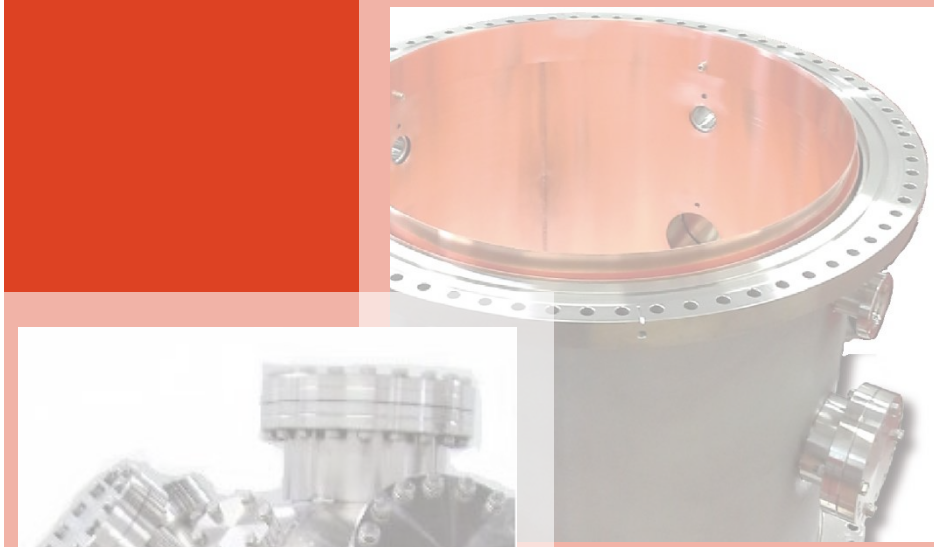
TVP

AIDAinnova – ADVANCED MECHANICS

April 27th 2023 (Valencia)



THERMAL
VACUUM
PROJECTS

vacuum-projects.net

THERMAL VACUUM PROJECTS

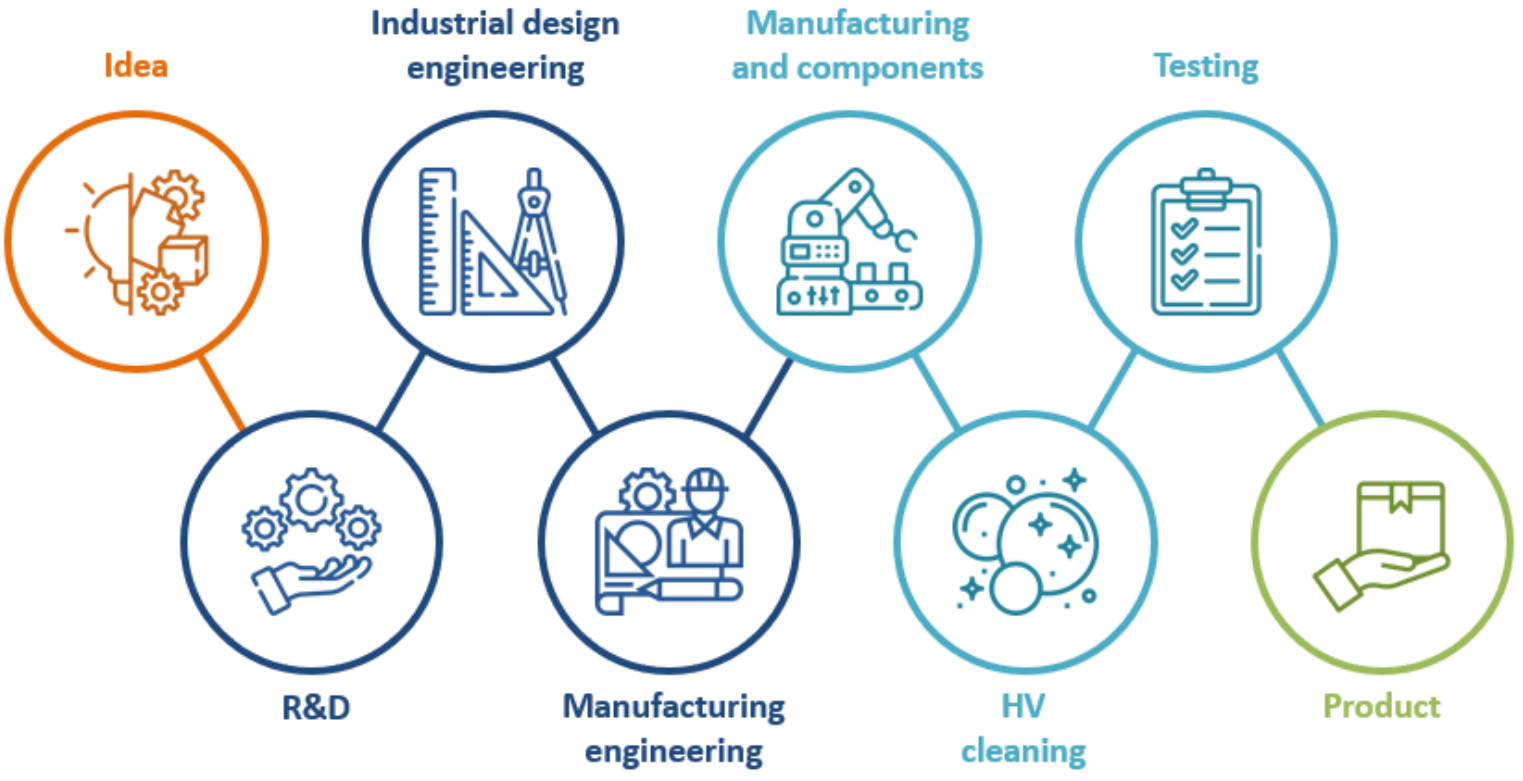
TVP is a company supported by a professional experience of more than 20 years in High Vacuum and Cryogenic technologies, offering tailored solutions for Big Science laboratories, Space, Research Centers and applied vacuum and cryogenics for industry.

