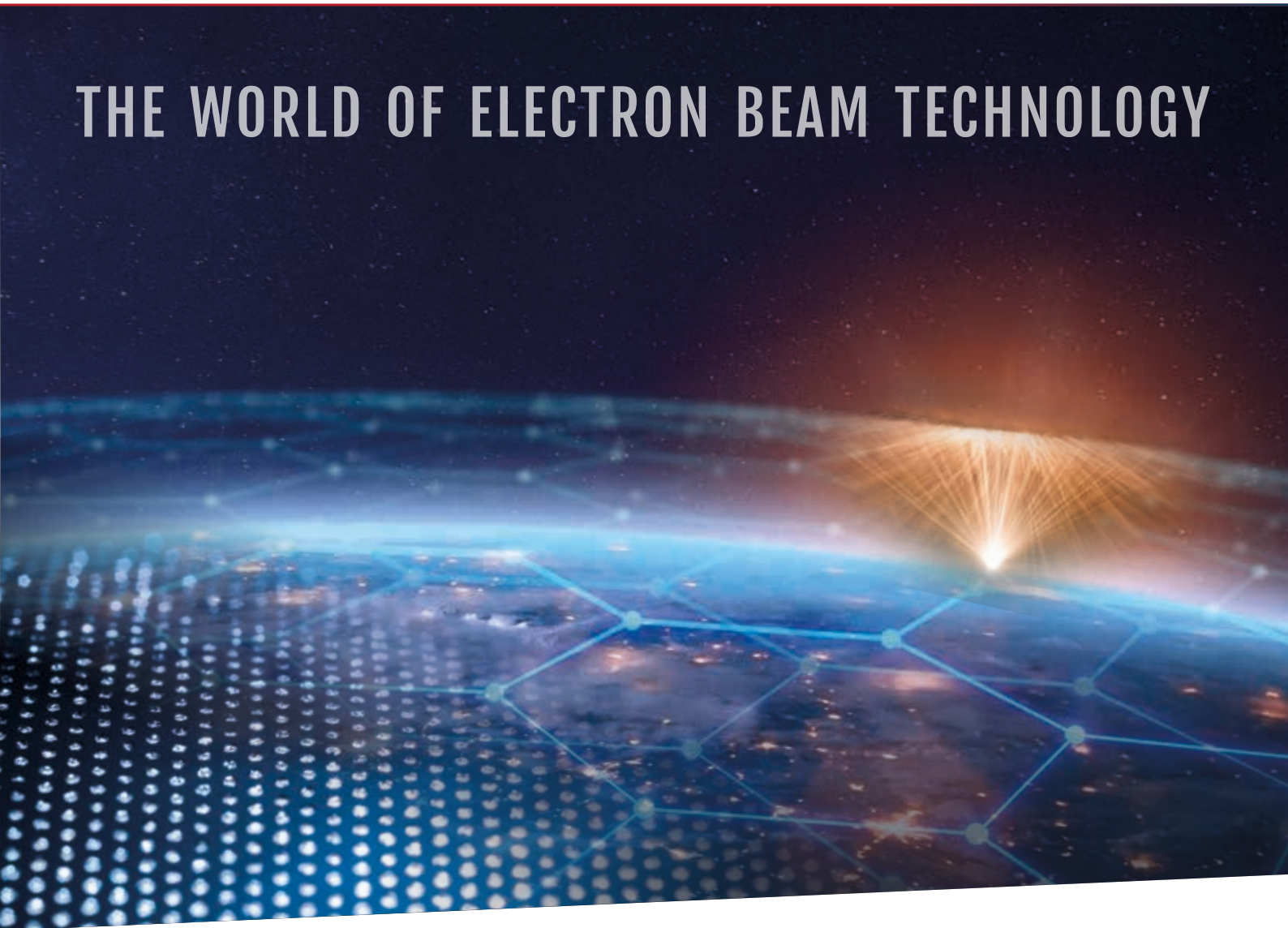


THE WORLD OF ELECTRON BEAM TECHNOLOGY



WELDING • DRILLING • SURFACE TREATMENT

PRECISION IN HIGHTECH

With more than five decades of experience, PTR Strahltechnik stands for innovation and maximum precision in electron beam welding, drilling, and hardening processes – from the development of initial prototypes to full-scale industrial production.

