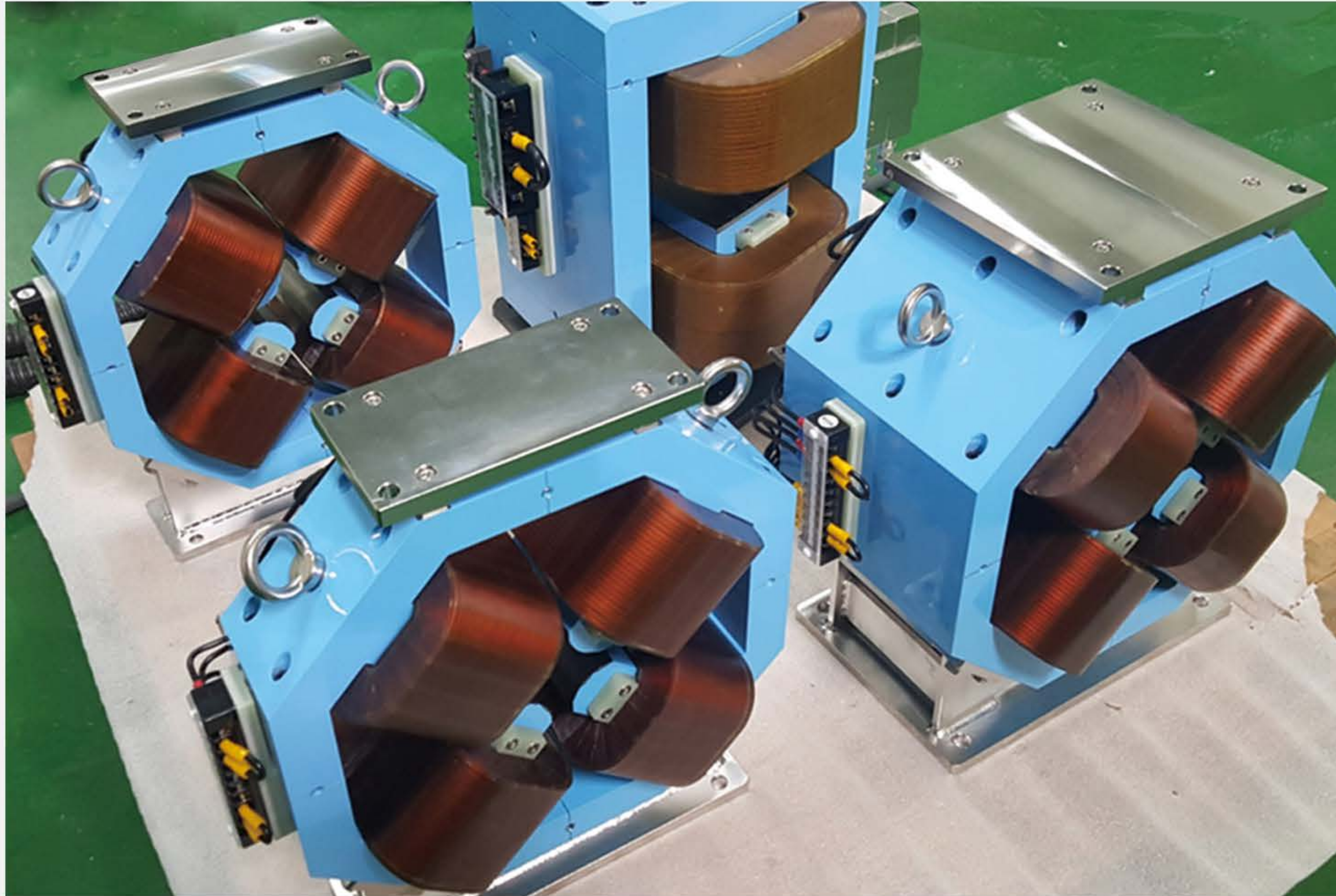
900kg

- Field:

1.7 Tesla



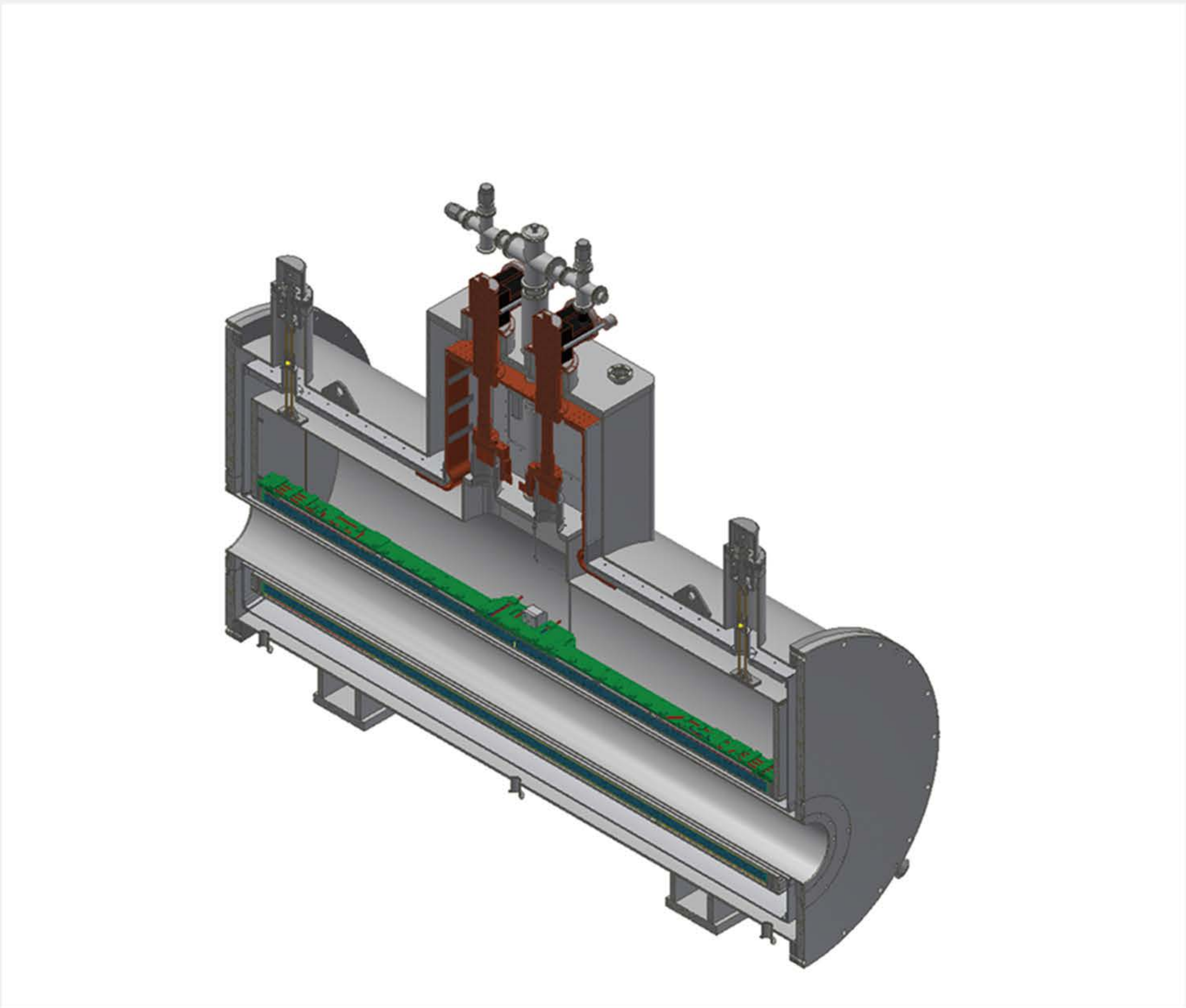
Lumitron Technologies, USA



7T Solenoid Superconducting Magnet



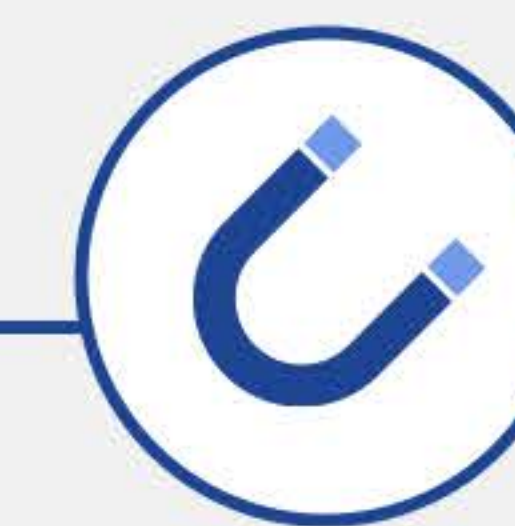
- Korea Multi-purpose Accelerator Complex, 2018



