

RESEARCH & PHYSICS EXPERTISE

OUR EB SOLUTIONS MEET ALL YOUR CHALLENGES

ELECTRON BEAM WELDING

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RESEARCH AND
PHYSICS
EXPERTISE

THE PARTNER OF
YOUR PROJECTS

OUTSOURCING
DEVELOPMENTS

SPECIFIC
MACHINES

RESEARCH AND PHYSICS EXPERTISE



SINCE 1972 →
44 YEARS
OF EXPERTISE



RESEARCH AND
PHYSICS
EXPERTISE

WE HAVE THEIR TRUST...

SEVERAL RESEARCH AND PHYSICS CLIENTS

TECHMETA
GROUPE **bodycote**

TIER-1 SUPPLIER
FOR MOST OF
OUR CLIENTS

cea


ESRF
The European Synchrotron


NEUTRONS
FOR SCIENCE


CERN

CMS


cewac

lapp.


GANIL
GRAND ACCELERATEUR NATIONAL D'IONS LOURDS

RESEARCH AND
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THE PARTNER OF YOUR PROJECTS

OUR WILLING IS TO GO FURTHER BY YOUR SIDE

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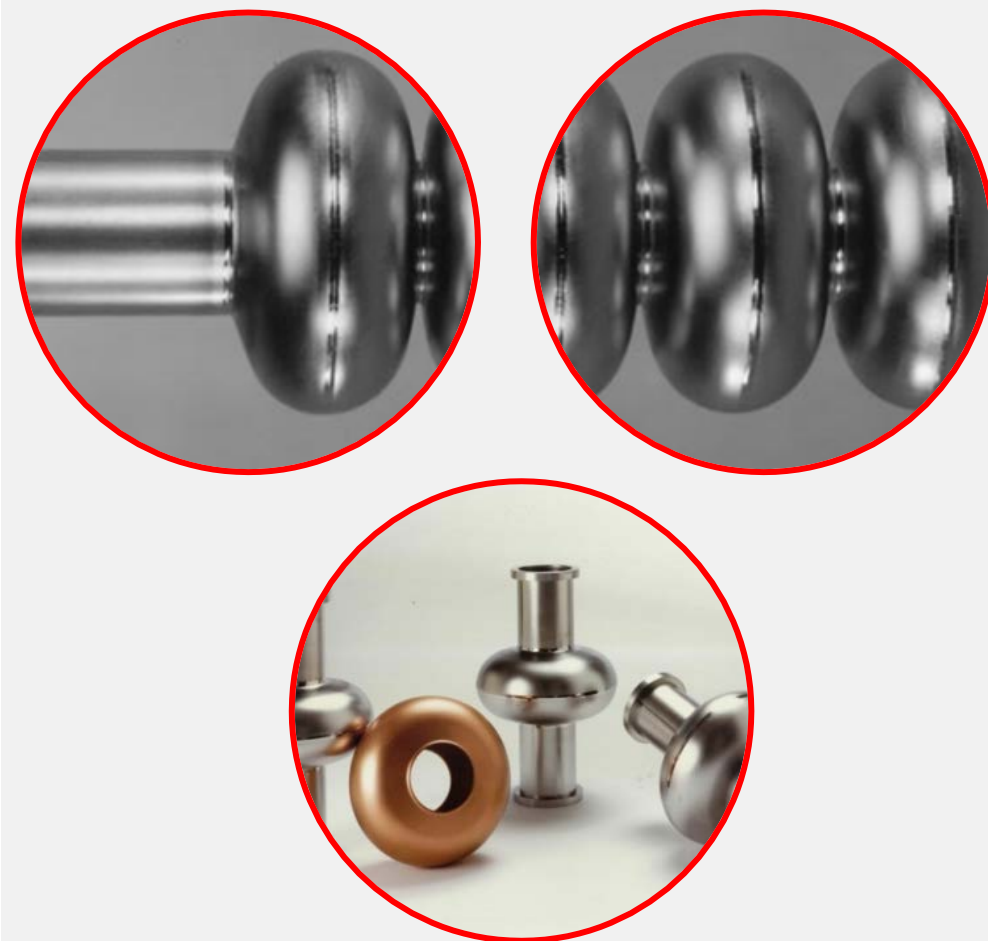
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PARTS WELDED BY TECHMETA

