



BERTIN TECHNOLOGIES

FUSION - PRESENTATION APRIL 2025



Created in 1956 by
a **visionary engineer**
at a time when innovation
was an **adventure**



The company was **acquired in 2022** by the FCDE investment fund and has **opened its share capital** to its employees





European industrial group in
HIGH-END INSTRUMENTATION
for **CRITICAL OR SCIENTIFIC**
applications

established in **France, Europe,**
the United States and Asia

1 000

Employees

178M€

2024 Revenue

>70%

Export

>70%

Products
& Services



RADIATION MEASUREMENT AND HEALTH PHYSICS SOLUTIONS

Reliable ionizing
radiation detection &
measurement solutions
designed to ensure safe
and sustainable
operations



Health Physics



Safety Radiation Monitoring
Systems



Radon & Environmental
Monitoring Solutions

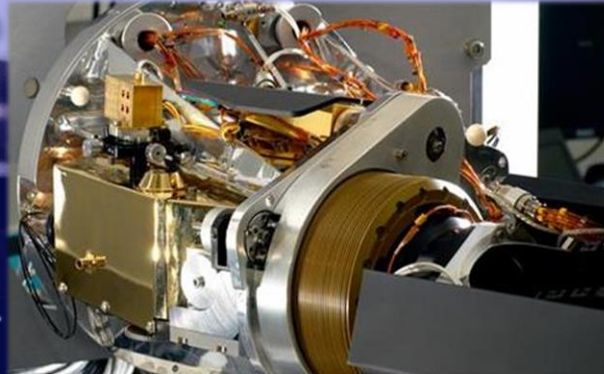


Services
and Calibration



OPTICAL SOLUTIONS

High-performance optical components and systems for space, big science.



Ignition
fusion plasma diagnostics



High performance optical
components



Magnetic
fusion plasma diagnostics



Complex optical
instrumentation systems

Ignition Fusion portfolio

Complete optical LMJ lasers alignment system

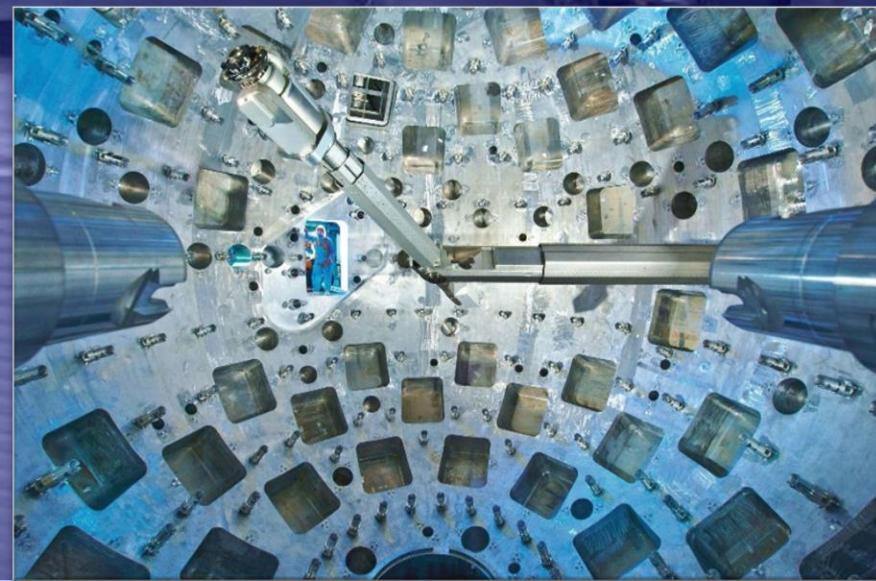
X-ray Streak cameras

Passive optical diagnostics – DP7 & DP8

X-ray spectrometers – DP9

VISAR – DP5

X-ray mirrors - NIF



Ignition Fusion portfolio

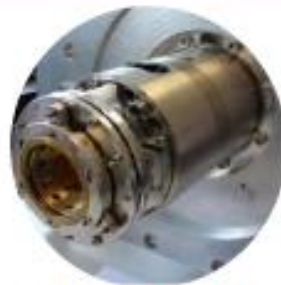
1999-2003

LIL



SOPAC :
Maquette

Depuis 2003



Analyseur Optique

ECI : Instruments Optiques



RAX



Référence Commune

2014 : JOB 34



SCOR

2009-2023

Hall Laser



BAIES Alignement LASER

2003-2015

ECI : Contrôle commande



SIHE



SID

Ignition Fusion portfolio

2017

Les Diagnostiques Plasma

2022



DP5



DP7



DP8



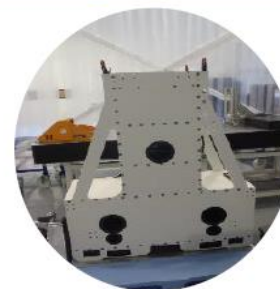
DP9

CESTA

2009 EPURE / VALDUC --- CEA et AWE 2023



CLEAPART (2015)