Since 2019, TVP belongs to the DIECAROS group, with a wide experience in space technologies, accelerators, fusion, etc.

DIECAROS
Science and Technology Corp.

CAPABILITIES

We have all capabilities from design to machining, welding and testing for the delivery of tailored solutions.



TVP

TVP projects

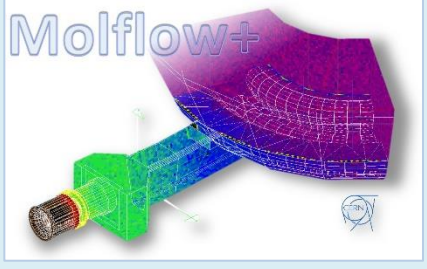
Planning

Simulation & Calculation

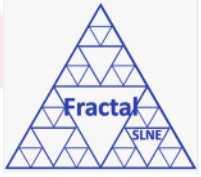
Ansys

CAD Design

SOLIDWORKS



OUR CUSTOMERS



OUR CUSTOMERS

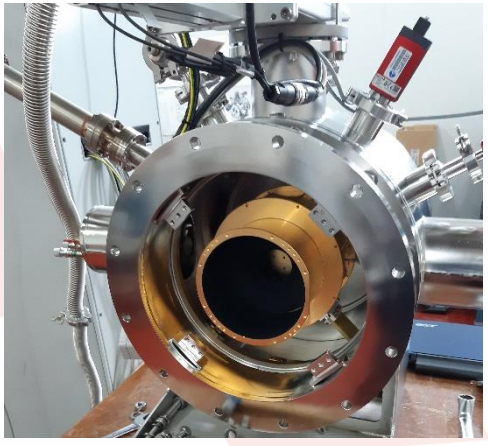
TVP

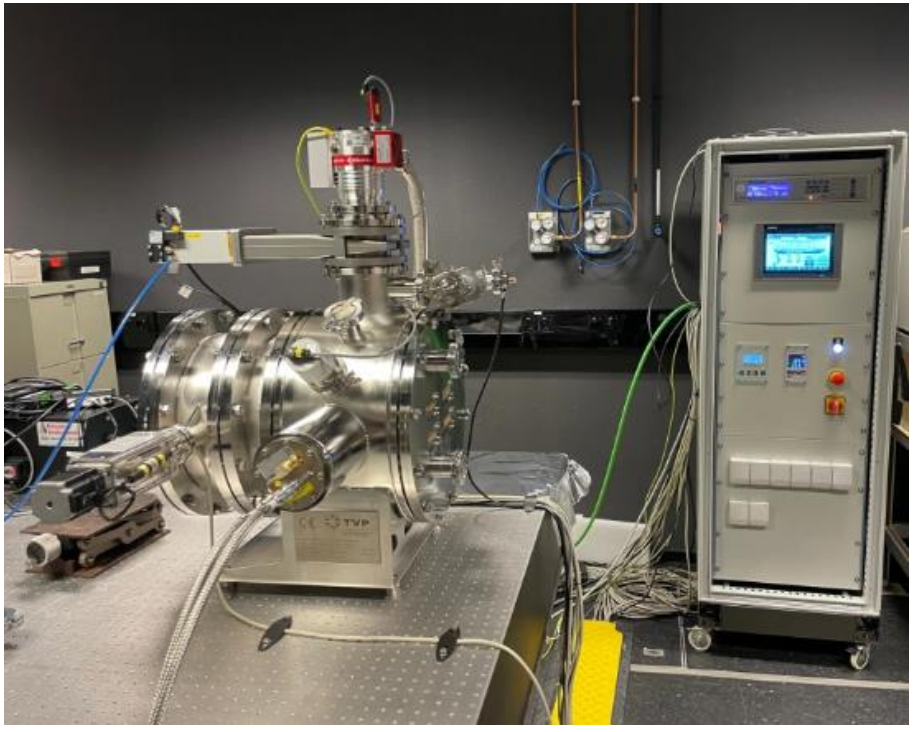
SOME APPLICATIONS

- Applied Physics
- Nuclear Physics
- Electronics Industry
- Particle Physics
- Nanotechnology
- Cryogenics
- Astronomy and Space
- Materials Science
- Chemistry
- Photovoltaic Industry

SWIR Bench Cryostat for CCD and CMOS sensors testing

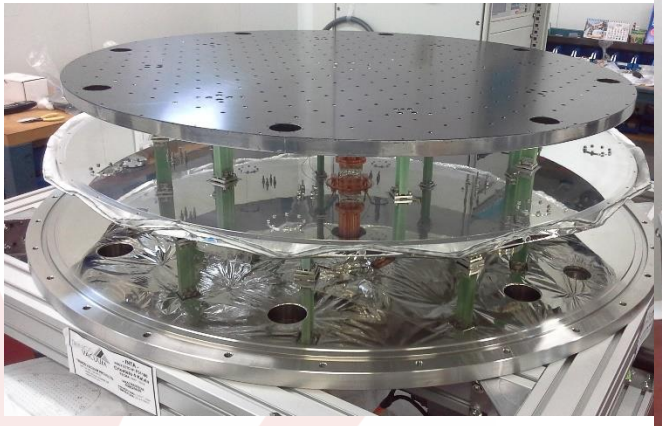
(ESA - European Space Agency ESTEC - European Space Research and Technology Center)