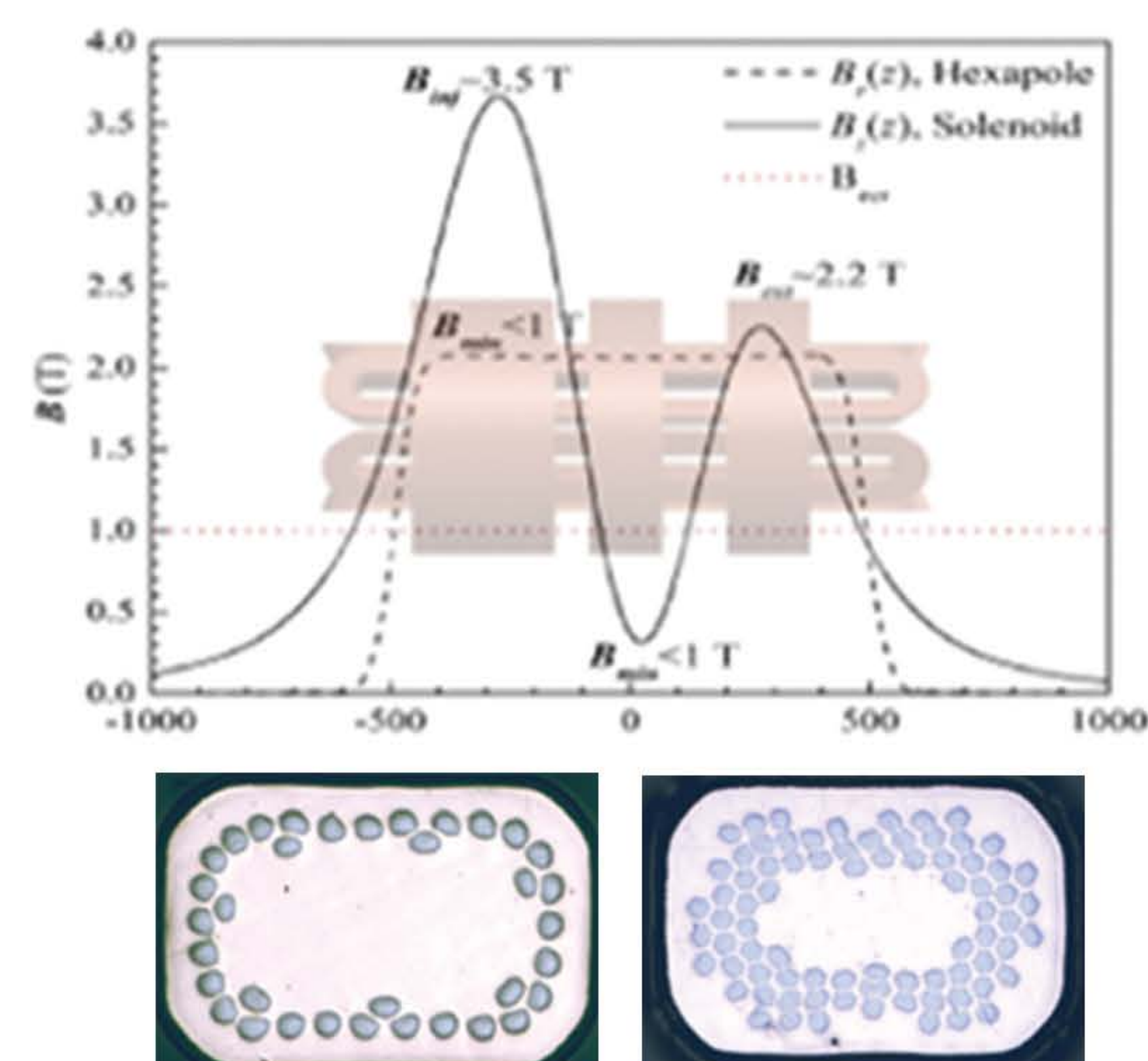
- Specification -

RT Bore Size :	Magnetic field :	Uniformity (1300mm) :	Current :	Operation mode :	Cooling system :	Weight :
204mm	7 Tesla	0.3%	200A	PCS mode	LMe Recondensing	~3000 kg