Caméra AWE CEC II (2015)

Magnetic Fusion portfolio

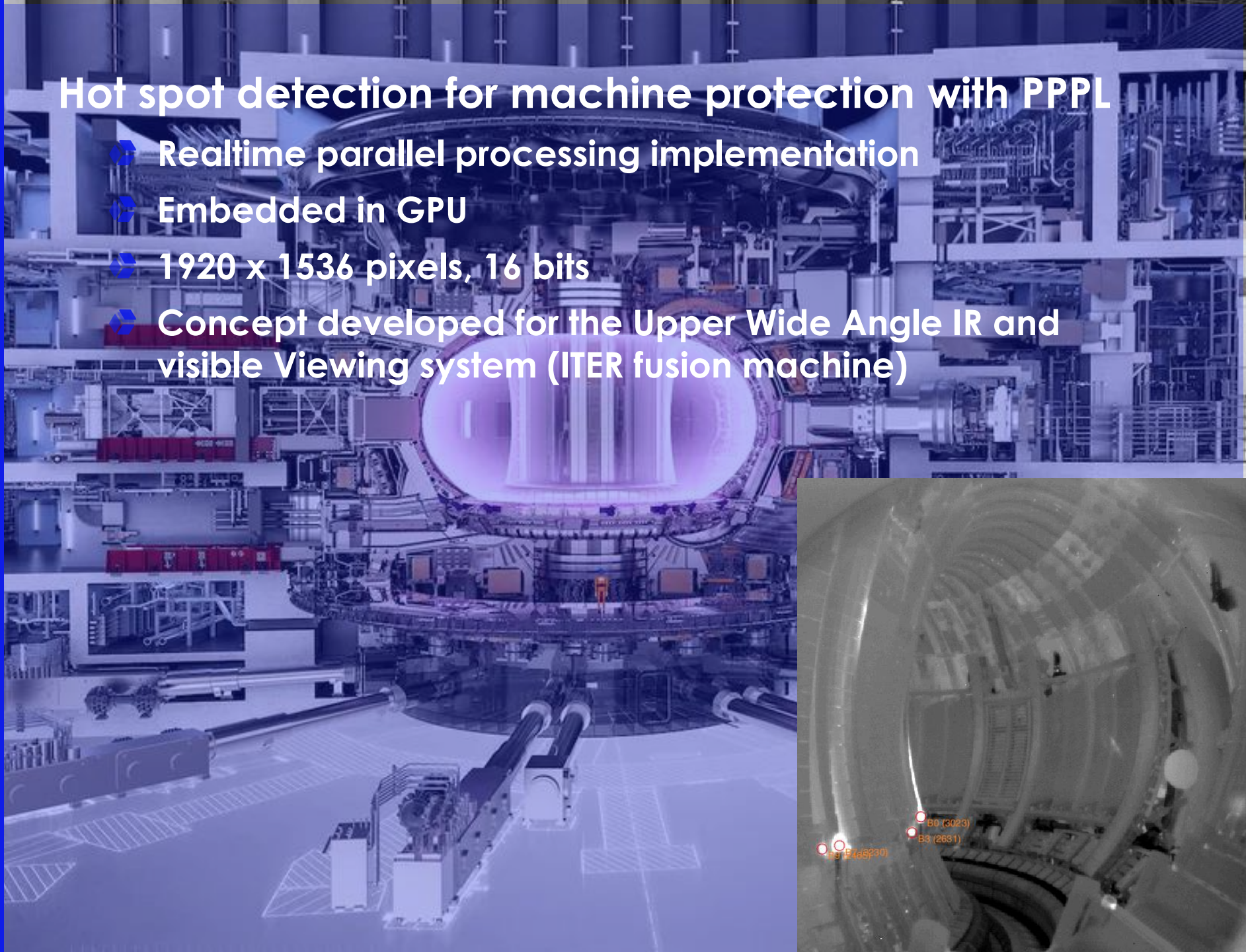


Density Interferometer Polarimeter (Dispersion Interferometer)
Wide Angle Viewing System (IR & VIS Cameras)
In Vessel Viewing System (LIDARs)
CXRS (Visible Spectrometers)
First confinement Windows