- Temperature control in the range of 120 to 300 K
- Pressure below 10^{-6} mbar at room temperature after 48h of pumping.
- Turn-key solution including Control Cabinet and the HMI program

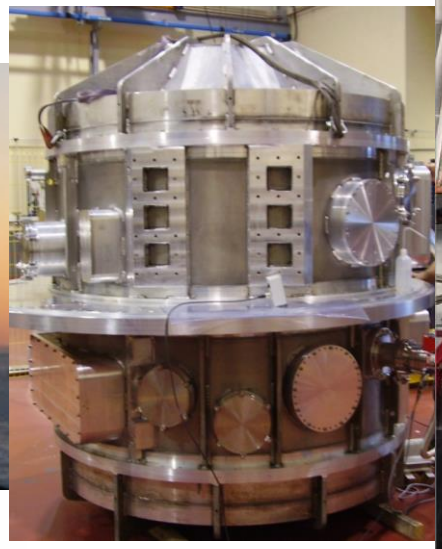
4K Cryostat for mechanical and optical components testing (INTA)



- Design and manufacture of a 4K Cryostat (-269 ^{o}C)
- Pressure: ~10^{-7} mbar
- Software control: with one push button the cryostat starts cooling from room temperature to 4K

Cryostat for optical bench

(IAC-GRANTECAN)

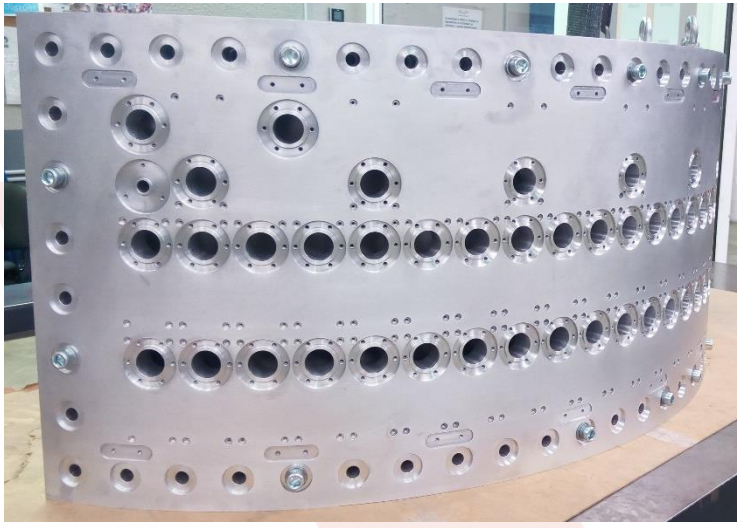


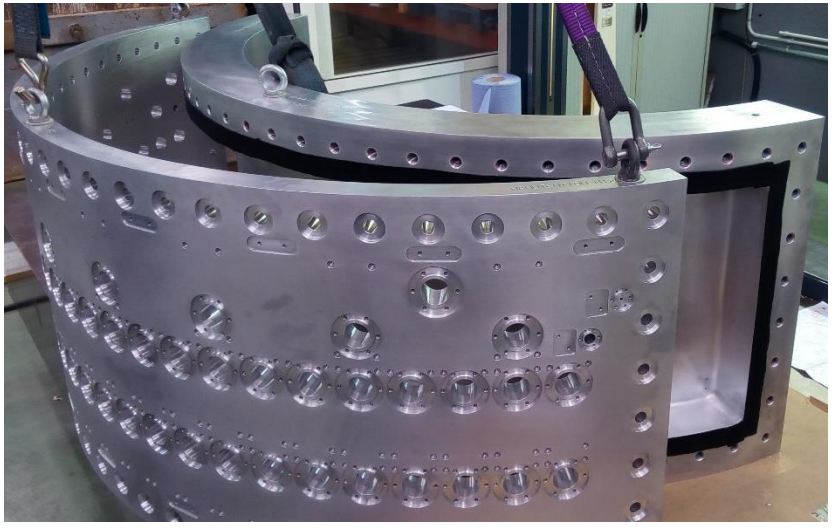
EMIR attached to the Nasmyth
A focal station of the GTC telescope.
www.gtc.iac.es/instruments/emir/emir.php

- Rotating vacuum chamber
- Aluminium Welds by EBW, MIG and TIG
- Active Shielding Temperature: -196 ^{o}C (77 K)
- Pressure: 5x10^{-6} mbar

XtremeD Detector Vessel

(ILL - Institut Max Von Laue – Paul Langevin)