Superconducting magnet for 28Ghz ECR Ion Source



- KBSI, 2014

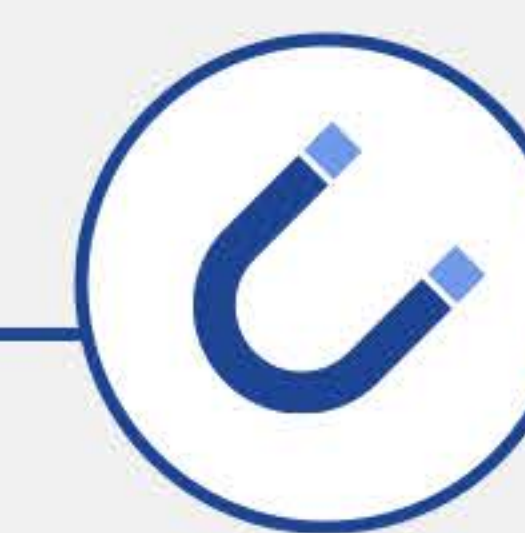


HP: B_r SL3: B_{ext} SL2: B_c SL1: B_{inj}

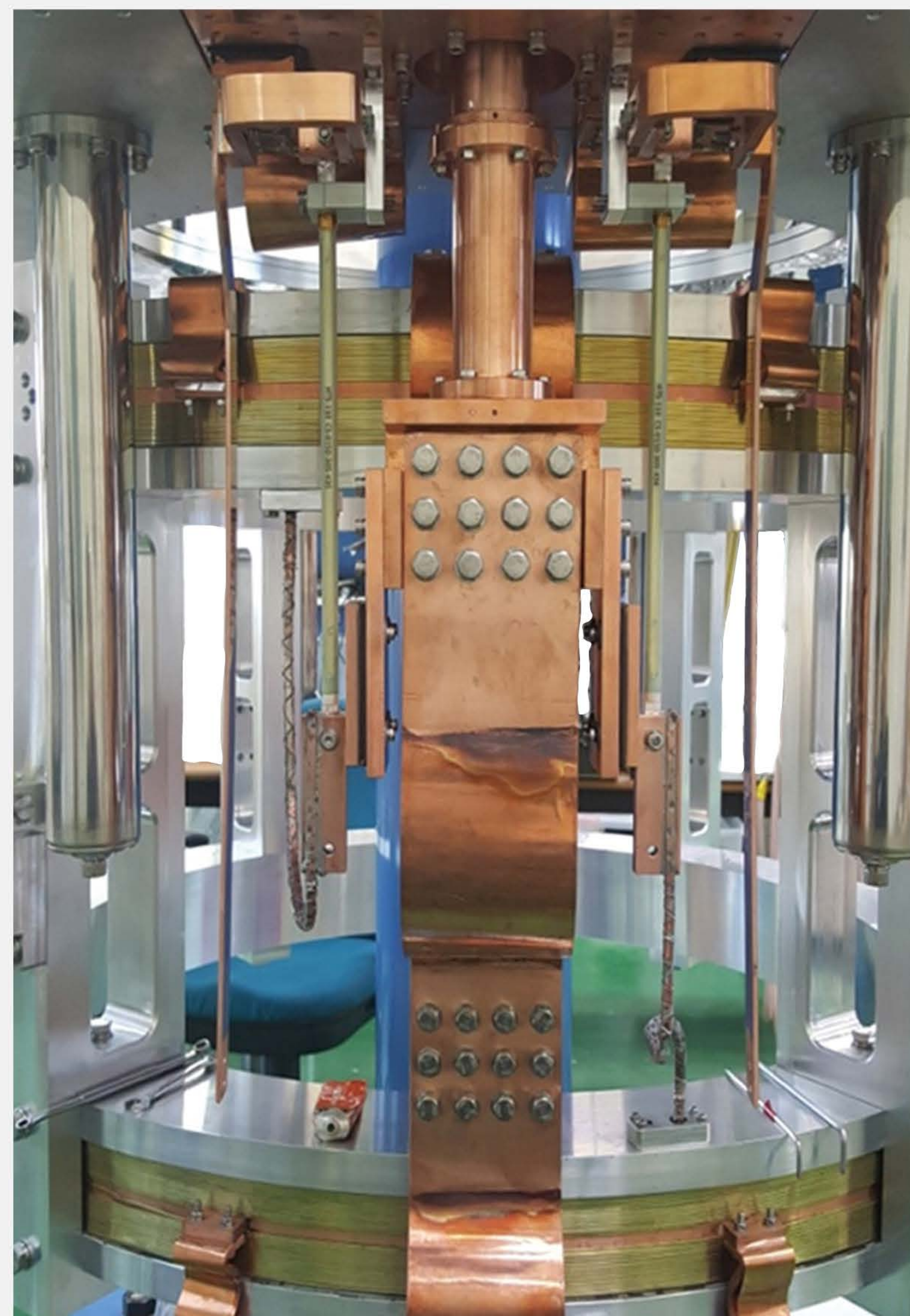


	Axial position of center (mm)	Inner diameter (mm)	Outer diameter (mm)	Hexapole length (mm)	Conductor size (mm)	Cu/NbTi ratio	Turns/coil	Wire lengths/coil (Km)	Current (A)	Bmax (T)
SL1	-250	442	540.8	-	0.95x1.4	4.9	9360	14.5	197	5.98
SL2	0	442	540.8	-	0.95x1.4	4.9	4784	7.4	198	5.35
SL3	-250	442	540.8	-	0.95x1.4	4.9	5408	8.4	197	4.72
HP	0	207	394.96	1066.4	0.95x1.4	2.32	2304	4.9	263	7.65