Hot spot detection for machine protection with PPPL

- Realtime parallel processing implementation
- Embedded in GPU
- 1920 x 1536 pixels, 16 bits
- Concept developed for the Upper Wide Angle IR and visible Viewing system (ITER fusion machine)

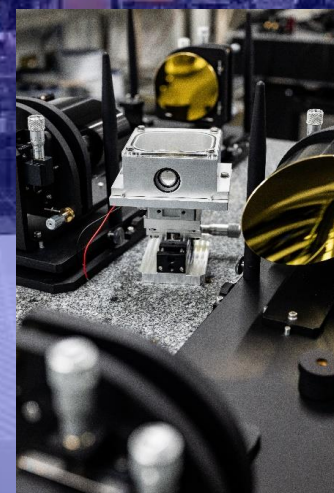
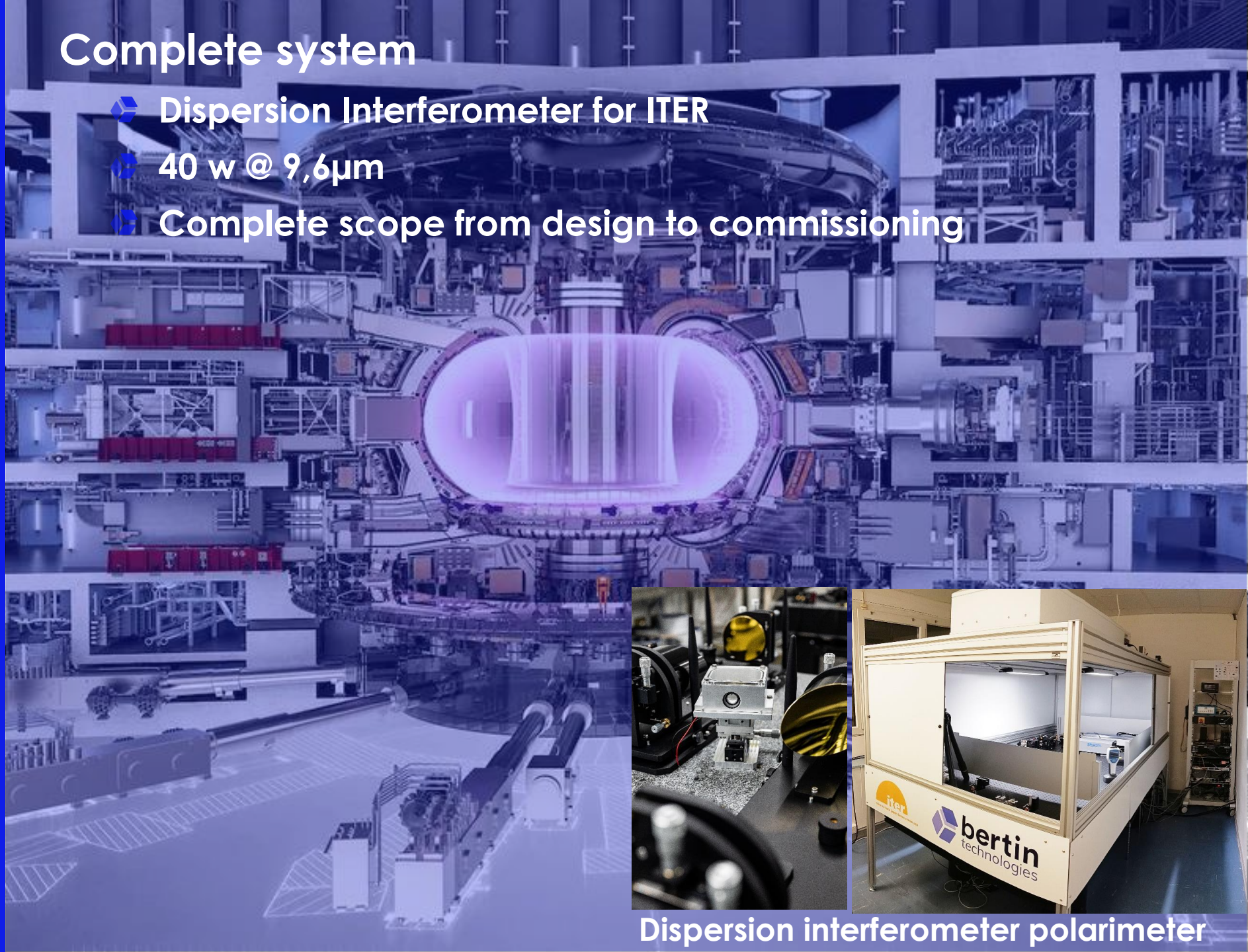
IR Image processing
algorithms on GPU