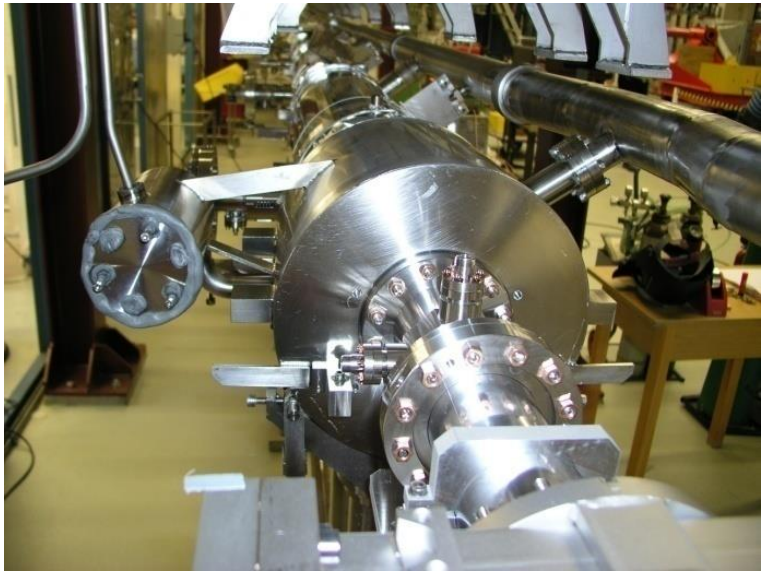




- Forged Aluminium
- Ultrasonic testing
- Precision machining

Helium vessel with superconductor magnet for XFEL project

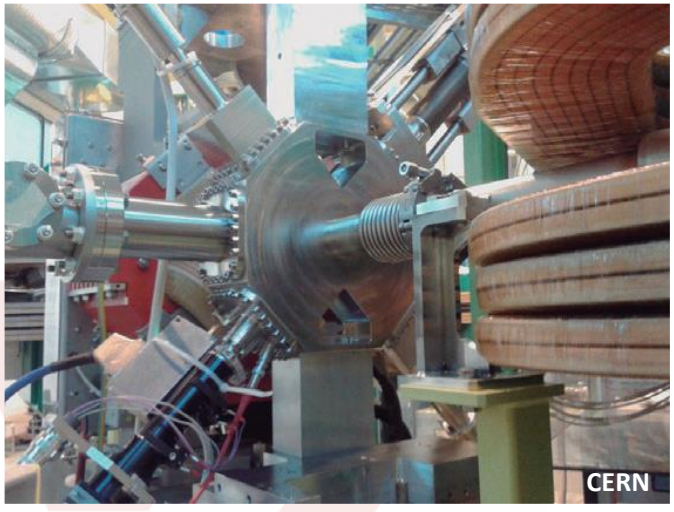
(DESY (Hamburg) – CIEMAT)

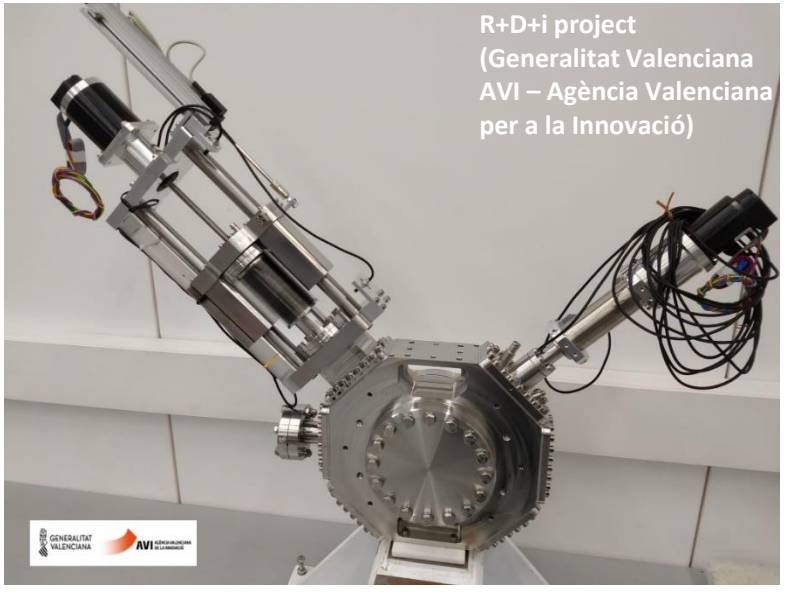


- 105 vessels with superconductor dipole and quadrupole magnets
- Vacuum pressure $1x10^{-6}$ mbar
- Pressure vessel certification

Beam Diagnostic Boxes

(CERN & R+D+i)

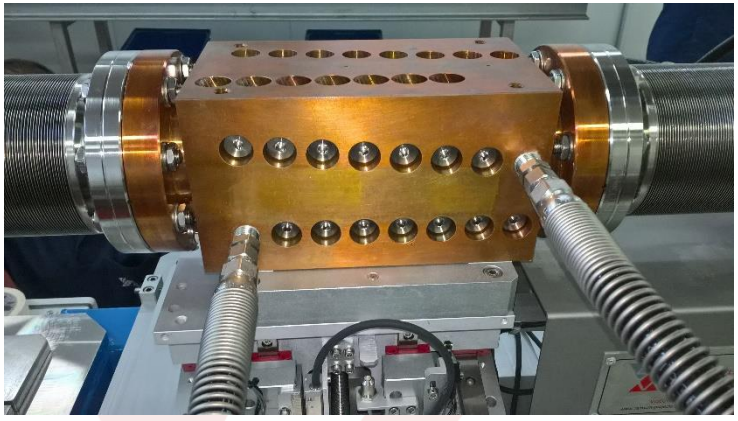




- Precision machining and assembly
- High precision movement calibration testing (microns)
- Exhaustive cleanliness and RGA certification