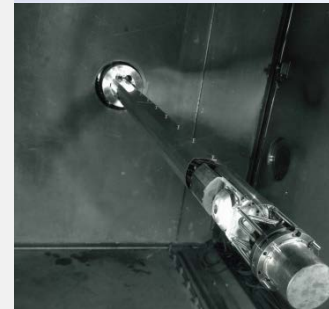
SUPRACONDUCTING CAVITIES

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GROUPE Bodycote



PART DIMENSION

- 2 types : niobium and copper
- Diameter from 55 to 260 mm



WELDS

- Internal with deflector
- External



MAIN FEATURES

- GENOVA & LARA machines
- Welding chamber : 3300 x 1000 x 1300 mm,
- X axis motion : 1400 mm,
- Y motion : 500 mm.

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PARTS WELDED BY TECHMETA

AVA MACHINE – STRIPS FOR THE CERN CMS SUPRACONDUCTING PROJECT

TECHMETA
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PART DIMENSION AND WELDS

- 2,3 mm width
- 2 guns
- Continuous welding



AWARD

- TECHMETA won an AWARD for its collaboration to this project



MAIN FEATURES

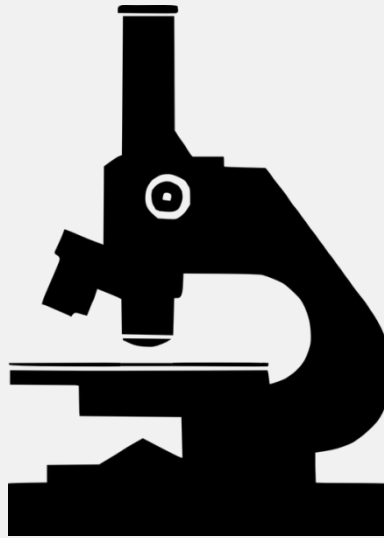
- 70 meters length with : cleaning, EBW, cooling, ultrasonic checking, machining, dimension checking, driving, saw, finished conductor
- 3 years for manufacturing

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PARTS WELDED BY TECHMETA

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OVER 10 PARTS WELDED FOR THE RESEARCH AND PHYSICS SECTOR

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OUTSOURCING
DEVELOPMENTS

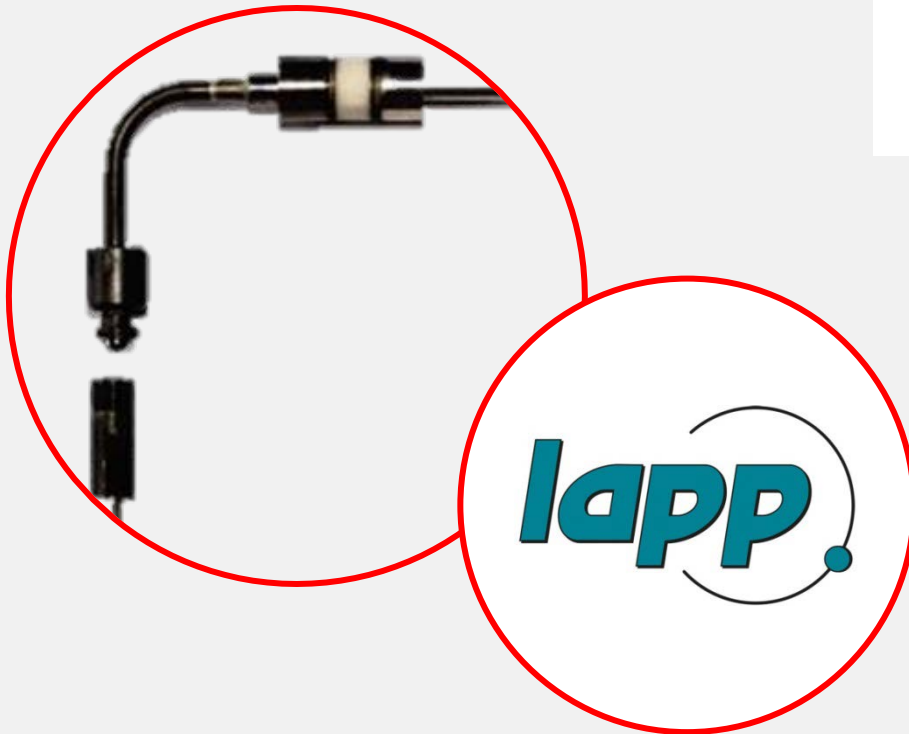
PARTS WELDED BY TECHMETA

ULTRACOMPACT COUPLING AND THERMICAL ISOLATOR

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MAIN FEATURES

- Titanium,
- Very thin tubes on connector for cooling fluid



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HE³ SENSORS DEVELOPMENT

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MAIN FEATURES

- Precise geometrical characteristics,
- Welds of high length.