In addition to its comprehensive range of systems, PTR offers efficient contract manufacturing that impresses with precision and flexibility. Close collaboration with universities and customers leads to innovative, tailor-made solutions that set new benchmarks in quality and efficiency.

The fields of application extend from the automotive and aerospace industries to medical technology, research, and energy generation.



PTR STRAHLTECHNIK, headquartered in Langenselbold near Frankfurt am Main

HIGHTECH IN OPERATION



**RESEARCH &
DEVELOPMENT**



AEROSPACE



MEDICAL TECHNOLOGY



UTILITY VEHICLE INDUSTRY

PRECISION

THE INNOVATORS OF THE ELECTRON BEAM

Steigerwald Strahltechnik has been an internationally leading developer and manufacturer of electron beam welding and drilling systems for over 60 years – from compact units to fully automated large-chamber solutions.

At the company's own Innovation Center, Steigerwald Strahltechnik focuses on intensive research and development in close cooperation with universities and research institutes. This results in technologically advanced processes that ensure the highest levels of quality, efficiency, and cost-effectiveness.

In operation worldwide – from aerospace, energy technology, and electrical engineering to turbomachinery, research and development.



SST Steigerwald Strahltechnik, headquartered in Maisach, west of Munich



RAIL TRAFFIC



SHIPBUILDING



DEFENSE



RENEWABLE ENERGY

MAXIMUM PRECISION IN ELECTRON BEAM TECHNOLOGY

When it comes to maximum accuracy in joining technology, PTR Strahltechnik has been setting benchmarks for decades. Electron beam technology offers unique possibilities: even the smallest welds or drill holes are executed with micrometer precision – reproducible, efficient, and with minimal distortion.



WELDING · DRILLING · SURFACE TREATMENT

ELECTRON BEAM SYSTEMS MACHINE CONCEPTS FOR EVERY REQUIREMENT

Whether a compact solution for research and development or a fully automated large-scale system for series production – PTR Strahltechnik offers the full range of electron beam systems, tailored to the individual requirements of our customers.

- Perfectly tailored solutions from prototype to large-scale production
- State-of-the-art beam guidance, process control and automation
- Resource-efficient manufacturing with maximum productivity