Helmholtz Type Superconducting magnet #1



- KEK, 2016



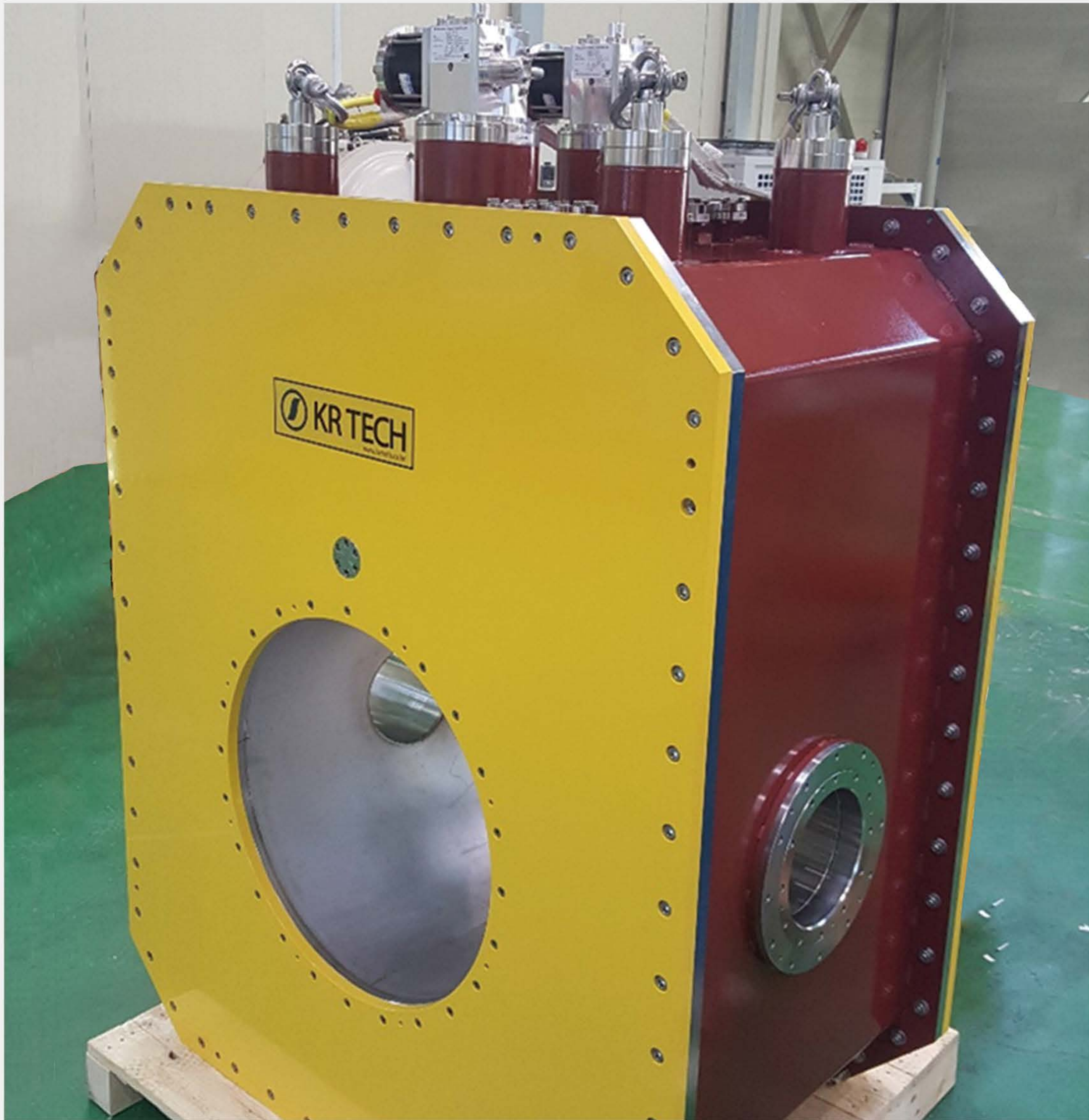
- Specification -

- **Magnetic field :**
2200x1450x2250mm
- **Magnetic field :**
7400/coil
- **Uniformity (1300mm) :**
251.6 H
- **Current :**
10Ton
- **Operation mode :**
1.5 T
- **Cooling system :**
100A
- **Weight :**
0.77mm

Helmholtz Type Superconducting magnet #2



- Korea Univ, 2020



- Specification -

- Size : W2300 x H2785 x D1080 (mm) RT Bore ø204 mm	- Current : 207 A
- Magnetic Field : W 1.4 x H 0.95 NbTi (mm)	- Inductance : 127.5 H
- Magnetic Field : 7T	- Wire Size : W 1.4 x H 0.95 NbTi (mm)
- Homogeneity : Axis 1300 XR 10 +0.3 %	- Driving Type : PCS
- Coil Turns : 55,472 Turns/Coil	- Weight : 8 ton