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BEAM STOPPER

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MAIN FEATURES

- Welds of high penetration,
- Dimensions : High length
- Variable working distance
- Copper connection welded for cooling
- Leak tests at extremely low vacuum levels.



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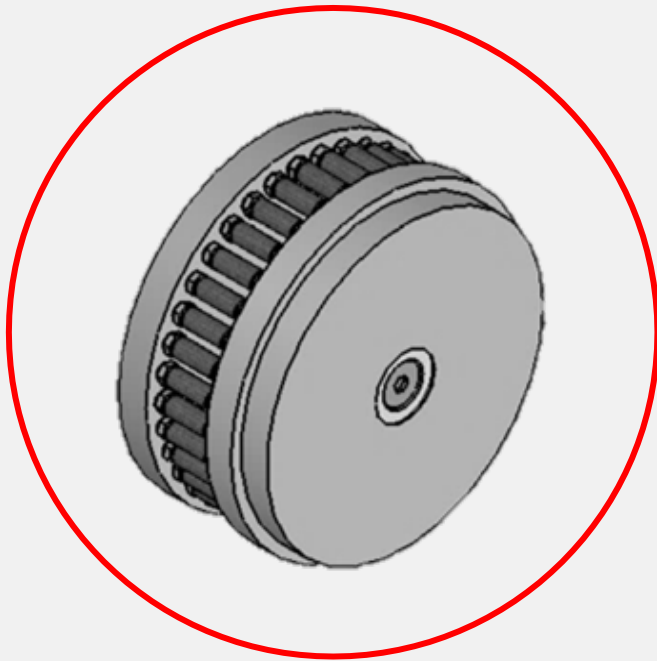
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COOLING EXCHANGER

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MAIN FEATURES

- Parts in aluminium or copper,
- Heat exchanger,
- Welding penetration up to 25 mm,
- Difficulty: thermal dissipation to conserve the metallurgical properties

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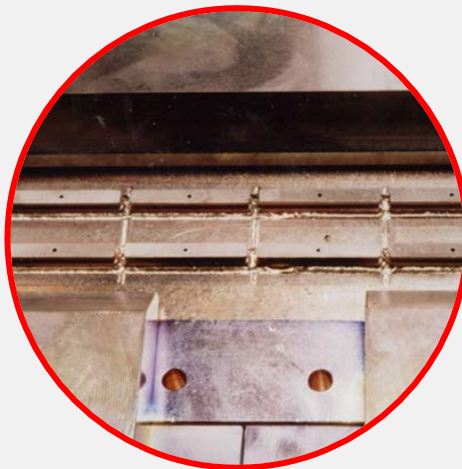
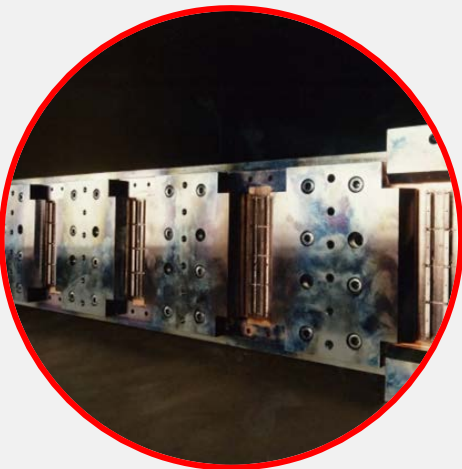
PARTS WELDED BY TECHMETA

HYPER FREQUENCY ANTENNA

TECHMETA
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MAIN FEATURES AND DIFFICULTIES

- Welding position extremely precise,
- Use of a heat diffuser,
- Parts of high dimensions: 2,20 meters height,
- Mirror polished zones to be protected,
- Finished parts in machining when welding



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PARTS WELDED BY TECHMETA

SAMPLES CARRIER

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MAIN FEATURES AND DIFFICULTIES

- Heterogeneous welding : tantalum on molybdenum,
- Angle welding realised on the side of the inner diameter,
- Welding diameter : 1,8 mm



