



Product guide



About Sigmaphi

Driving Innovation Since 1981

Founded in 1981, SIGMAPHI (Vannes, France) is a global leader in high-performance magnetic systems for particle accelerators. Our unique expertise fuels innovation across research, medical treatment, sustainable energy (fusion research), and diverse industrial applications.

Collaboration at the Core

United by a team spirit and a drive for excellence, our 130 employees join forces with leading institutions to tackle the major challenges of science and healthcare, contributing to a better future.

Global Impact, Local Roots

While 95% of our €21 million turnover comes from exports, SIGMAPHI remains deeply committed to our Breton roots. We believe in the power of collaboration for a better world, fostering a vibrant team environment that fuels innovation.

SIGMAPHI Where we are?

SIGMAPHI FRANCE

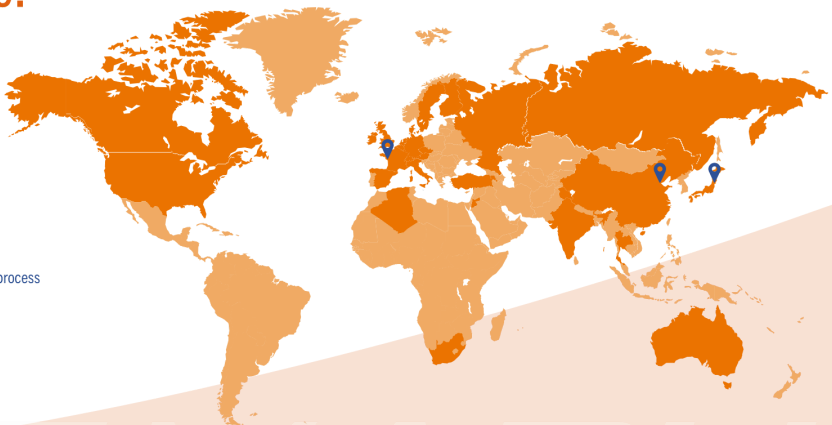
Vannes
130 employees
95% export

SIGMAPHI CHINA

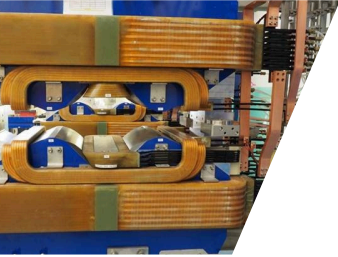
Beijing
20 employees
Same quality and management process

SIGMAPHI JAPAN

Tokyo
Sales agent

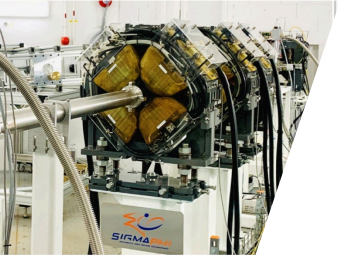


Our products applications



Research

*Light sources, heavy ion facilities
Projects selection : Spiral 2 (GANIL)
CEBAF U (JLAB) / SLS 2.0 (PSI)*



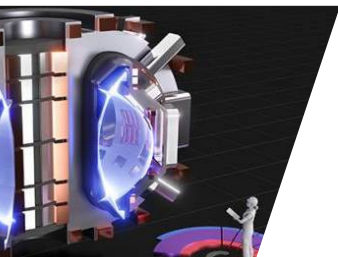
Medical

*Protontherapy, Hadrontherapy,
Radioisotopes
Projects : MedAustron / Christie NHS /
LOTUS (CEA)*



Industry

*Ion implantation, Mass spectrometry,
Fault current limiter
Projects : CAMECA / IBA*



Energy

*Fusion energy
Projects : SPARC (CFS)
NSTX-U (PPPL) / BOSSE
(CNRS)*

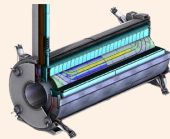


GET THE LAST INNOVATION FOR RESEARCH

We offer customized and innovative solutions for scientific challenges. With a team of highly qualified experts, we provide a wide range of cutting-edge technologies for research institutes. We are committed to deliver the highest quality solutions and achieve excellence in all our services. We value long-term partnerships with our customers, based on trust and collaboration, aiming to push the boundaries of scientific knowledge.