Complete system

- ◆ Dispersion Interferometer for ITER
- ◆ 40 w @ 9,6 μ m
- ◆ Complete scope from design to commissioning

Dispersion interferometer



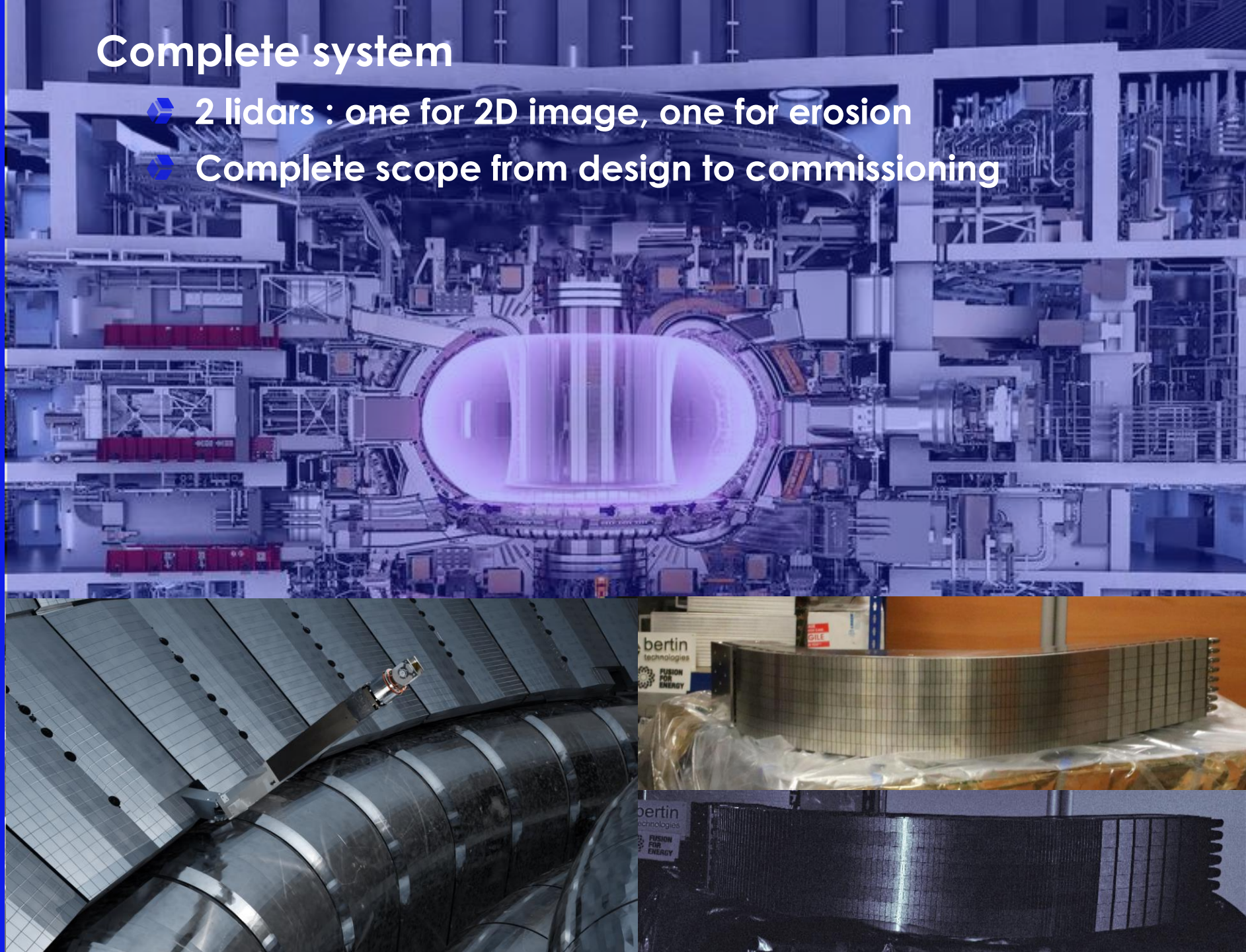
Dispersion interferometer polarimeter