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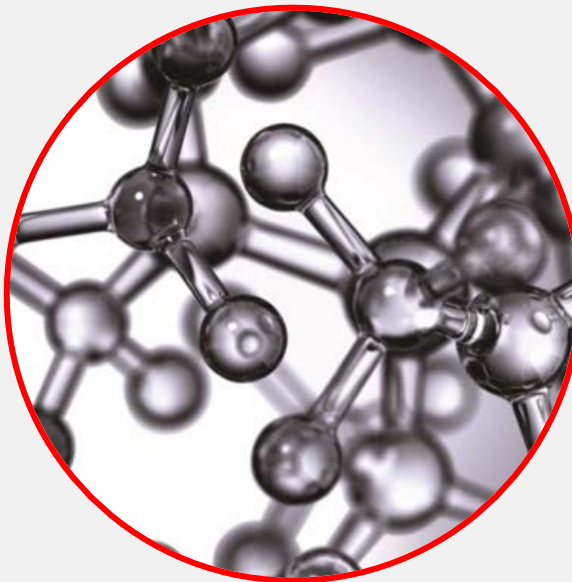
PARTS WELDED BY TECHMETA

MIRRORS CARRIER STRUCTURE FOR MEGAJOULES LASER

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MAIN FEATURES

- Length : 8 m,
- Penetration : 45 mm maximum.



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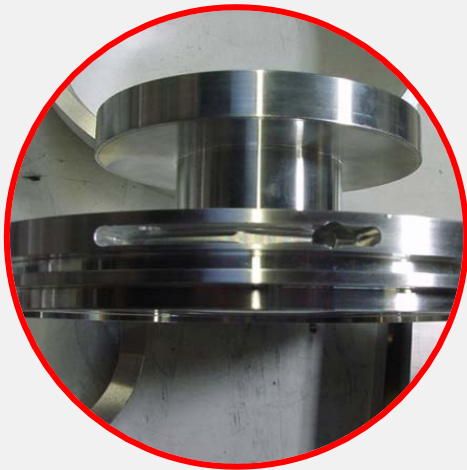
PARTS WELDED BY TECHMETA

BEAM DUMP – TARGET FOR CERN RING

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MAIN FEATURES AND DIFFICULTIES

- Longitudinal, radial and extremity contouring welding,
- Part weight : 3,5 tons,
- Length : 5 m,
- Evolution of the penetration during the welding



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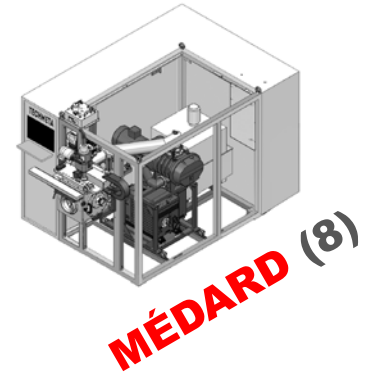
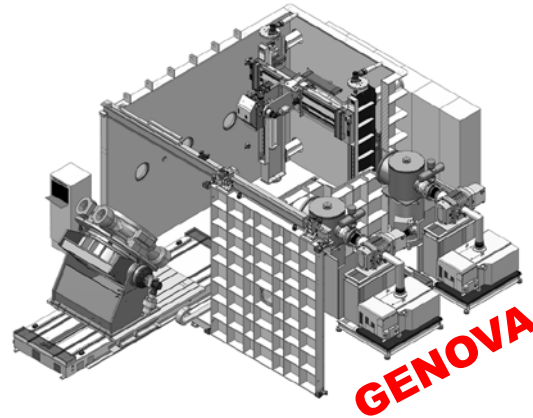
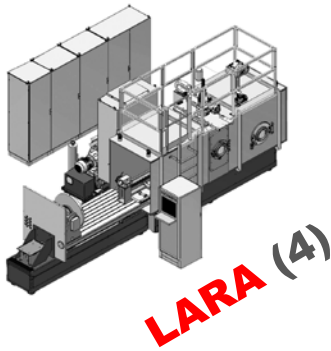
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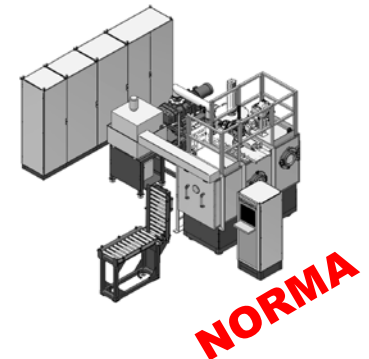
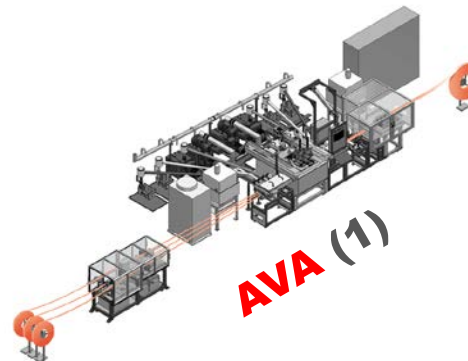
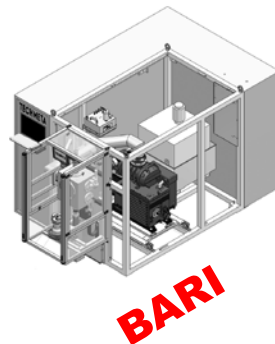
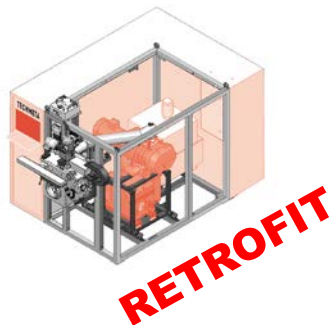
MACHINES