GANIL | SPIRAL 2 - Line S3

The triplet of quadrupoles is a crucial component of the S3 beamline at the SPIRAL 2 accelerator. It consists of three magnetic quadrupoles that focus and control the particle beam.



24 TONS, WARM BORE
600MM, 4,25T
NBTI
LIQUID HELIUM 4,2K
3500 A

JLAB | CEBAF Upgrade - SHMS dipole

Jefferson Lab had upgraded the CEBAF Accelerator to 12 GeV/c and expanding experimental facilities. Hall C is building an 11 GeV/C Superconducting Spectrometer for high-energy Nuclear Physics experiments. Sigmaphi had constructed the Q2Q3 quadrupoles and Dipole for the SHMS.

PSI | SLS 2.0 - Superbend magnet

For the upgrade of the Swiss Light Source (SLS) facility at the Paul Scherrer Institut PSI, superconducting Nb-Ti superbend magnets will be installed in two sector arcs of the upgraded SLS2.0.

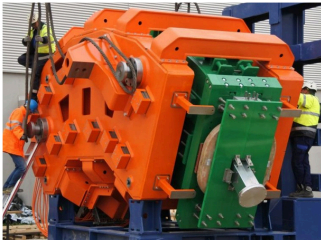


They trust us : ANL | BARC | BNL | CAEP | CEA | CERN | CIAE | CNRS | DESY | DIAMOND
| ELETTRA | ENSTA | ESRF | FAIR | FERMILAB | FZ JÜLICH | GANIL | GSI | INFN | JINR |
JLAB | KEK | KVI | LBNL | LIST | MAINZ UNIVERSITY | NSRL | ORNL | PSI | QST | SLAC |
STFC | TOHOKU | TRIUMF | VECC



GET THE EXCELLENCE FOR MEDICAL

Our electromagnets offer uncomparred precision for the most demanding medical applications, ensuring exceptional reliability and durability. With tailor-made adaptability and customization, we meet your specific needs. Our team of technical specialists provides expert support at every step. At Sigmaphi, we are committed to excellence, contributing to the advancement of healthcare. Contact us today to discover how our product can transform your medical practice.

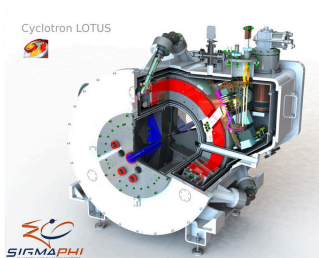


MedAustron | 90° dipole for carbon therapy

Sigmaphi provides synchrotron, beamline and gantry magnets for hadrontherapy facilities. The picture illustrates the MedAustron gantry 90° dipole with a gap of 230mm and a length of 5,8 m, it is weighing more than 100t with the supporting structure.

Christie NHS | Protontherapy facility R&D beamline

At the Christie NHS Protontherapy Center in the UK, we are involved in the RBA Research beamline project, including on-site installation and dosimetry. Our collaboration promises to enhance cancer treatment capabilities, ensuring precision and effectiveness in proton therapy



CEA R&D partnership | LOTUS Cyclotron Helium Free

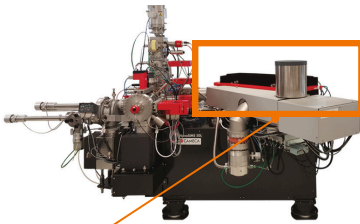
Since the early 2000s, Sigmaphi has supplied superconducting magnets to leading physics labs worldwide, pioneering advancements in NbTi, MgB₂, and HTS technologies.

They trust us : HEIDELBERG | IBA | MEDAUSTRON | PMB ALCEN | NHA | CNAO | NHS CHRISTIE | TOSHIBA | VARIAN | MEDISCAN | PRONOVA | ZYKLOTRON AG



GET THE BEST SOLUTION FOR INDUSTRY

Our 40+ years of experience across diverse industries, we established further long-term partnerships. We work closely with our partner to craft the best solutions that perfectly align with your current needs, timelines, and objectives, all while incorporating cost optimization from the conception (design-to-cost) to delivery. Whether you're launching a new product line or optimizing an existing solution, we ensures you achieve your goals with the best possible solution.



