



## Critical Mechanical Components for Extreme Environments

*Thanks to its long-standing collaboration with Fusion for Energy (F4E) through multiple contracts in major fusion programmes such as ITER and JT-60SA, De Pretto Industrie has developed strong capabilities in the design, manufacturing, and assembly of critical mechanical components for fusion reactors. The company has played a key role in delivering high-precision structures operating under ultra-high vacuum (UHV), high temperatures, and intense radiation, contributing directly to the advancement of fusion technologies in Europe.*

## Capabilities and technologies

De Pretto Industrie has participated in the development of key systems and components for fusion reactors, including:

- UHV vacuum vessels, with tightness up to  $10E-9$  mbar l/s, delivered for systems such as the ITER Neutral Beam Injector (NBI) and MITICA.
- Plasma-facing components and structural steel assemblies for the ITER Tokamak, manufactured and tested under cleanroom conditions.
- Cassette body frames and Normal Heat Flux (NHF) elements for the JT-60SA divertor, enabling the handling of thermal loads inside the reactor.
- Beamline components and mechanical supports for the ITER NBI, developed under F4E contracts.
- Superconducting Magnet Cases for Conductors for the DTT TFC (Toroidal Field Coils).

## Advantages and Potential Applications

- Extensive experience in fusion-related engineering, with components already deployed in ITER, JT-60SA, DTT and other fusion experiments.
- Compliance with fusion standards for vacuum, thermal, and mechanical performance.
- In-house manufacturing and cleanroom assembly, ensuring full quality control.
- Proven capabilities from prototype to series production, meeting the rigorous requirements of fusion environments.



## Collaboration opportunities

De Pretto Industrie offers its fusion-proven capabilities to companies and research institutions developing high-performance mechanical systems for challenging environments such as Big Science infrastructures, the aerospace industry, ultra-high vacuum systems, and nuclear fusion or fission facilities. With validated experience in fusion projects, the company is ready to deliver tailored engineering and manufacturing solutions for demanding applications.

Fusion for Energy Technology Transfer  
Programme

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