WE DESIGN AND MANUFACTURE THE MACHINE
THAT BEST FITS WITH YOUR WELDING NEEDS

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OVER 10 MACHINES AROUND THE WORLD



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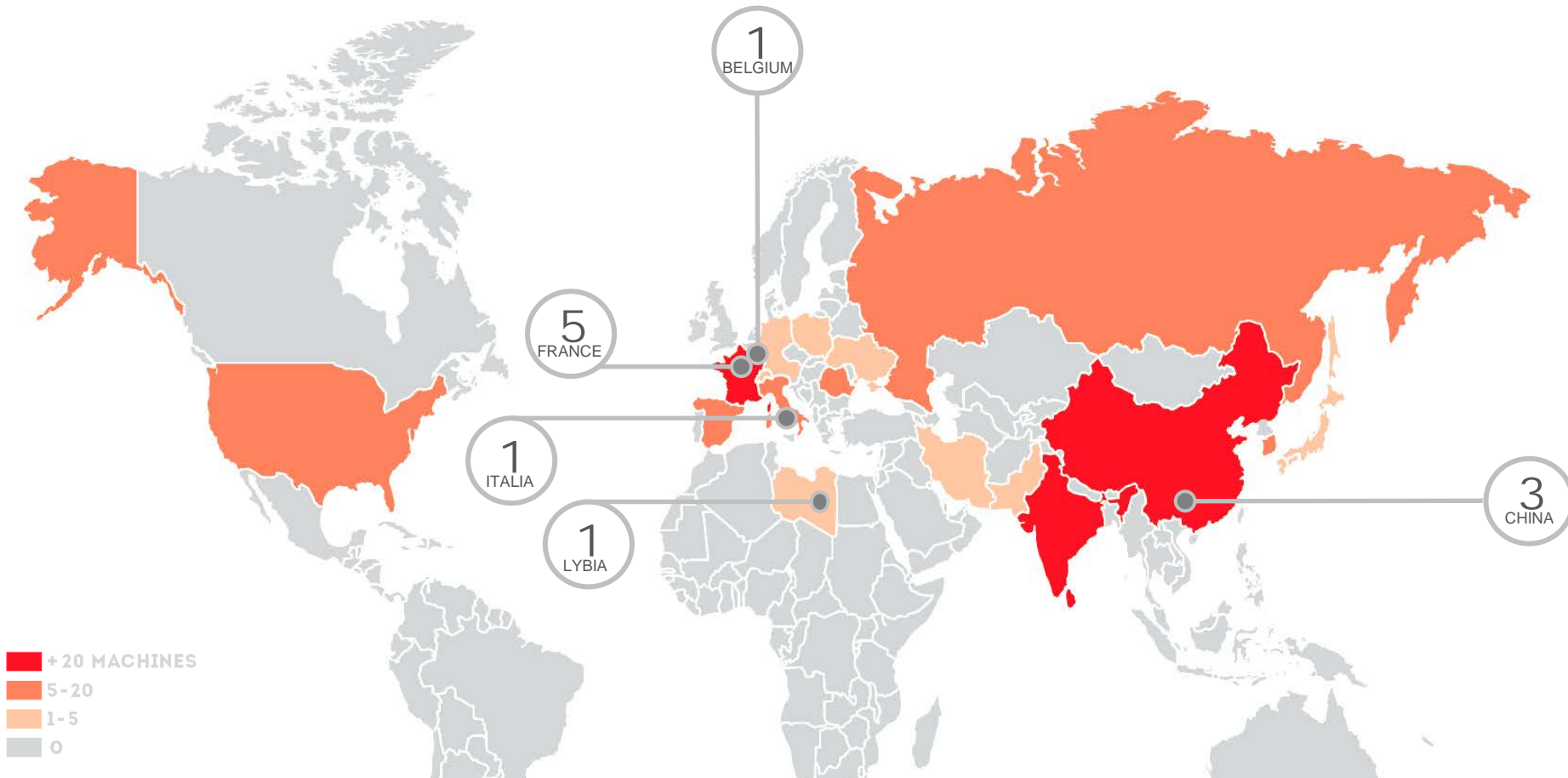
OUTSOURCING
DEVELOPMENTS