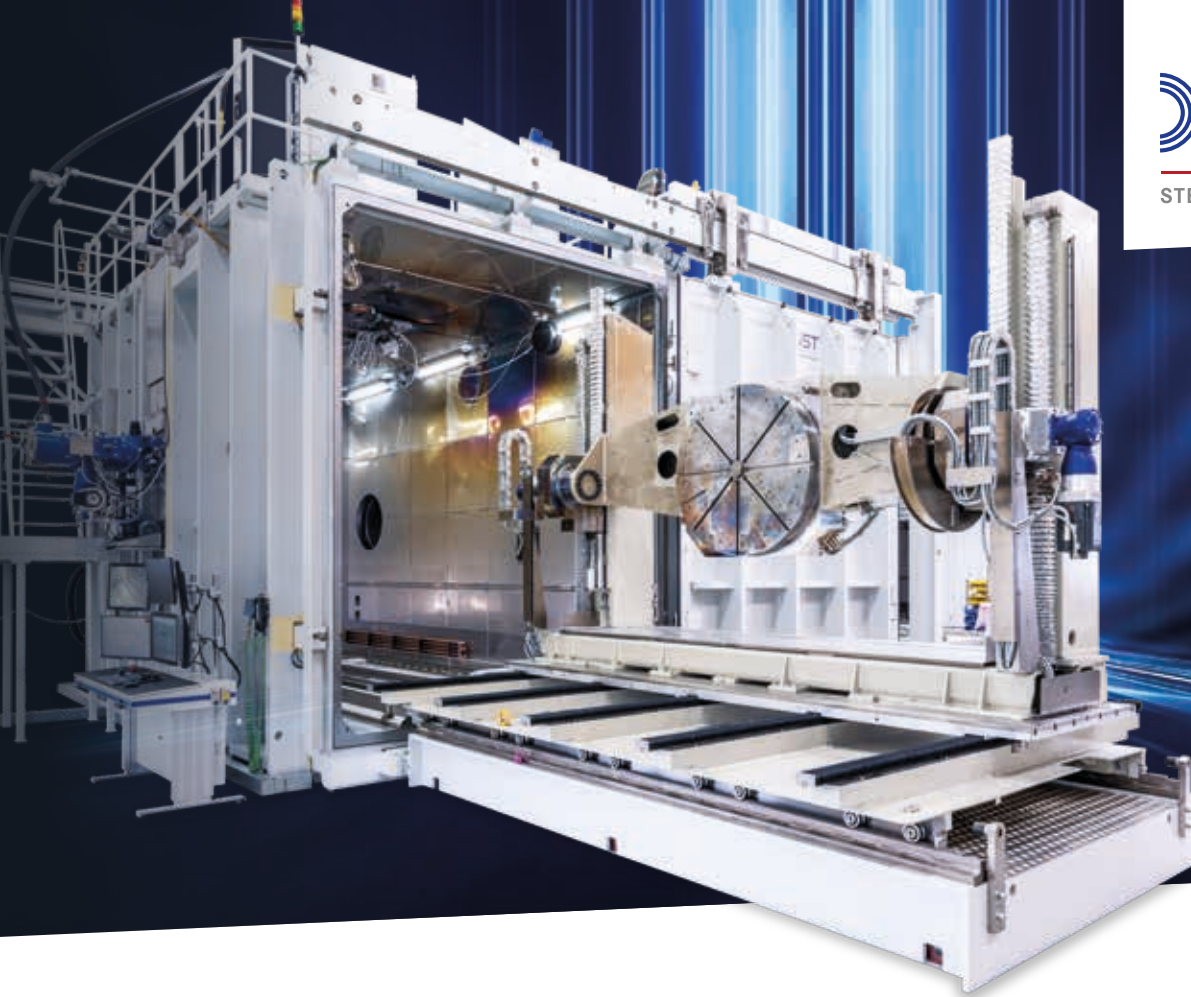
UNIVERSAL SYSTEMS

- Small chamber systems
- Special systems

PRODUCTION SYSTEMS

- Rotary indexing table cycle type systems
- Airlock cycle type systems
- Complete production lines





*Chamber machine
for welding aircraft
engines*

ELECTRON BEAM TECHNOLOGY OF THE FUTURE HIGH-TECH FOR HIGH-END

Steigerwald Strahltechnik provides electron beam systems for the highest demands. With state-of-the-art beam guidance, vacuum technology, and automation, Steigerwald Strahltechnik combines maximum precision with efficiency and sets new standards for high-end applications.

CERN



WELDING · DRILLING · HARDENING · ADDITIVE MANUFACTURING

THE SST INNOVATION CENTER

In close collaboration with customers, universities, and research institutions, Steigerwald Strahltechnik develops electron beam processes with the aim of continuously raising standards in precision, efficiency, and quality. For our customers, this means innovative solutions that reduce material usage, lower costs, and at the same time enable sustainable manufacturing processes.



JOB-SHOP FROM PROTOTYPES TO SERIAL PRODUCTION

PTR Strahltechnik offers tailored contract manufacturing solutions for the highest demands. Whether prototypes, small batches, or high-volume series production – our highly precise electron beam processes ensure reproducible quality, exact geometries, and minimal distortion.