Front End

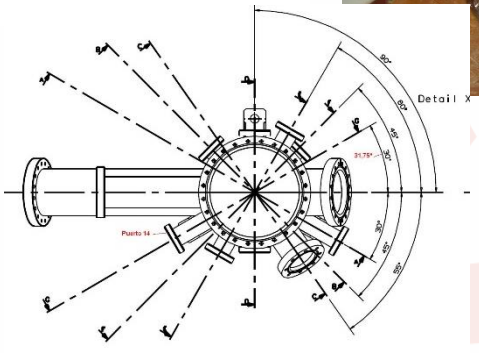
(ALBA - CELLS)

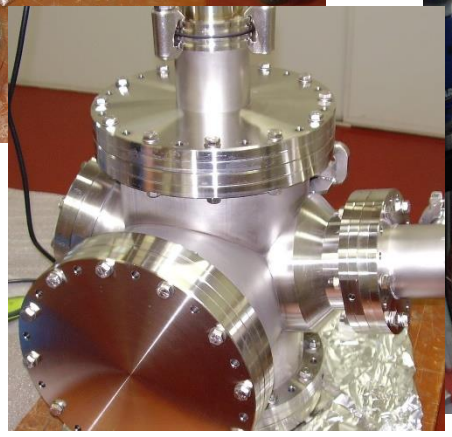


- Precision machining and assembly
- Ultra High Vacuum (~10^{-10} mbar)
- Exhaustive cleanliness and RGA certification

Vacuum Chambers

(ALBA Synchrotron)



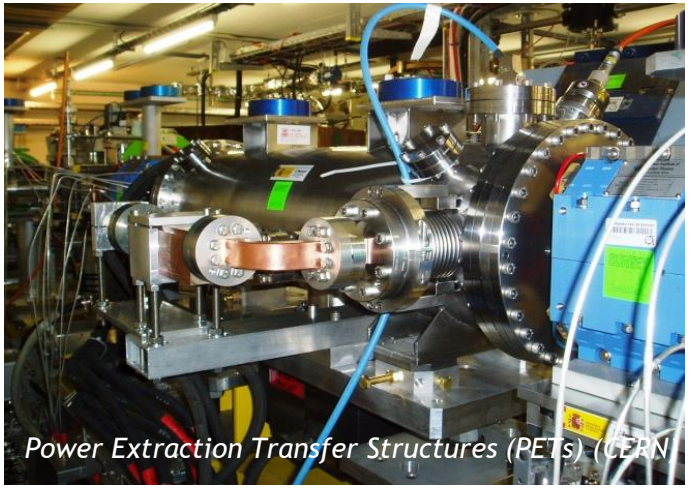


- Ultra High Vacuum (~10^{-10} mbar)
- Critical manufacturing process for angle convergence
- Exhaustive cleanliness and RGA test

Vacuum chamber for PETS project & Strip line kicker

(CERN - CIEMAT)

- Stainless steel 316L and 316LN
- MIG and TIG welding
- UHV



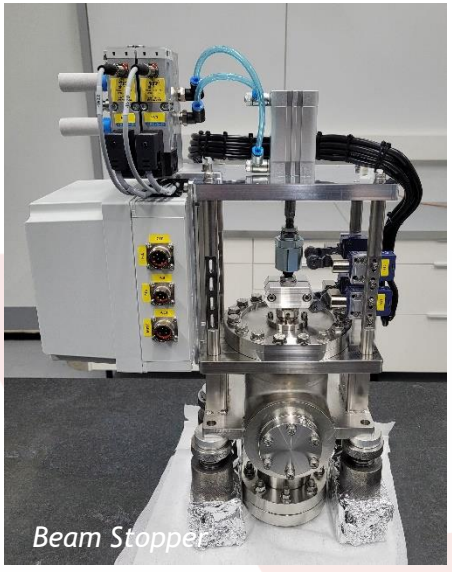
Power Extraction Transfer Structures (PETs) (CERN)

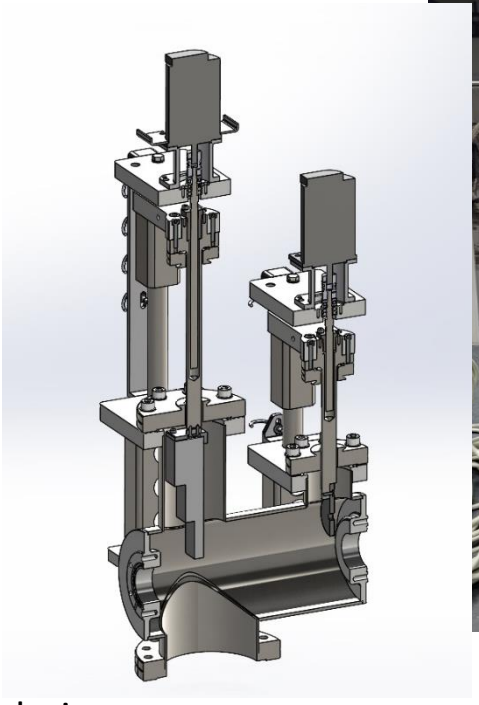
Kicker installed in CTF3 (CERN)