CAMECA | Resistive dipole

Sigmaphi electromagnets are a key component in advanced scientific instruments. Here, high-performance dipoles are integrated into the CAMECA solution. This unique system enables high-resolution isotopic and trace element analysis.

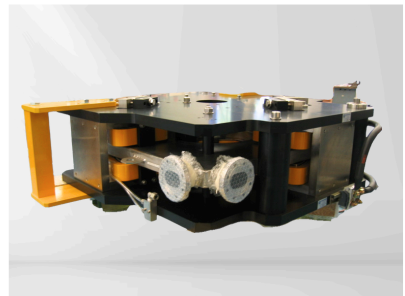
Our expertise in electromagnet design ensures reliable operation and optimal performance for a wide range of industrial applications



IBA | Dipole 270°

Since more than 30 years, Sigmaphi is partenering with IBA on different industrial projects. For example, we provide around 60 dipole 270°. These essential electromagnet contribute to the performance of IBA's irradiation solutions

This partnership showcases reliable and high-performance electromagnets, meeting the specific needs for industries.

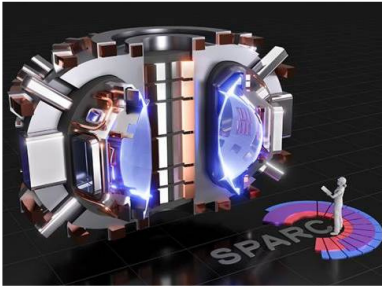


They trust us : THALES | IBA | IONS BEAM SERVICES | ITOPP ALCEN | BEVATECH
TECHNOPLUS INDUSTRIE | CAMECA | ALSYMEX ALCEN | LION | NEXANS |
SUPERGRID | TECHNICATOM



GET THE FUTURE FOR ENERGY

Engineering for the energy industry, our electromagnets redefine reliability and performance standards. With a relentless focus on innovation, and fusion energy, our team stands ready to propel your energy initiatives to new challenges. Discover the transformative potential of our solutions for your operations today!

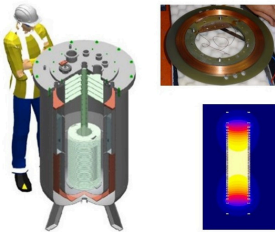
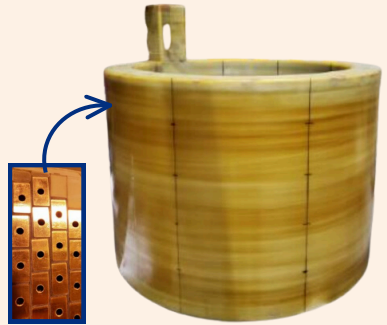


CFS | SPARC Project - Tokamak

In support of the Tokamak SPARC project, Sigmaphi is set to manufacture Divertor Coils and Error Field Correction Coils. These components are key to the success of this innovative initiative.

PPPL | NSTX-U - Solenoid coils

PPPL's NSTX-U project involves the development of a prototype coil, a task undertaken by Sigmaphi. Our scope encompasses crafting one prototype coil along with necessary toolings. Challenges include dealing with unconventional conductor insulation and adhering to stringent cleanliness standards exceeding our usual practices. Additionally, the manufacturing process requires step-by-step approval.



CNRS | BOSSE - Solenoid

In partnership with CNRS for the DGA, we had developing the YbCCO solenoid, an energy storage device. This project holds promise to pave the way for new advancements in energy research and defense, leveraging our combined expertise.

They trust us : CFS | CNRS | PPPL | TOKAMAK ENERGY



Accelerating transition to a better world

CONTACT



+33 (0)2 97 01 08 80



contact@sigmaphi.fr



www.sigmaphi.fr



ZI du Prat, rue des frères
Mongolfier 56000 Vannes
FRANCE