Conextivity Group

fischer CONNECTORS

wearin'

LEVI Project

04.11.2026

– CONFIDENTIAL INFORMATION –



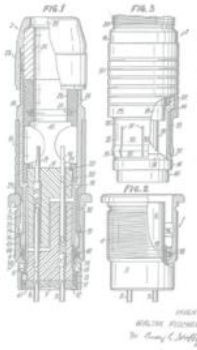
70+ YEARS OF FAMILY BUSINESS

FULLY PRIVATELY OWNED



SWISS QUALITY,
GLOBAL AVAILABILITY

HERMETIC CONNECTOR SPECIALIST



WORLD'S FIRST HERMETIC PUSH-PULL CONNECTOR

GLOBAL PRODUCTION SITES

SWITZERLAND



CONNECTORS
CABLE ASSEMBLY
ELECTRONICS

UNITED STATES



CABLE ASSEMBLY

PORTUGAL



CONNECTORS
CABLE ASSEMBLY
ELECTRONICS

FISCHER FAST TRAK

PART OF Conextivity Group

1,000 WORLDWIDE

MARKET FOCUS

- DEFENSE
- MEDICAL
- INSTRUMENTATION

NETWORK OF MANUFACTURING PARTNERS

CONNECTOR MANUFACTURING
TURNING, MOLDING, PLATING, ASSEMBLY

ASSEMBLY MANUFACTURING
TUNISIA, MEXICO, MALAYSIA, INDONESIA

CONNECTORS

Standard



Custom



CABLE ASSEMBLIES

Receptacles



Plugs / inline receptacles



ELECTRONICS

Flash Drives



Adapter Modules



Hub and Switch

FISCHER KEYSTONE™





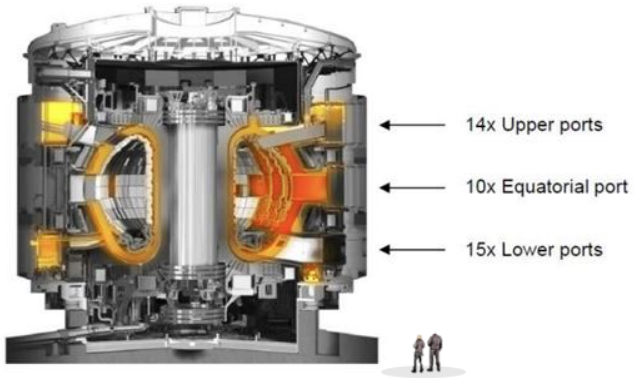
ISO 9001 ISO 13485 ISO 14001 ISO 45001 NUCLEAR REACH RoHS SONY