SPECIFIC
MACHINES

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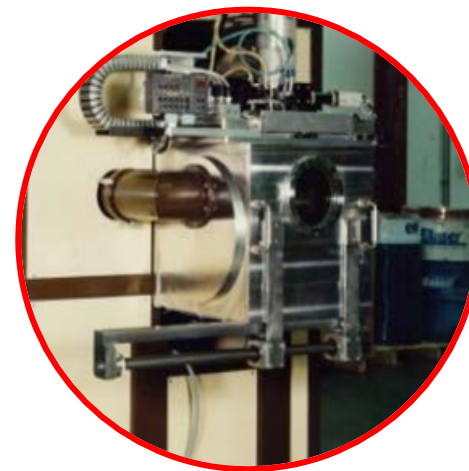
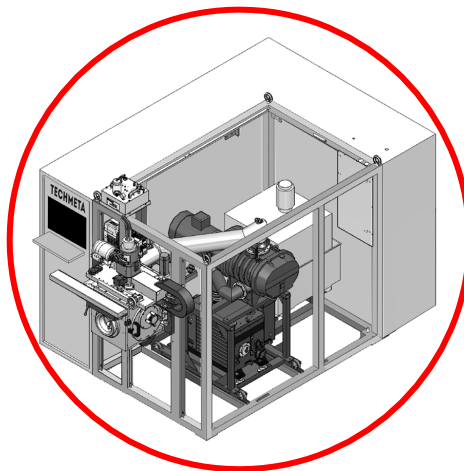
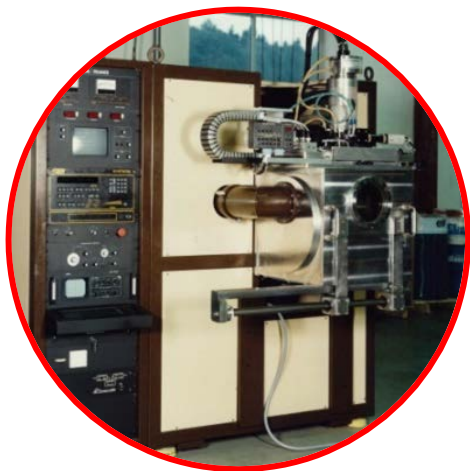
OUTSOURCING
DEVELOPMENTS

SPECIFIC
MACHINES

MANUFACTURED MACHINES

MEDARD MACHINE – PARTS FOR UNIVERSITY RESEARCH

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MAIN FEATURES

- Pumping group – primary vacuum : $5 \cdot 10^{-2}$ mbar,
- Maximum vacuum – secondary vacuum : $5 \cdot 10^{-7}$ mbar
- Cryogenic pump for secondary vacuum
- Welding chamber : over 1m^3
- Vertical or horizontal gun position