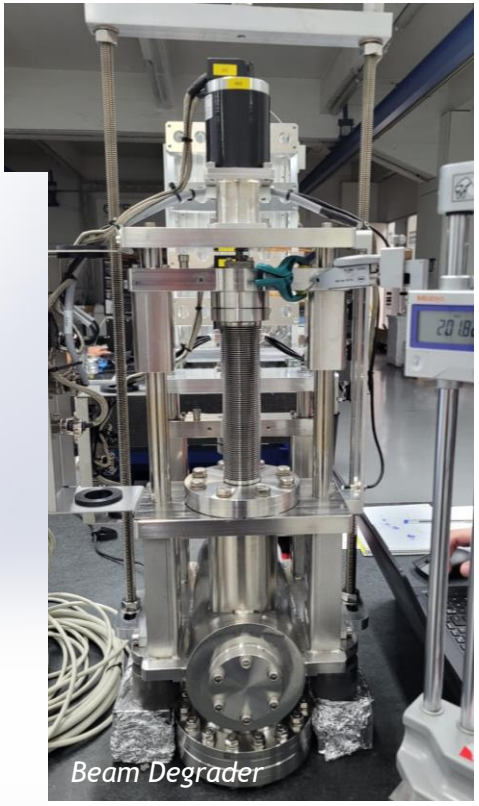
Beam Stopper and beam Degrader

(AVO* (AdVanced Oncotherapy) – AVS)

*Spin-off of CERN


Beam Stopper

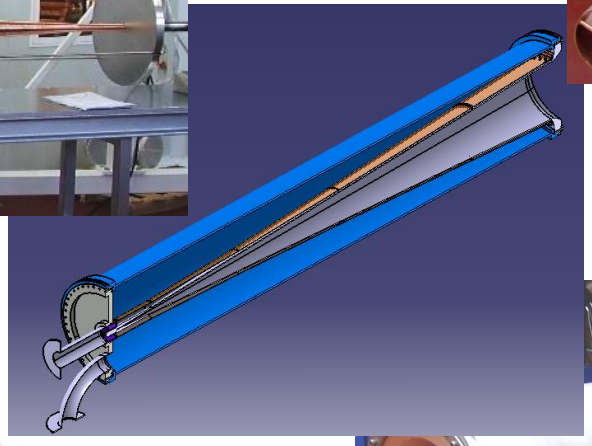



Beam Degrader

- Thermal study by Finite Element Analysis
- High precision degrader assembly
- High speed stopper actuation (<0.2 seconds)

Beam dump for International Fusion Materials Irradiation Facility

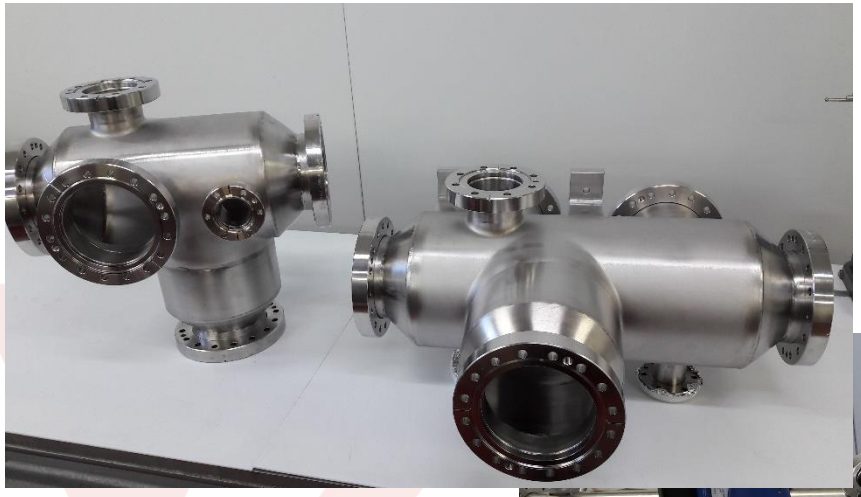
(IFMIF and CIEMAT)

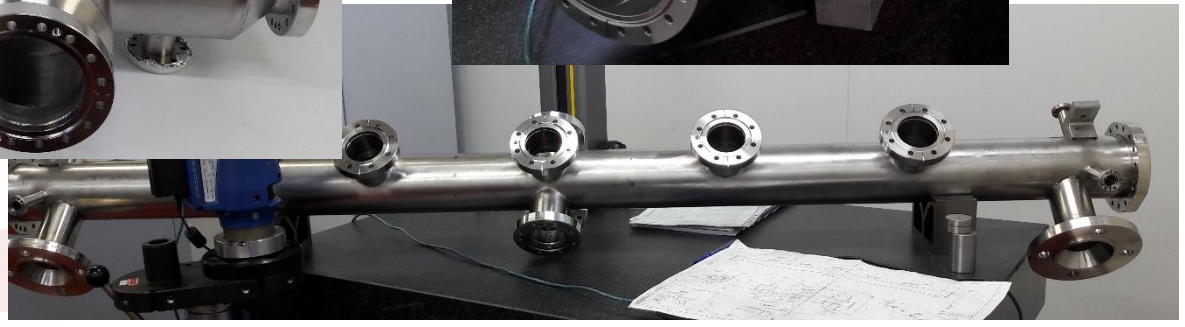


- Copper and stainless steel welding
- Cylindrical and frustoconical surfaces
- Surface finish, straightness, coaxiality and roundness are critical as they determine the cooling properties

ANKA Synchrotron Radiation Facility Vacuum Chambers

(CERN)