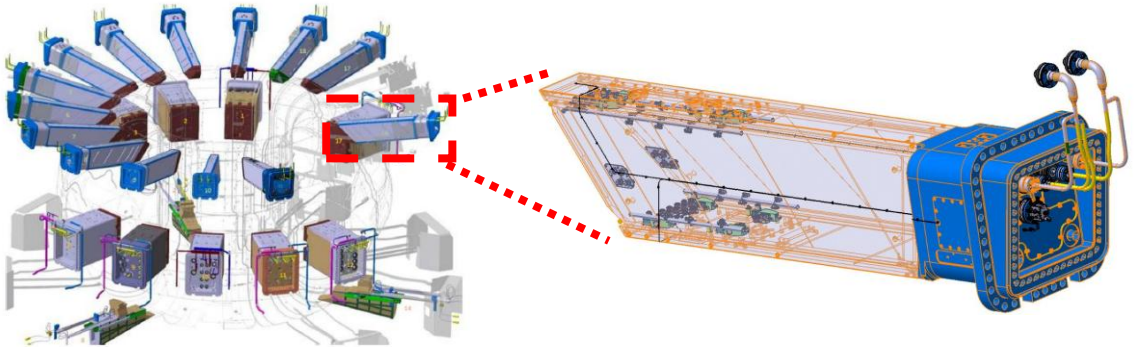
Port plugs

china
eu
india
japan
korea
russia
usa

iter

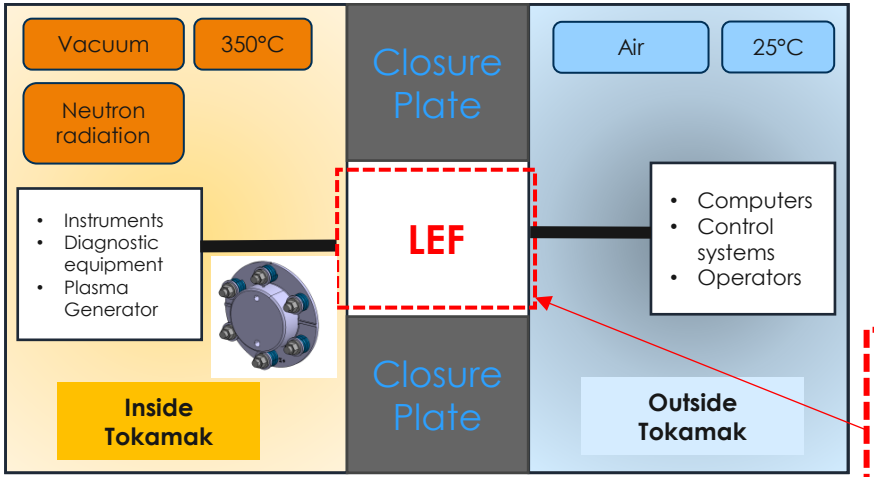
- Fischer will be responsible for the design, testing and production of the equipment allowing signals and power to be transferred from outside to the inside of the tokamak
- Each participating country has one or more viewports, known as Port Plugs, through which it can collect specific signals
- **There are many types of signals and connector categories**

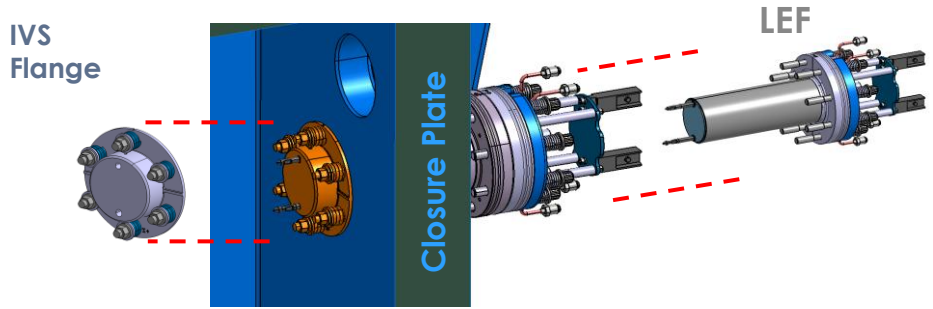




Port plugs – Explanation of Architecture

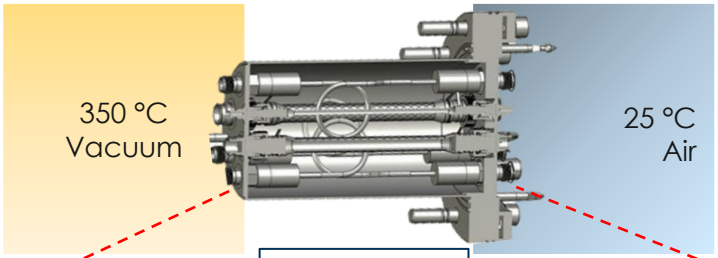
- An assembly is needed to transfer signals from inside the tokamak to the outside environment.
- This assembly is called Loom Electrical Vacuum Interfaces (LEVI) Electrical Feedthrough (LEF)
- The LEF must be hermetic and replaceable. The monitoring system must be able to detect gas leaks.
- LEFs can have multiple sizes and types of signals