- Demagnetizing
- Heat treatment
- VTI (visual inspection)
- PTI (dye penetrant inspection)
- UTI (ultrasound inspection)
- Metallography (grinding preparation)
- Helium leak testing
- Water pressure testing
- Hardness measurement (according to Vickers)

EBOMAT SHUTTLE



Airlock Chamber Production System

MAXIMUM PRECISION HIGH REPRODUCIBILITY

PTR Strahltechnik systems not only enable precise welding but also allow highly accurate drilling of even the smallest diameters at the micrometer scale.

With state-of-the-art beam guidance, vacuum technology, and intelligent process control, we provide our customers with entirely new possibilities: complex components, delicate structures, and the most demanding materials can be processed efficiently and reliably.





WENDELSTEIN 7-X

*High-performance heat exchanger
in cooperation with Plansee SE*

ELECTRON BEAM TECHNOLOGY FOR THE HIGHEST DEMANDS

PTR Strahltechnik offers electron beam processes at the highest level, designed to meet the most demanding requirements of customers across all metalworking industries. Our technologies excel with high processing speeds, minimal heat input, low distortion, and outstanding energy efficiency. Even challenging materials such as copper, aluminium, titanium, Inconel, or tungsten can be processed with precision.



INNOVATIVE IN ELECTRON BEAM TECHNOLOGY

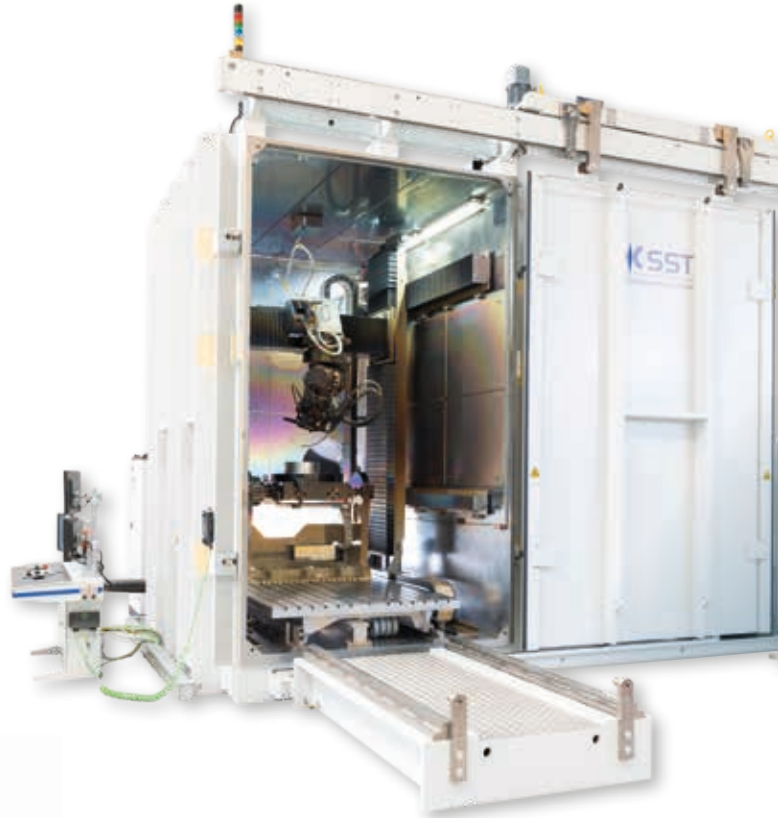
SST combines high-end technology with forward-looking engineering for companies that want to meet tomorrow's demands today.

With state-of-the-art electron beam systems, we develop solutions that deliver the highest precision, efficiency, and material conservation.