LIDARS for erosion and deposition measurement

Complete system

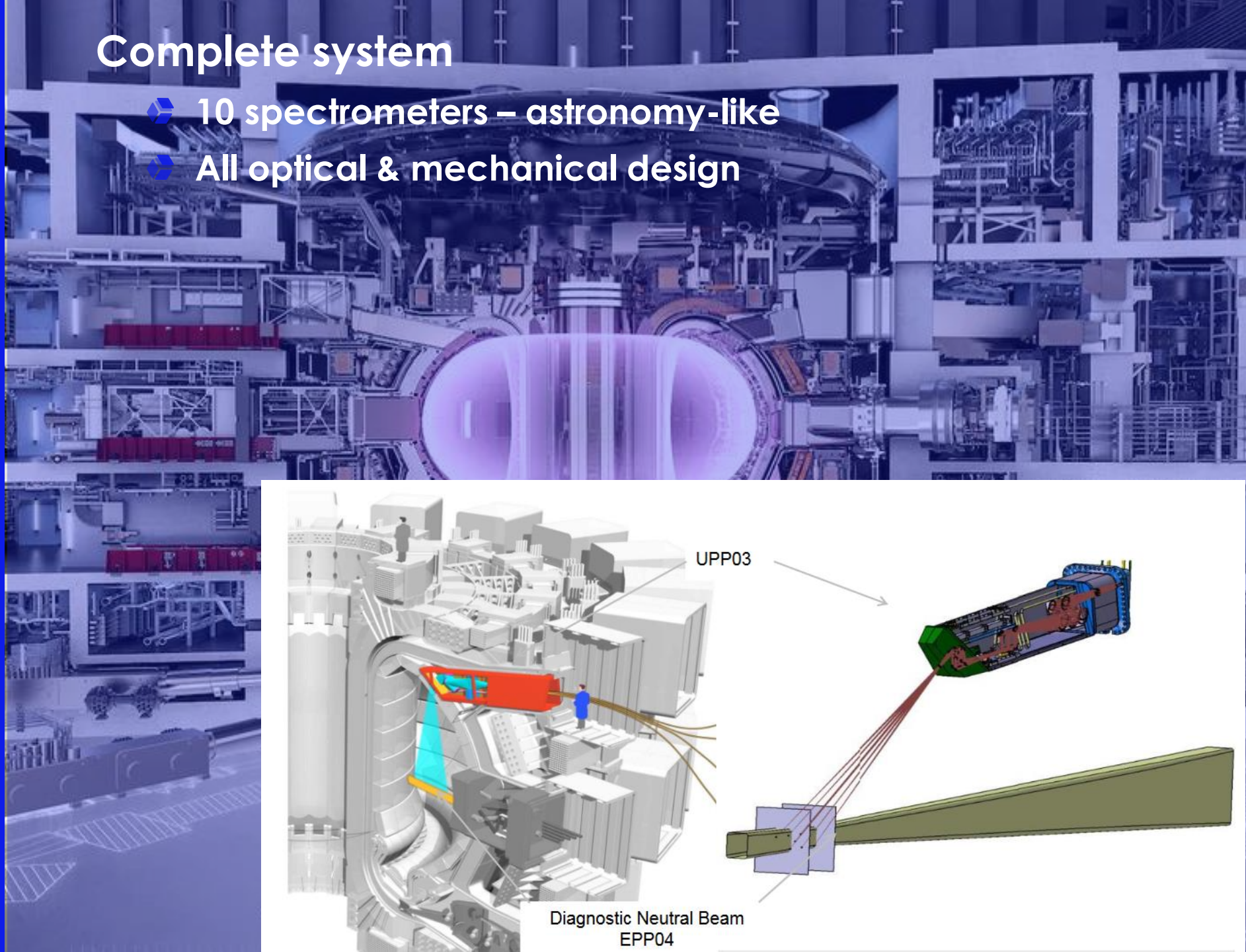
- 2 lidars : one for 2D image, one for erosion
- Complete scope from design to commissioning



