



Surface materials engineering

 **HEF**[®] GROUPE

HEF in figures,

Since 1953,

70 years of surface materials
engineering expertise
(St Etienne Head Office)

3200 employees (worldwide)
650 In France

317 M €
Turnover - 2022

66%
of its capital held by employees
and **34%** by the founding family

200
patents

90
Industrial plants
In **21** countries

55 M€
Invested 2023

6500
customers



3 areas of surface materials engineering expertise



TRIBOLOGY

Understanding and mastering of friction and wear mechanisms.



PHOTONICS

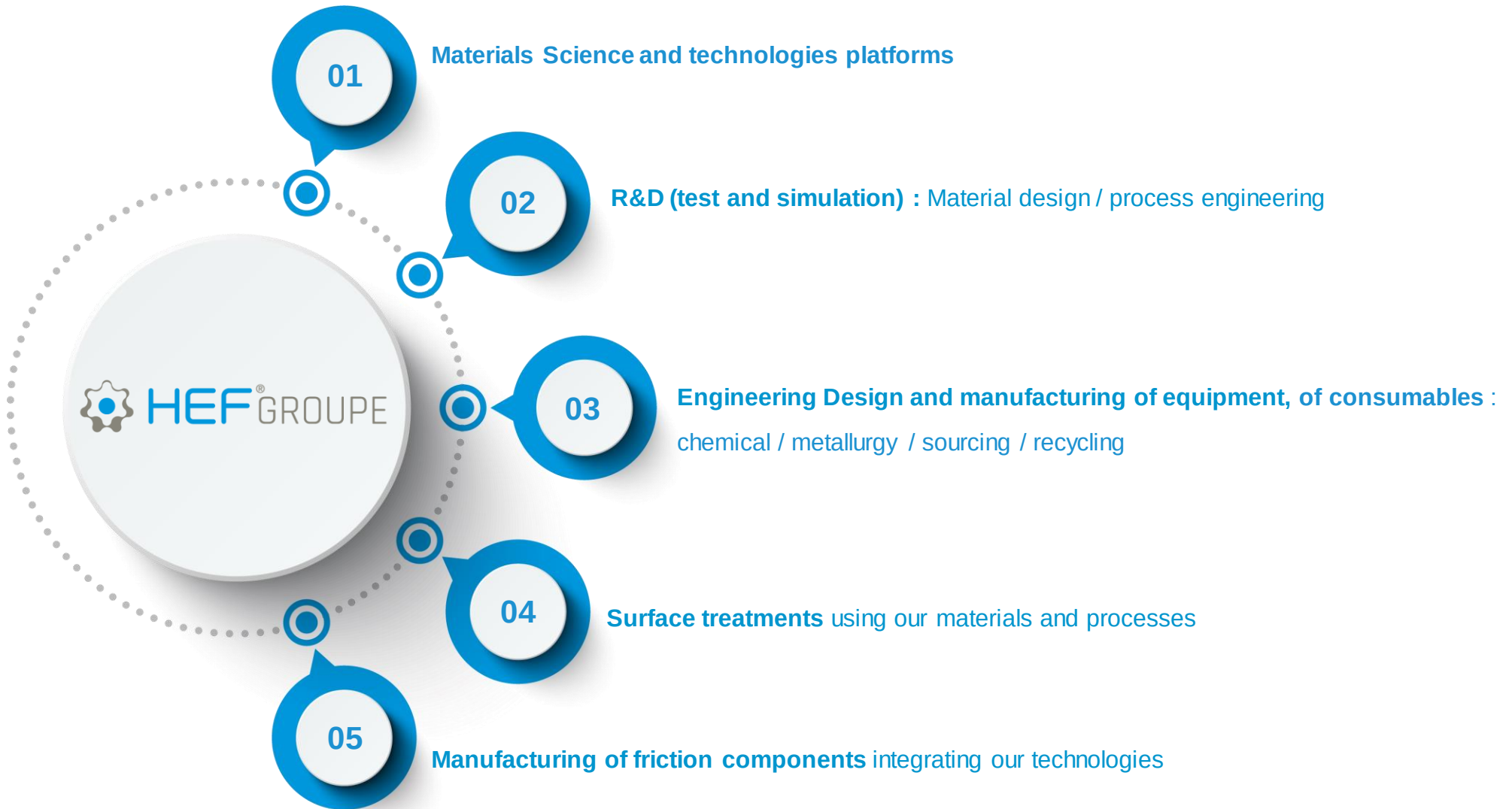
Understanding and control of surfaces, interfaces and optical components.