ADDITIVE MANUFACTURING THE PRODUCTION OF TOMORROW

The EBOADD process developed by SST enables the precise, layer-by-layer construction of highly complex metal components directly from CAD data. Even demanding materials and alloy combinations such as aluminium, copper, titanium, Inconel, or stainless steel can be processed reliably, tailored to meet the high-end requirements of modern industries.

- Precise
- Quick
- Material conserving
- Universal
- Efficient



*A special-purpose machine for
the European Organization
for Nuclear Research (CERN)*

CERN

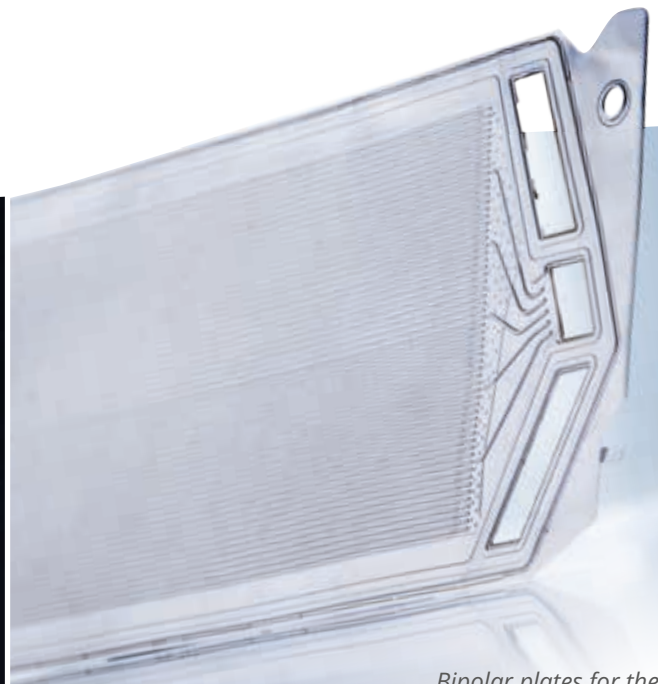
Here electron beams are used to research what holds the world together at its core.

MADE FOR FUTURE

Whether complex welds or innovative applications in additive manufacturing – SST delivers solutions that sustainably improve processes and provide customers with decisive competitive advantages. Leading companies from the aerospace industry, energy and medical technology sectors, as well as research and development institutions, rely on our technologies when the highest levels of precision, reproducibility, and efficiency are required.



For many years, the propulsion rockets of the European booster rocket Ariane have been developed at arianesGROUP in Ottobrunn and manufactured with Steigerwald EB



Bipolar plates for the hydrogen industry

ELECTRON BEAM TECHNOLOGY PRECISION TO THE POINT

Electron beam technology stands for the highest precision, efficiency, and quality – and has established itself as a key technology in numerous high-tech industries. The use of concentrated electrons enables processing methods that are hardly achievable with conventional techniques.

Electron beam technology uses a focused beam of high-energy electrons to precisely process materials. By accelerating the electrons in a vacuum and controlling them with precision, an extremely accurate energy input is achieved – ideal for welding, drilling, hardening, or additive manufacturing.

EB TECHNOLOGY – YOUR ADVANTAGE IN MANUFACTURING

The consistently small beam diameter at the focus ensures exceptionally high geometric accuracy – even for the most demanding applications. Thanks to fully electronically controlled operating parameters, the system can be adjusted flexibly and quick to new requirements. The result: impressive reproducibility of the application results at the highest level.