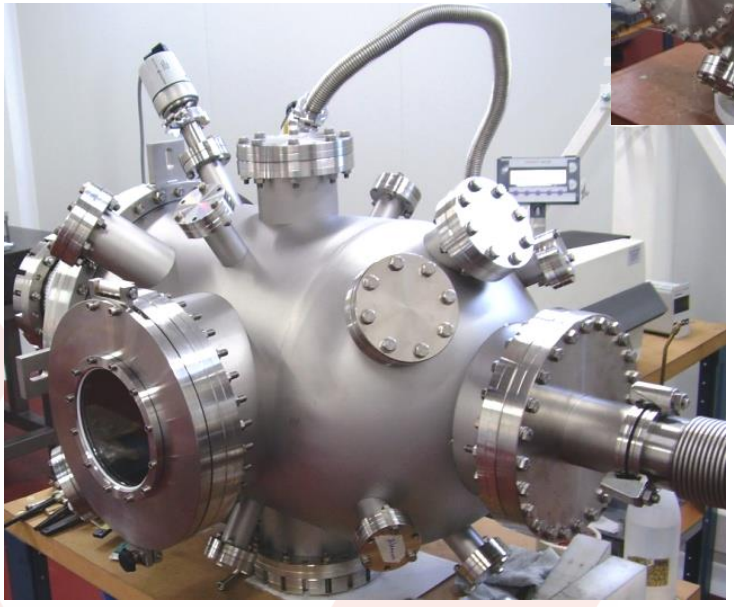
- Operating condition: 10^{-11} mbar
- Back and Front instrumentation assembly, Slits chamber and Test-bench mono-tube
- Critical manufacturing process: ports are extruded and flanges welded after.

Screen Monitors BTVSI

(CERN)

- 304L and 316LN Stainless Steel
- TIG welding
- Critical assembly process

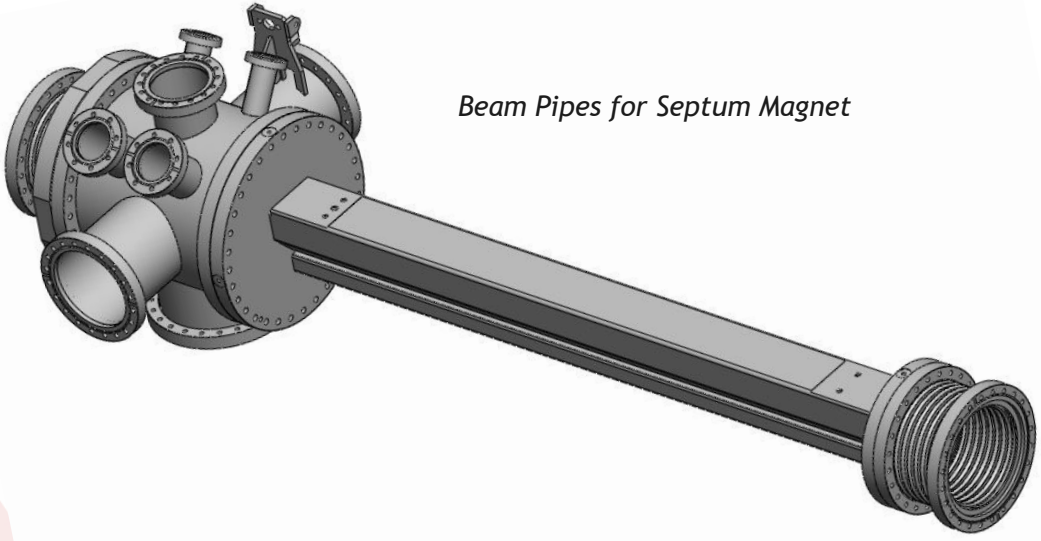
Spherical and hemispherical vacuum chambers



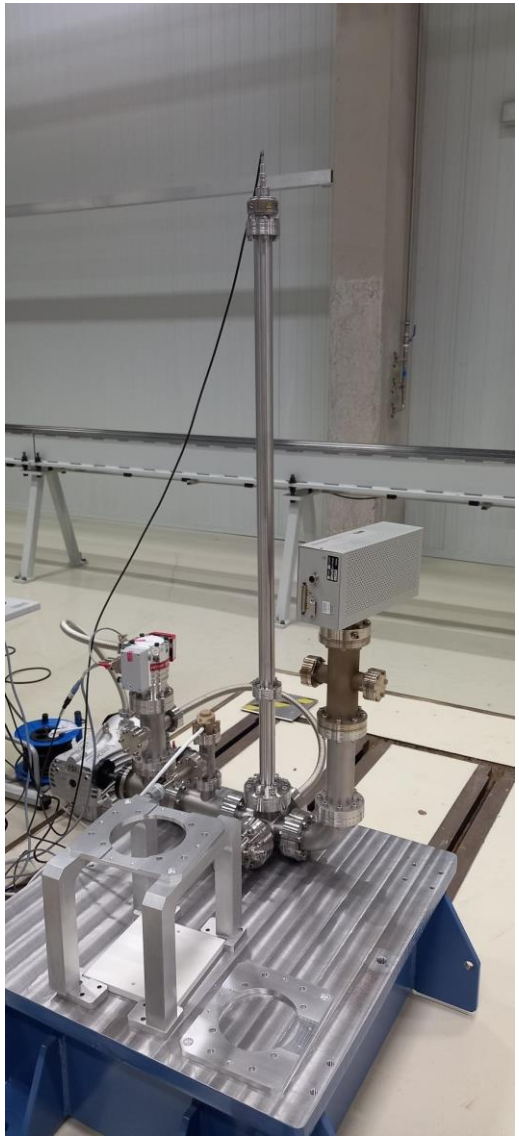
- Stainless steel 316L y 316LN
- Welds by MIG and TIG
- Critical manufacturing processes for angle ports convergence