HYDROGEN TECHNOLOGIES

Understanding of the surface phenomena related to the technologies: electrolysis/fuel cell and hydrogen engine.

From science and research to industry, a proven development model: vertical integration



5 key technologies for developing surface materials



THERMOCHEMISTRY

World leader in ionic liquid nitriding:

wear- and corrosion-resistance treatment by transforming metallic materials.



PVD - PECVD

World leader in carbon-based tribological deposits.

This technology enables the synthesis of new and complex materials in thin layers on all types of substrates.



FRICTION COMPONENTS

Specialty player for severe environments. Combining know-how in tribology and in surface materials for the design and production of friction components.

5 key technologies in surface materials engineering

EMERGING TECHNOLOGIES:



FUNCTIONALISED POWDERS

Our technologies enable the manufacture of multi-material functionalised powders.

Developing solid materials (3D printing) or surface materials (thermal, electrical properties), etc.



FEMTOSECOND LASERS

This technology enables cutting, etching on a micron scale and the functionalisation of the surfaces of all materials while respecting the environment thanks to a very low energy consumption and by a dry process without any effluent.

HEF works in close proximity to its customers worldwide

Our teams are ready to provide prompt responses, service, and close proximity to the group's customers. Technologies and expertise available at consistent quality standards worldwide.