EFFICIENCY

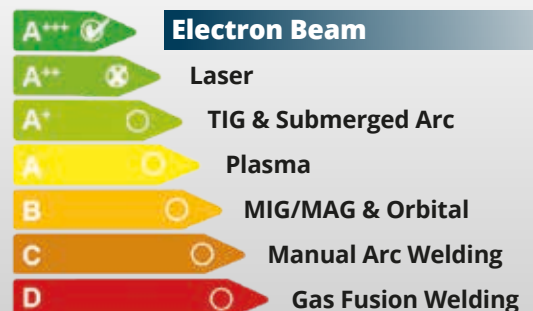
- High efficiency
- High processing speeds
- Minimal heat input
- Contactless operation
- Exceptional material combinations
- High penetration depths in a single pass

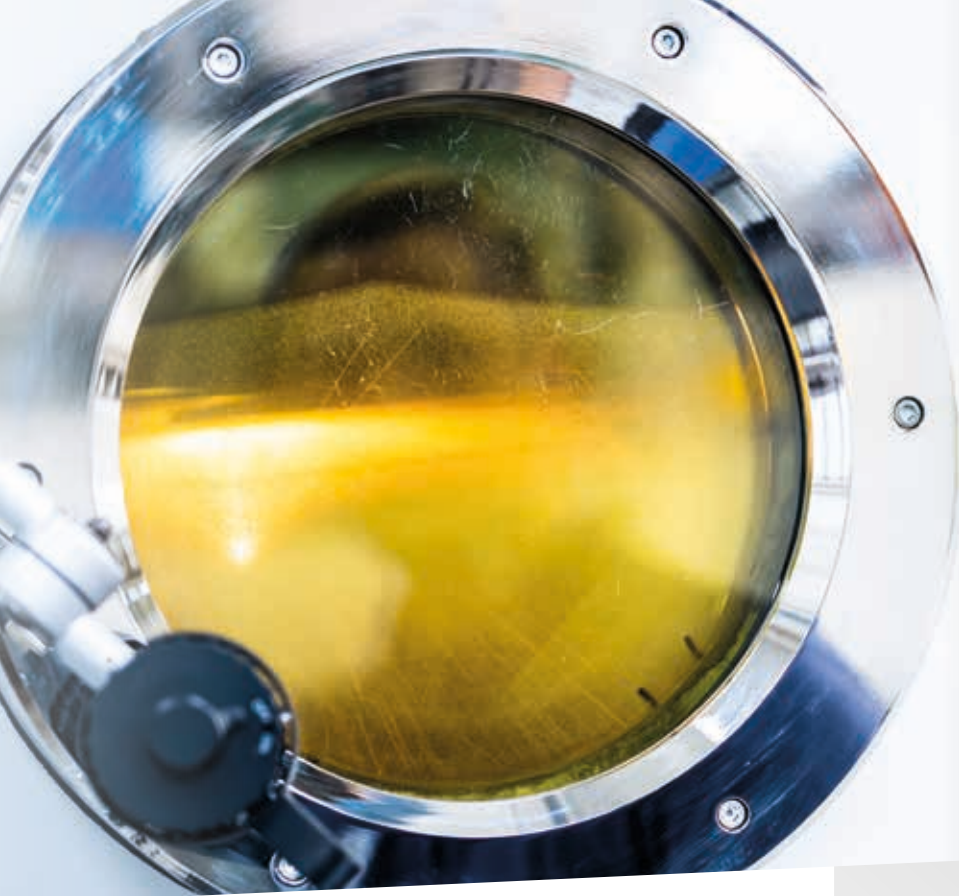
COST SAVINGS

- Expanded range of materials
- Avoiding straightening and rework
- Integration into production lines
- No need for filler material or shielding gas
- Simple joint preparation – low upfront costs

ENERGY EFFICIENCY

Electron beam welding stands out as an exceptionally sustainable manufacturing process.





PRECISION IN VACUUM

The high energy density of electron beam welding in a vacuum offers a range of compelling advantages.

Precisely controlled processes enable accurate results with minimal distortion and maximum reproducibility – meeting the highest demands.

