



- www.research-instruments.de

SRF Cavities and Module Manufacturing

- *With our customers every step of the way*

From concept to delivery

RI Research Instruments GmbH is a global leader in the design, development and manufacturing of advanced particle accelerators and pulsed power systems. With a commitment to excellence and

What we offer

Superconducting and normal-conducting accelerator systems & modules:

Tailored solutions for research and industrial applications, designed to meet precise project requirements.

High-precision accelerator components:

Manufacturing of key components such as RF cavities, cryomodules, RF couplers, Pulsed Power Systems and beamlines, ensuring seamless integration and peak performance.

Engineering and Consultancy Services:

Comprehensive support, from initial concept and design to installation, testing, and long-term maintenance.

Application-Specific Solutions:

We provide tailored accelerator systems and components for diverse industries and research fields, ensuring high performance, reliability, and precision for specialized applications.

Design & Development

- Project- and Supply Chain Management
- Cavity and cryomodule and SRF system design
- Beam dynamics simulations, RFQ design tools
- Electrodynamics simulations
- 3D CAD design tools
- Structural mechanics and thermal calculations
- Design & planning of electrical infrastructure
- Cryogenic distribution and system design
- Control and safety systems (PLC based)
- μ C based fast control and regulation systems

innovation, we provide state-of-the-art solutions for scientific research, medical applications, and industrial processes.

Our expertise ranges from the production of custom accelerators and high-precision components to comprehensive engineering services, making us a trusted partner for academia and industry worldwide.

Why choose us?

We understand the requirements for advanced SRF solutions, and our capabilities cover the entire production process, from design and prototyping to series production and testing.

Extensive experience: We have manufactured over 2200 SRF cavities so far and are the world leading supplier for all types of SRF cavities

Precision manufacturing: We use advanced manufacturing techniques including high-precision forming and deep drawing, electron beam welding, vacuum brazing, TIG-welding, CNC-machining, CMM-measurements, NDT, RF-measurements, and tuning

Advanced surface treatment: Nitrogen doping, electropolishing, buffered chemical polishing, high-pressure rinsing in ISO4-certified cleanrooms

Cryomodule assembly: Integration of cavities, couplers, tuners, and cryogenic components into complete SRF modules in our cleanrooms

Service & Integration: We offer maintenance services and the integration of SRF modules into larger accelerator systems

Manufacturing Capabilities

- Electronic workshop & High voltage lab <200kV DC
- CNC milling & turning, metal working
- EB & laser welding, TIG welding
- Vacuum brazing & heat treatment
- CMM & metrology
- RF measurements, Leak testing & RGA
- NDT testing with x-ray, ultrasound etc.
- Chemical surface treatments, degreasing
- ISO 4 clean-room assembly
- System integration, on-site installation, and commissioning

- *We are happy to help!*

If you can think it, we can build it.

Let's team up and see how our experts can support your cause.



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