The group's key areas of activity



CONSTRUCTION



MOBILITY



MEDICAL



AEROSPACE & DEFENSE

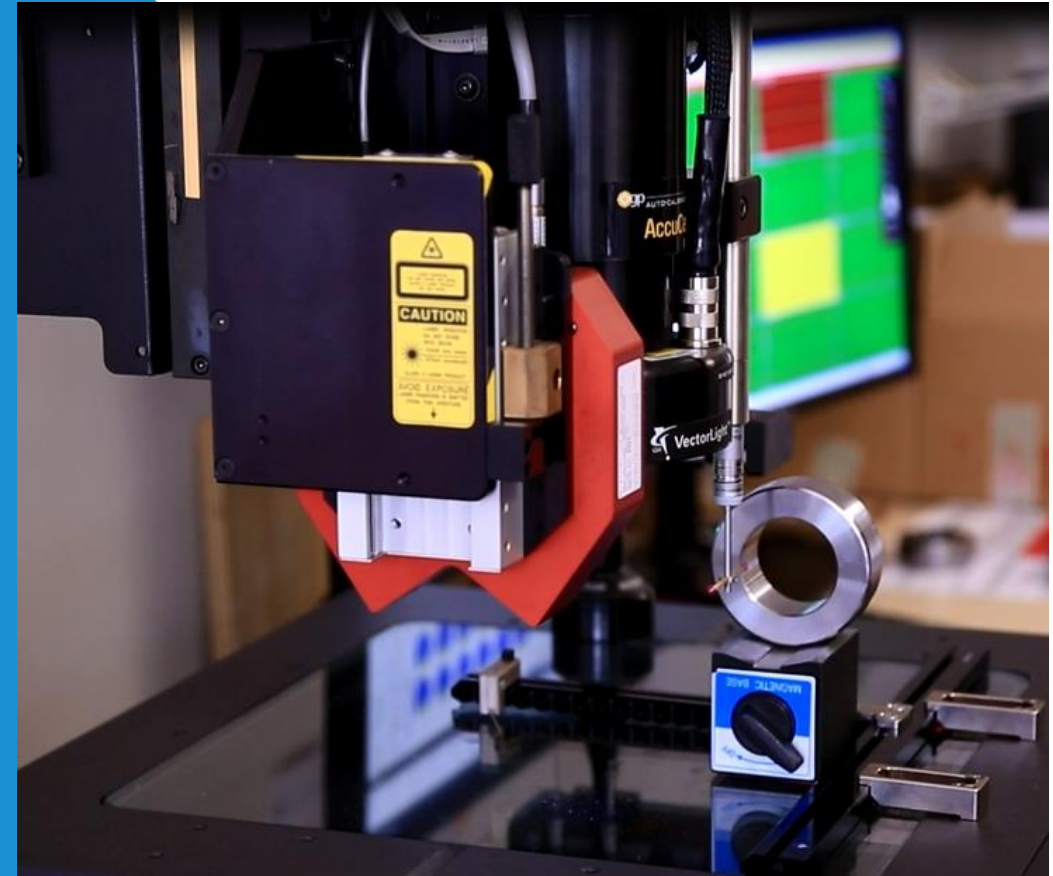


GREEN ENERGIES

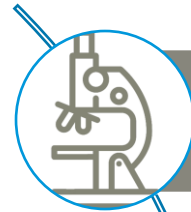


Introduction to HEF DURFERRIT

Mechanical & friction components



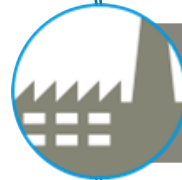
Key figures



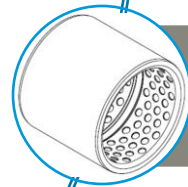
Extensive experience in tribology **since 1953**



90 surface treatment facilities in **21** countries



4 bushing plants



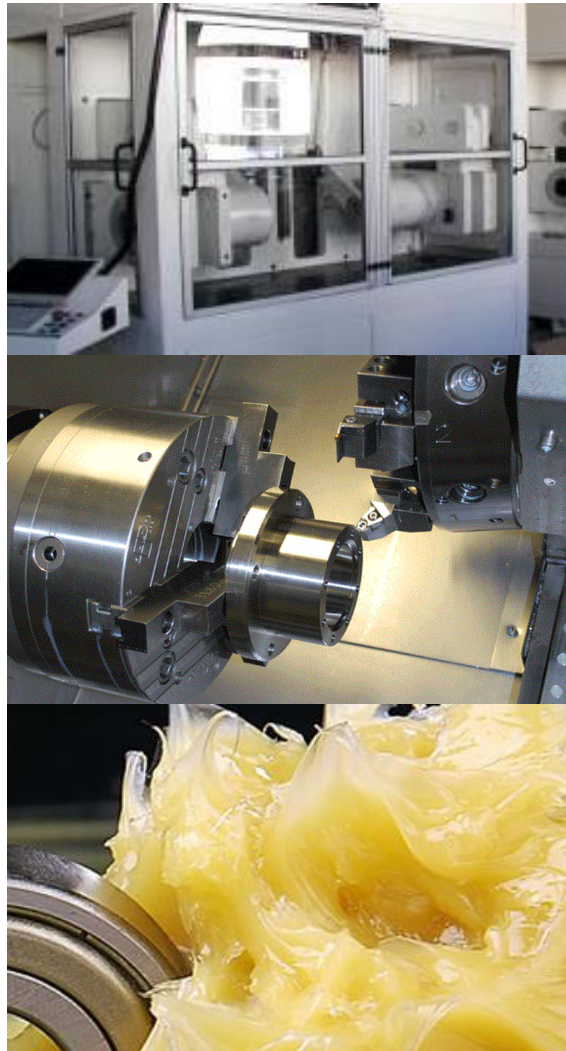
45M bushings sold in the last 10 years



56M€ (fiscal year 2022)