03. Manufacturing & Quality Control / PR Center

01

Copper Conductor

02

Materials

03

Power Supply

04

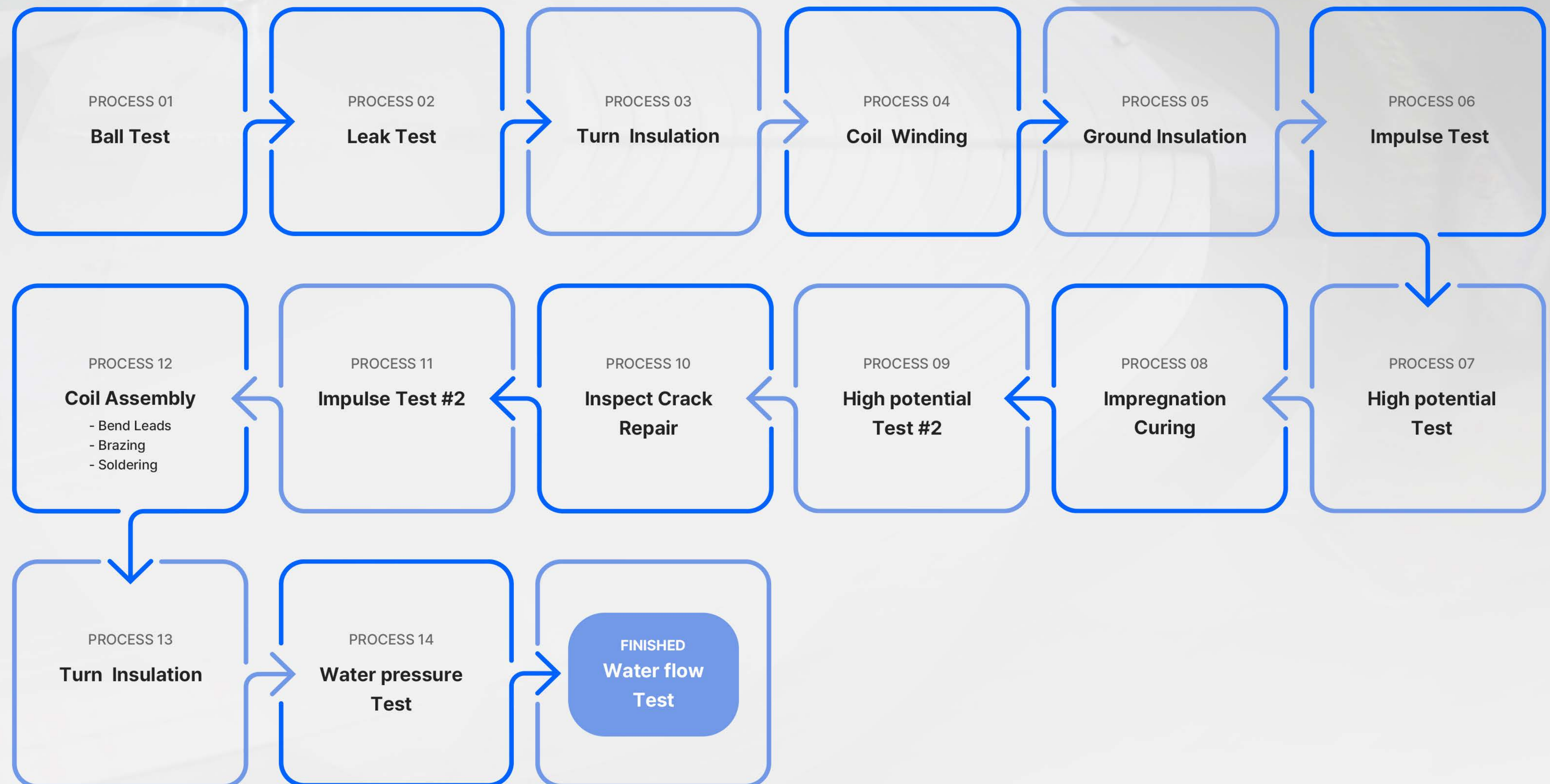
Customer

05

Contact us

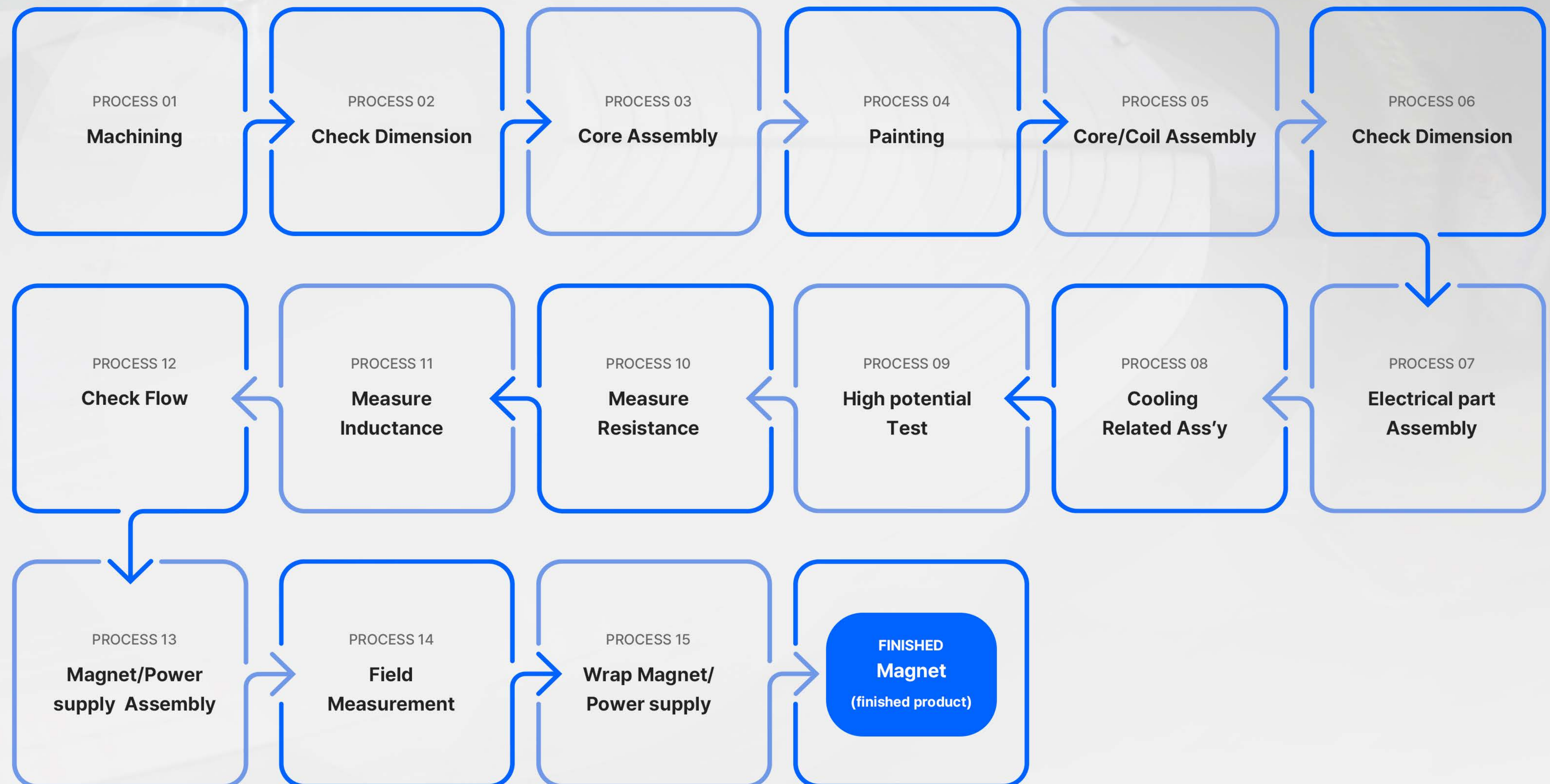
03. Manufacturing & Quality Control / PR Center

Copper Conductor



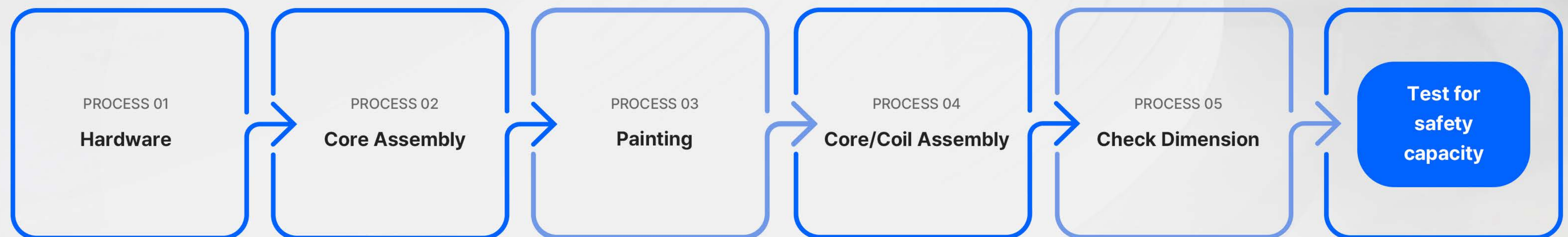
03. Manufacturing & Quality Control / PR Center

Materials



03. Manufacturing & Quality Control / PR Center

Power Supply



- main control plate
- high voltage D.C power control plate
- input controller

03. Manufacturing & Quality Control / PR Center

Customer





03. Manufacturing & Quality Control / PR Center

Contact us

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