Impurities spectrometry

Complete system

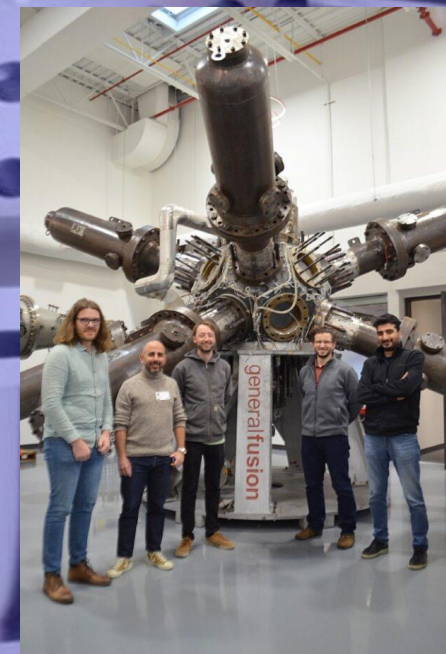
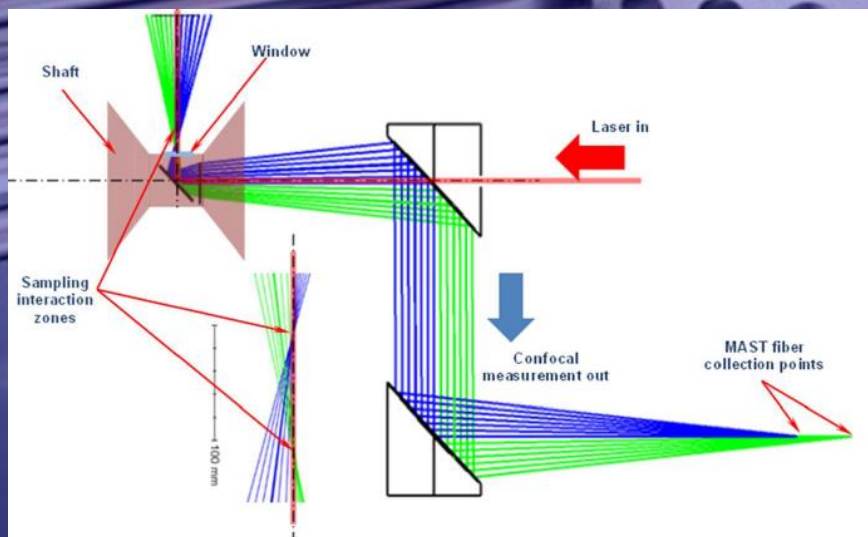
- 10 spectrometers – astronomy-like
- All optical & mechanical design



Thomson scattering

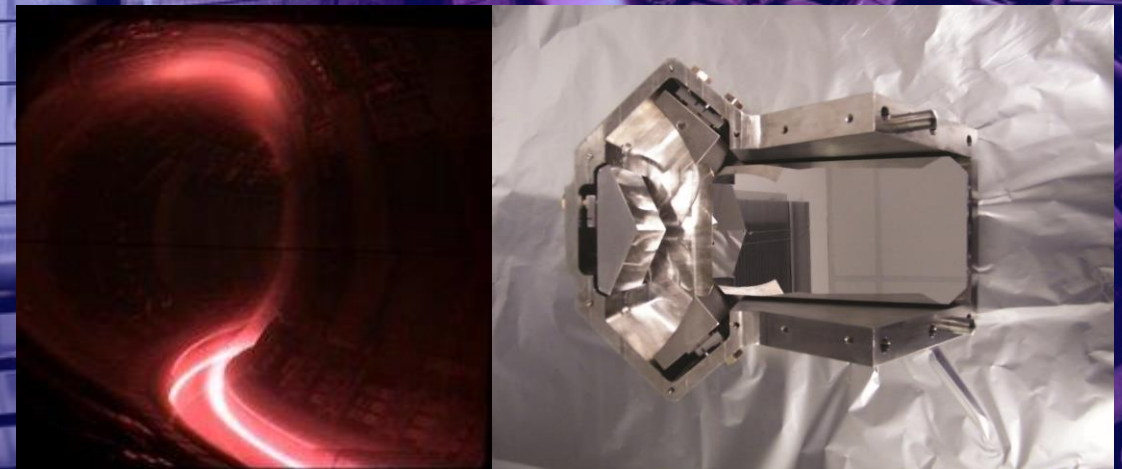
General Fusion Thomson scattering

- ▣ Specifications
- ▣ À la carte system division
- ▣ Interface definition
- ▣ Design and comissioning



- In Vessel Mirror for JET
- 316L rhodium coated mirrors
- Qualified for temperature / steam event / GDC / outgassing

Custom optics





bertin
technologies

*Excellence
drives
Technology*

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