TVP

NEG (non evaporable getter) coating for UHV systems



Beam Pipes for Septum Magnet

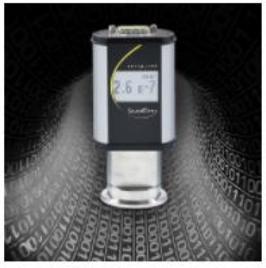


- NEG deposited onto the internal surfaces by sputtering
- Main advantages:
  - Pumping narrow geometries hard to pump out
  - Acts as a conductance-free distributed pump
  - Reduces out-gassing

THYRACONT
Vacuum Instruments

TVP is the official distributor in Spain of Thyracont vacuum pressure gauges

VD8
Compact
Vacuum Meters



Smartline
Digital Vacuum
Transducers

Analogline
Analog Vacuum
Transducers

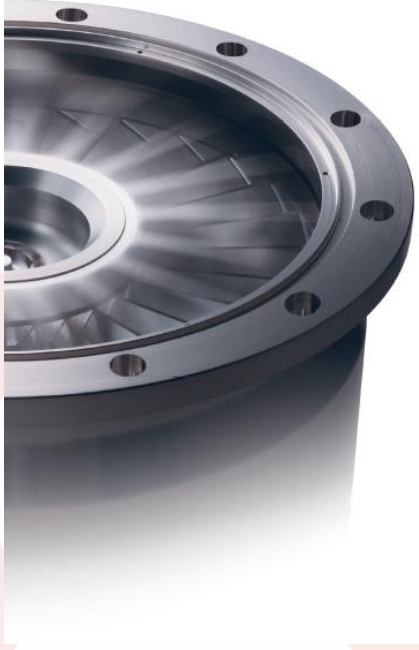
USB
Vacuum
Transducers
with USB-C

Passive Vacuum Sensors
Compact
Passive Sensors

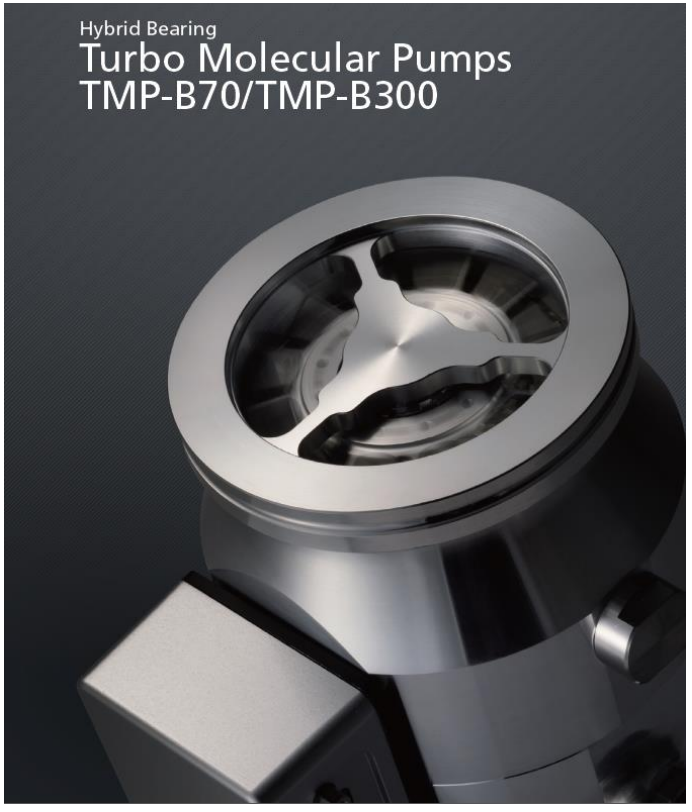
TVP

SHIMADZU
Excellence in Science

Magnetic Levitated Turbomolecular Pumps



- From 190 to 5300 l/s
- For demanding applications & harsh industrial environments
- Robust and very compact
- SHIMADZU's manufacturing of its own magnetic bearings gives total control of the most critical technology of the pump
- Significantly higher throughput for usual process gasses
- Significantly higher pumping speed in the high pressure range
- High efficiency motor: lower power consumption

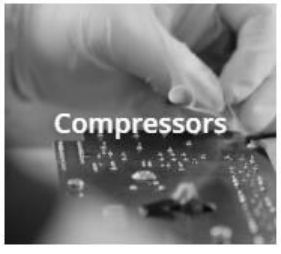


- From 70 to 300 l/s
- High compression for light gases like H_2 or He
- Patented damping design: low vibration
- Cooler running bearing: longer bearing life & service intervals
- High efficiency motor: lower power consumption
- Hermetically sealed bearing. It can be mounted in any orientation

TVP

Infraserv Vakuumservice

German company offering **multi-brand** technical service with 25 years of experience in **maintenance and repair** of all types of vacuum, high vacuum and ultra high vacuum pumps, from oil vane pumps and dry pumps to turbomolecular, cryogenic or ionic pumps, cold heads, compressors and leak detectors.



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