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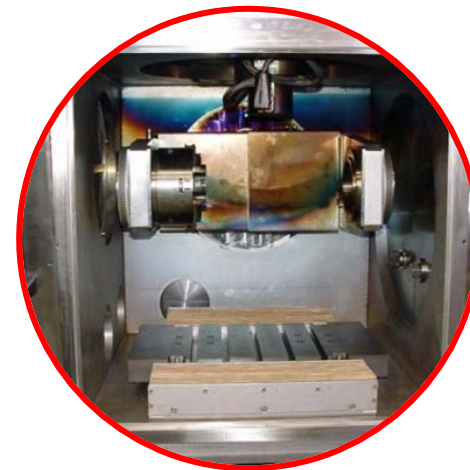
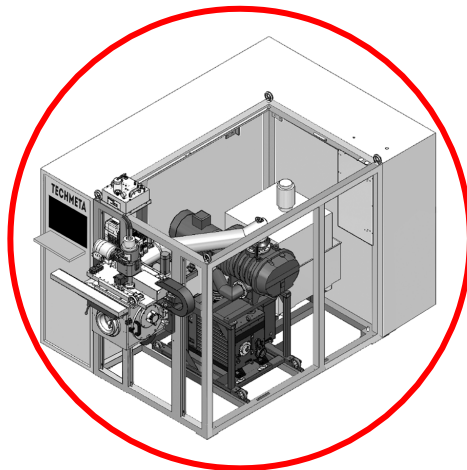
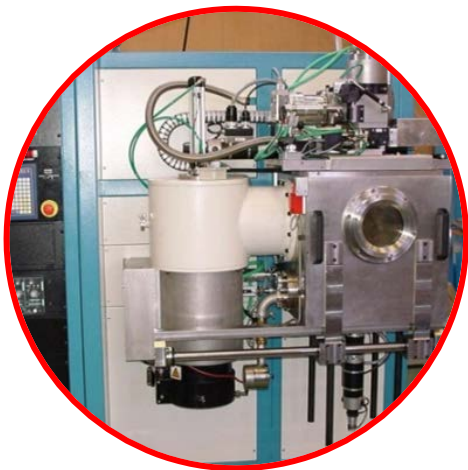
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SPECIFIC
MACHINES

MANUFACTURED MACHINES

MEDARD MACHINE – PARTS FOR UNIVERSITY RESEARCH

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MAIN FEATURES

- Welding chamber : 500 x 500 x 500,
- Beam focussing system,
- Beam deflection system
- Beam pulse welding system,
- Moving working table: 200 mm,
- Electron gun movement: 200 mm.

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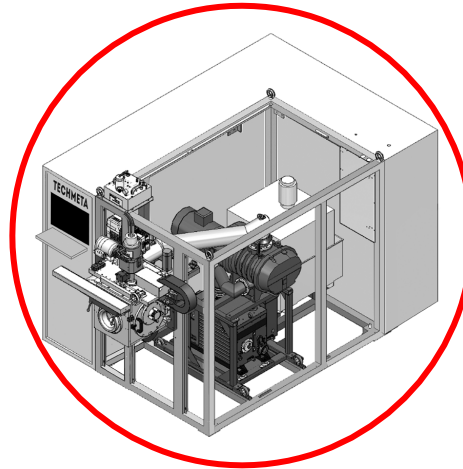
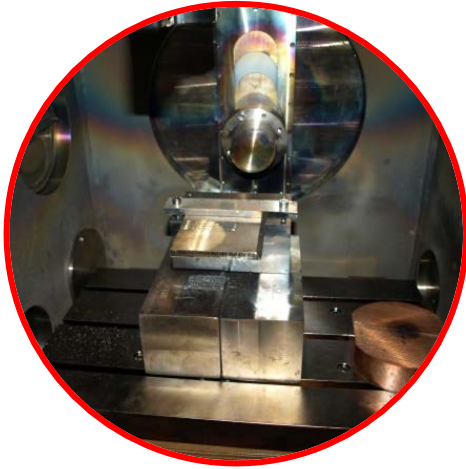
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SPECIFIC
MACHINES

MANUFACTURED MACHINES

MEDARD MACHINE – WELDING POSSIBILITIES TRIALS – WELDING INSTITUTE

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MAIN FEATURES

- Small productions,
- Double mandrel.

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DEVELOPMENTS

SPECIFIC
MACHINES

MANUFACTURED MACHINES

LARA MACHINE

TECHMETA
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MAIN FEATURES

- Run out platform,
- 2 rotary manipulator systems with tailstocks,
- Welding chamber : 1880 x 810 x 650 mm,
- Gun mounting positions: vertical at top face
- Linear motion travel : 655 mm,
- Maximum loading capacity: 550 kg.