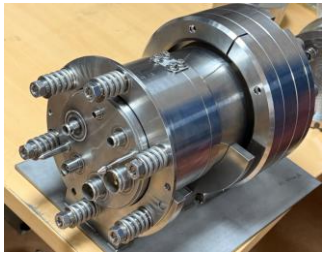


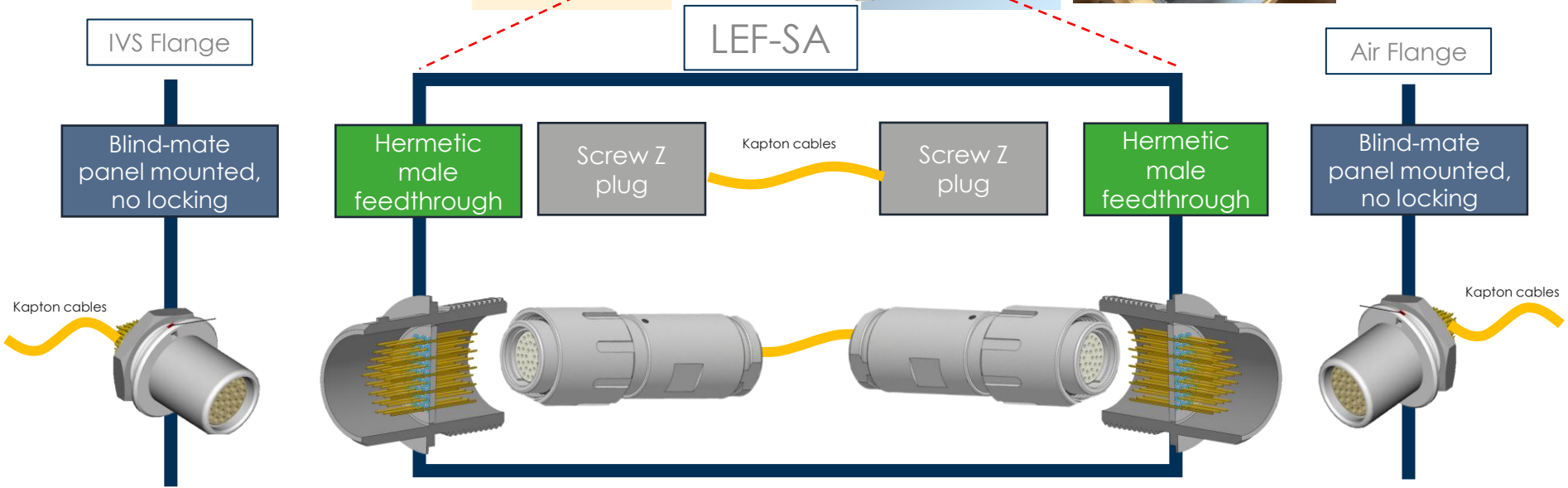


LEF architecture

- Double hermetic barriers
- Vacuum monitoring system





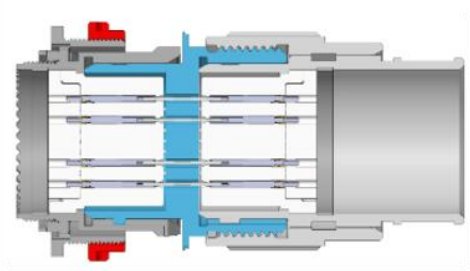


Each LEF requires three types of connector housings:

1. Blind-mate quick release connector
2. Hermetic Glass to Metal Seal feedthrough
3. Screw plug

Types of signals

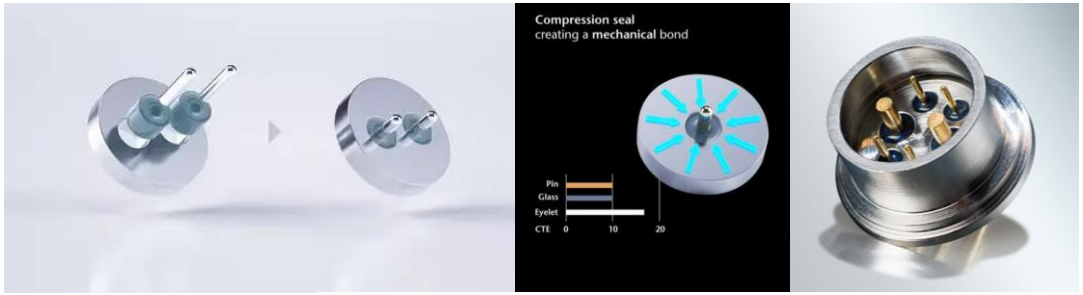
- Each Port Plug or equipment owner has a cable list with the required quantities
- Each LEF requires multiple cables
- Analyze the cable requirements for each Port Plug to determine the optimal number of contacts per connector.
- Development of a minimum of **24 connectors**

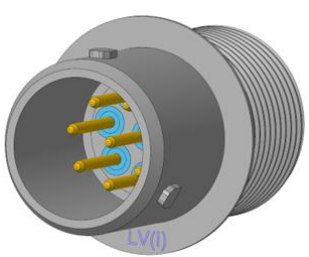


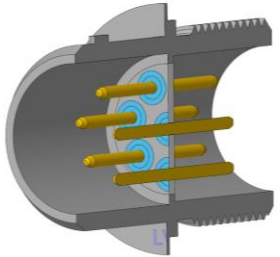
Service classification	Use case	Rated Voltage	Rated current
TC-N	**ThermoCouples** type N (made in Nisil/Nicrosil) for instrumentation	50 V	0.5 A
INSTRUM I	Low power & low frequency signal for **instrumentation**		
INSTRUM II	Low power & high frequency for **triaxial** line for instrumentation	600 V	10 µA
INSTRUM III	High Power & High Frequency signal for **coaxial** line for the Mirror Cleaning Application	1000 V	1A
LV (I) / LF / HC	Low Voltage & Low Frequency & **High Current** signal for control & power line	300 V	20 A
LV (II) / LF	Low Voltage & Low Frequency signal for control & power line	600 V	4 A
LV (III) / LF		1000 V	2 A
MV (I) / LF	Medium Voltage & Low Frequency signal for the **Glow Discharge Cleaning**	3000 V	32 A