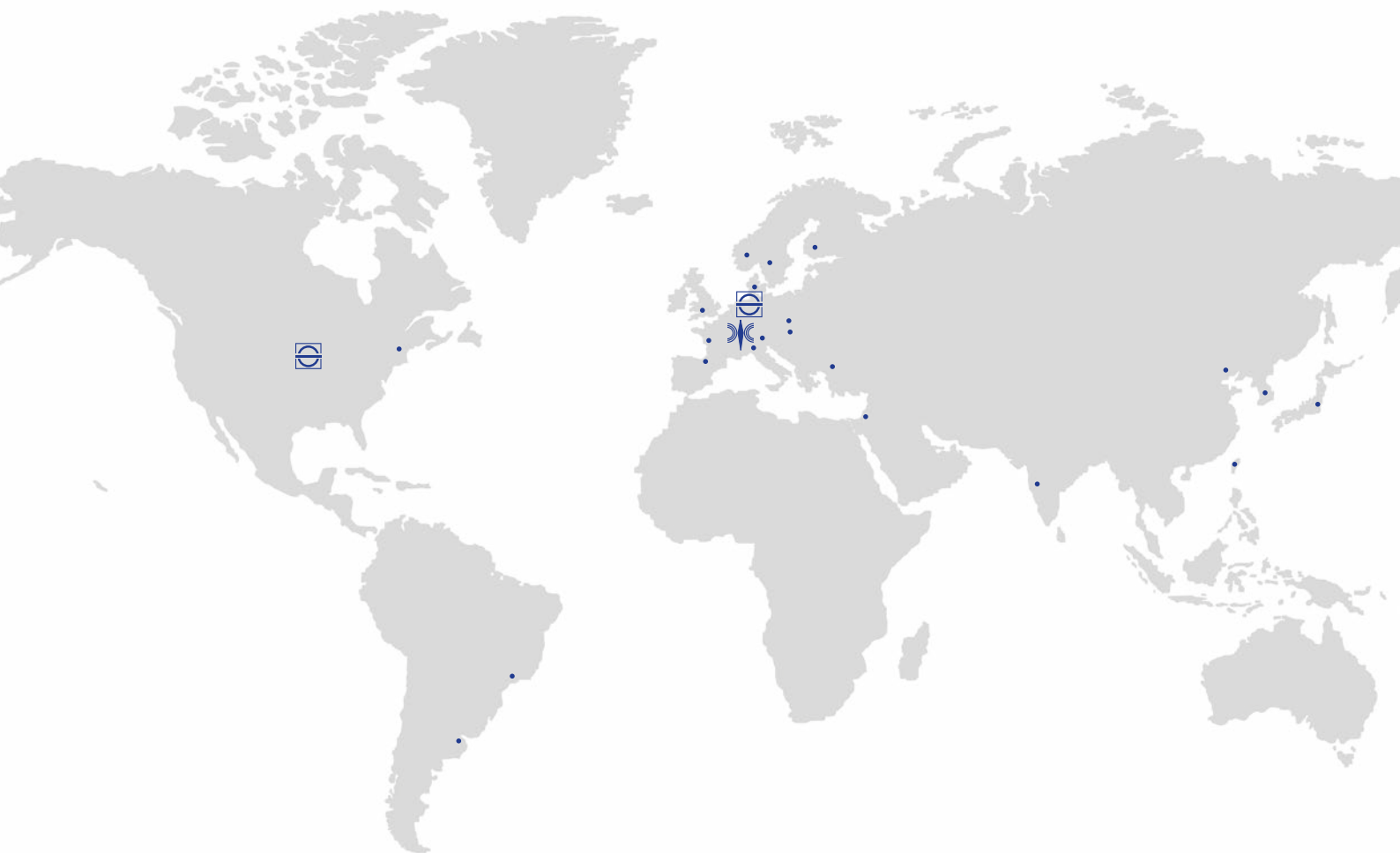
HIGHLIGHTS

- Exceptionally narrow seams
- Narrow, heat-tinted-free heat-affected zones
- Deep weld penetration
- High welding speeds
- Exact reproducibility of welds
- Consistent quality

THE ADVANTAGES OF ELECTRON BEAM

Scan for more:





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