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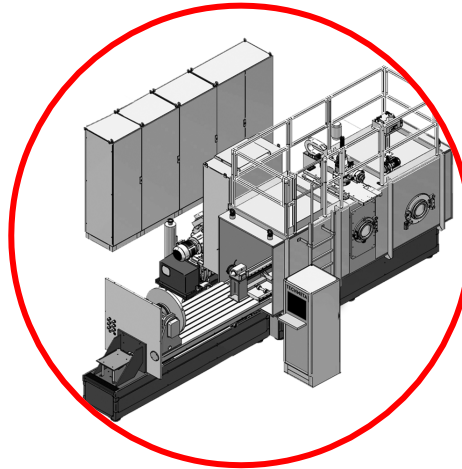
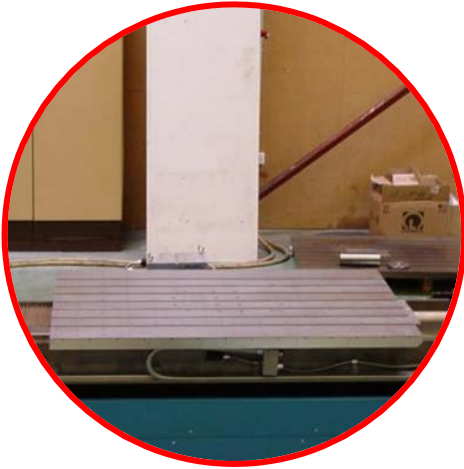
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SPECIFIC
MACHINES

MANUFACTURED MACHINES

LARA MACHINE

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MAIN FEATURES

- Tipping of the gun from horizontal to vertical position,
- Stainless steel plate of diameter 250 mm for the rotary system,
- 3 mechanical axis,
- Chamber size : 2500 x 1000 x 1000,
- Focal distance : 50 – 500 mm,
- CNC controlled,
- Part in stainless steel and niobium.

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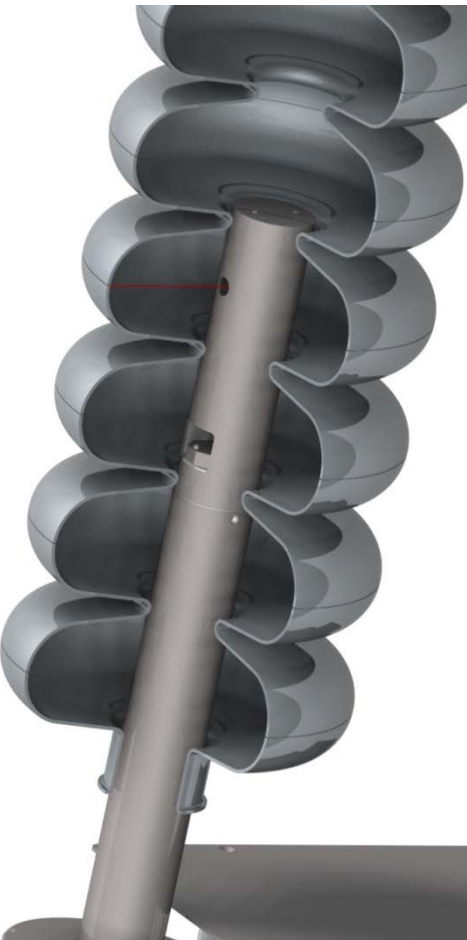
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SPECIFIC
MACHINES

MANUFACTURED MACHINES

DEFLECTOR

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MAIN FEATURES

- Diameter of 70 mm to enter cavities of a 72 mm diameter
- Standard length : from 250 mm to 800 mm

APPLICATIONS

- Niobium cavities,
- Copper cavities,
- Aluminium casing

ADVANTAGES

- Extremely smooth weld seam on the inside of the cavity without need of extra machining,
- Welding of unattainable seam.

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OUTSOURCING
DEVELOPMENTS

SPECIFIC
MACHINES

OUR EB SOLUTIONS MEET ALL YOUR CHALLENGES WHAT WILL BE YOURS?

44

44 YEARS OF
EXPERTISE

10

ABILITY TO
WELD OVER 10
PARTS FOR THE
SECTOR

10

OVER 10
MACHINES
AROUND THE
WORLD

THANK YOU FOR
YOUR ATTENTION

ANY QUESTIONS?

OUR EB SOLUTIONS MEET ALL YOUR CHALLENGES

ELECTRON BEAM WELDING