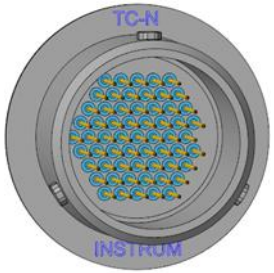
Multipin – Sealing technology for feedthroughs

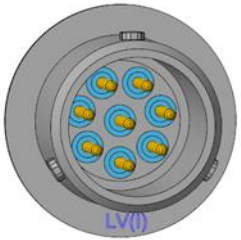
- High temperatures and neutron irradiation require the use of Glass to Metal Seal (GTMS) or Ceramic to Metal Seal (CTMS) for hermeticity.
- Example of GTMS : Glass beads are placed around each contact and placed in an oven to melt. When solidifying, this creates a hermetic seal due to the surrounding metal's higher Coefficient of Thermal Expansion.

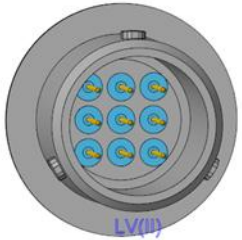


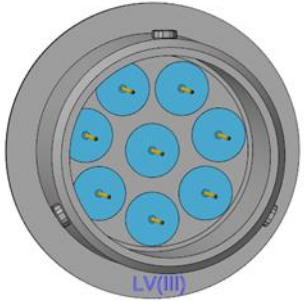






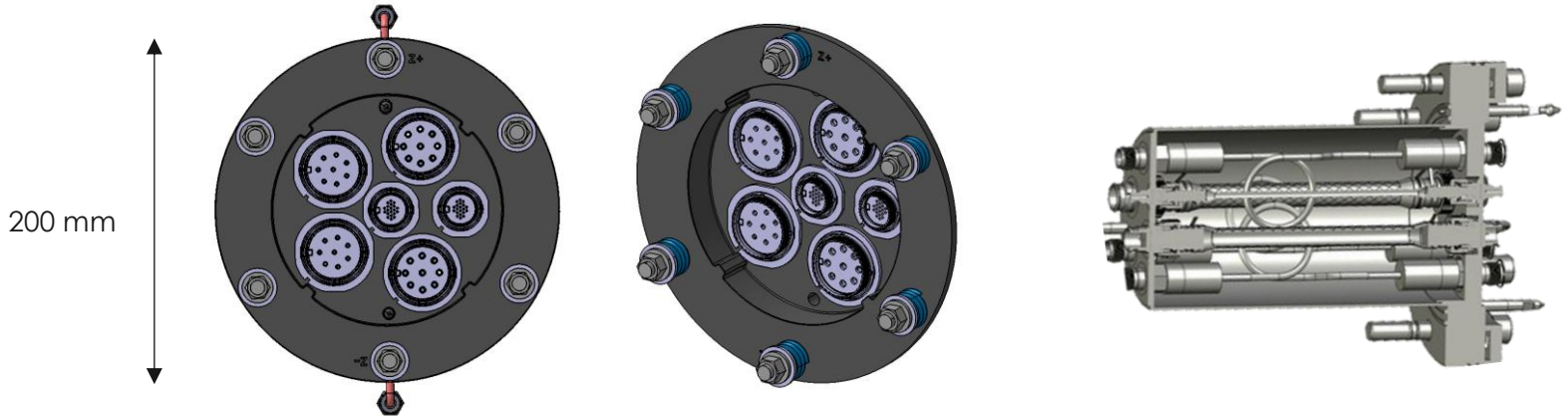






Connectors Feedthrough integration on LEF flanges

- Each flange has a specific set of signals. Feedthroughs are welded using Electron Beam welding.
- Here is an example of integration on a size 200 flange for Port Plug EQ11
- 4 LEFs size : DN200 – DN150 – DN100 – DN65

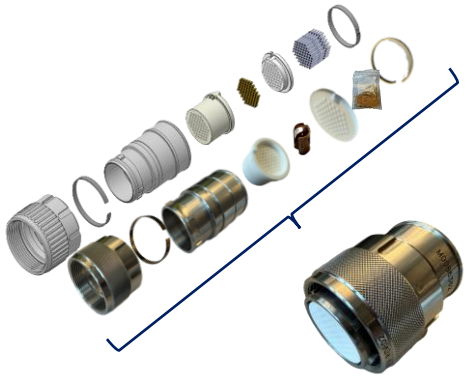


Scope of the project

- Timeline



- Serial Production :
  - LEVI
    - 38 LEFs to be manufactured
      - 24 different configurations
      - 1200 connectors
  - Neutral Beam Option :
    - 34 LEFs
      - 6 different configurations
      - 1600 connectors



➔ Once qualified, the connectors could also be used in other ITER subsystems with compatible requirements.

Thanks

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