Friction Component Expertise

A complete lineup coming from our extensive expertise in tribology, materials, heat and surface treatments



Friction Component Lineup

We offer a unique combination of surface geometry and surface treatments, designed for long life, high performance, and low-maintenance, for the most extreme environments



Key points:

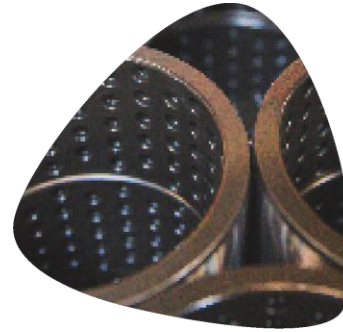
Benefits and properties:

- Tailor-made for various application
- lifetime increase
- Excellent guiding capacity in harsh environment
- Low-friction properties
- Reduced maintenance
- Cost effective

Parameters: shape, topography, processing & materials can be adjusted to specific application

HEF bushings are recognized to operate under high pressure with low or no maintenance, in harsh environments (abrasion shocks, vibration, corrosion, etc.)

We can also manufacture hardened steel bushing according to customer drawings (worldwide factories including Europe, China & India).



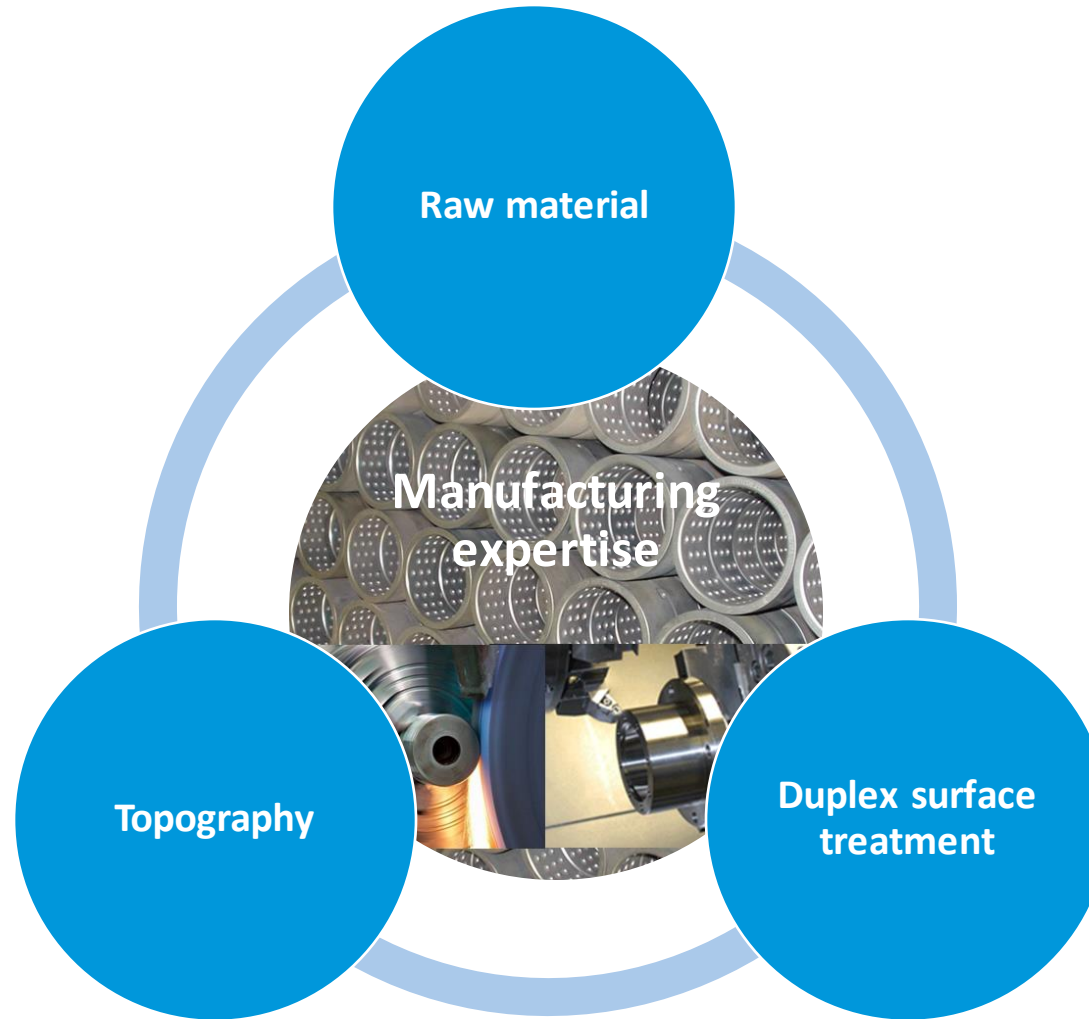
Bushings Lineup



PEL® range:



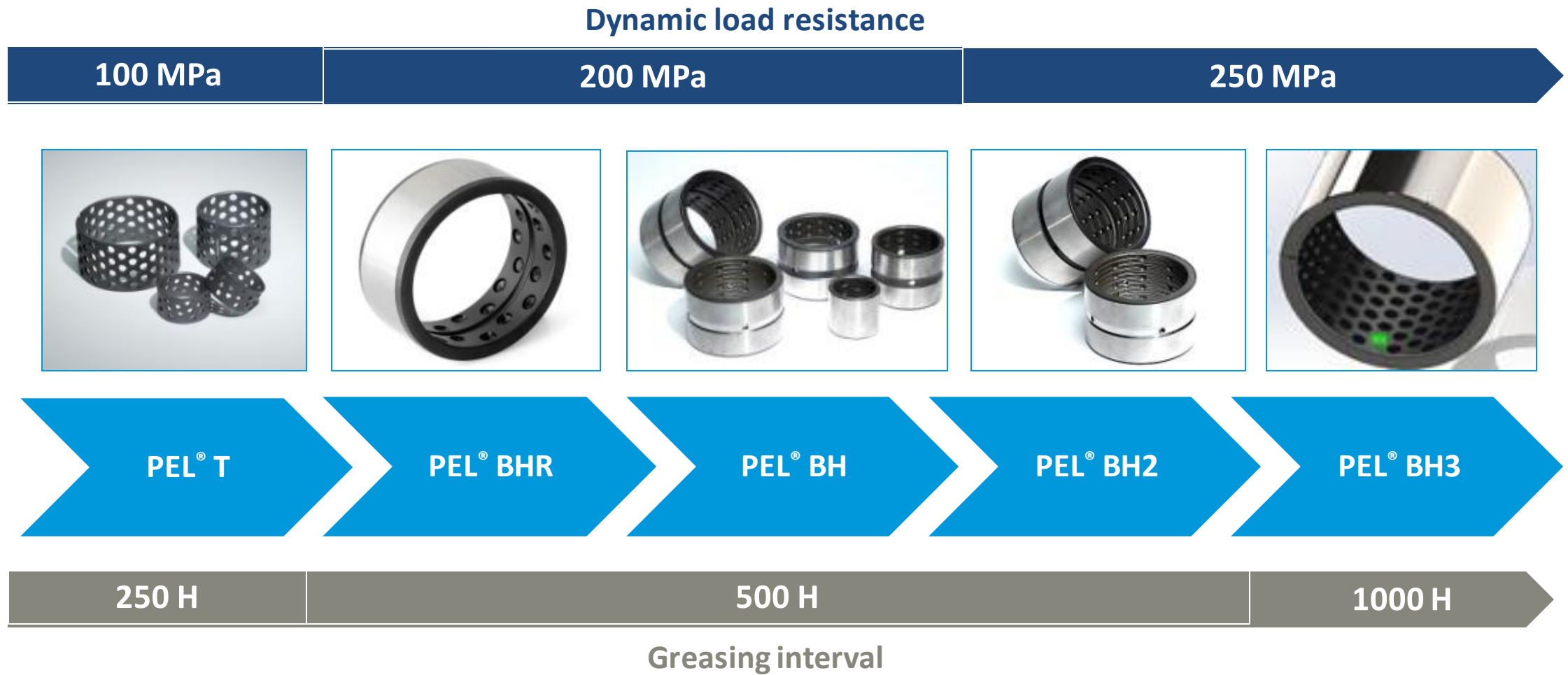
PEL® range:



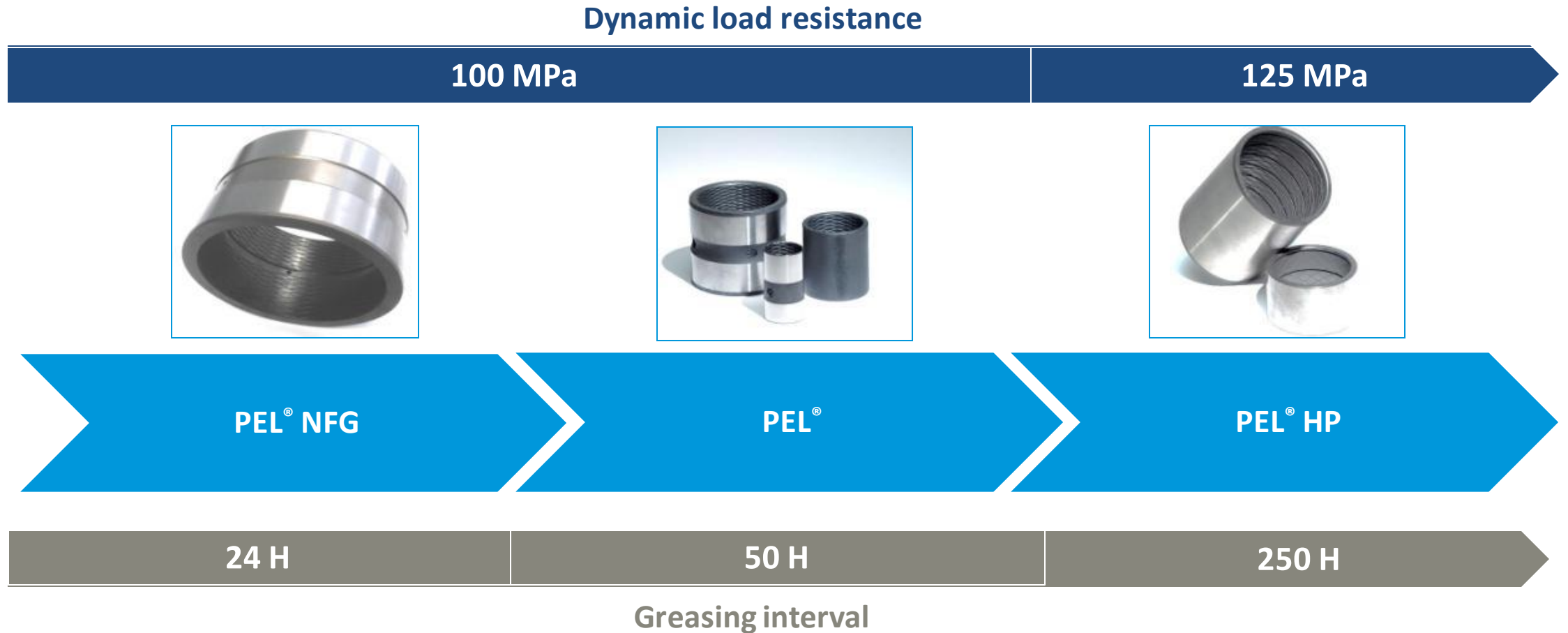
PEL® Bushings range

- High load resistance
- Long greasing intervals
- Abrasion resistance
- Seizure resistance
- Shock resistance

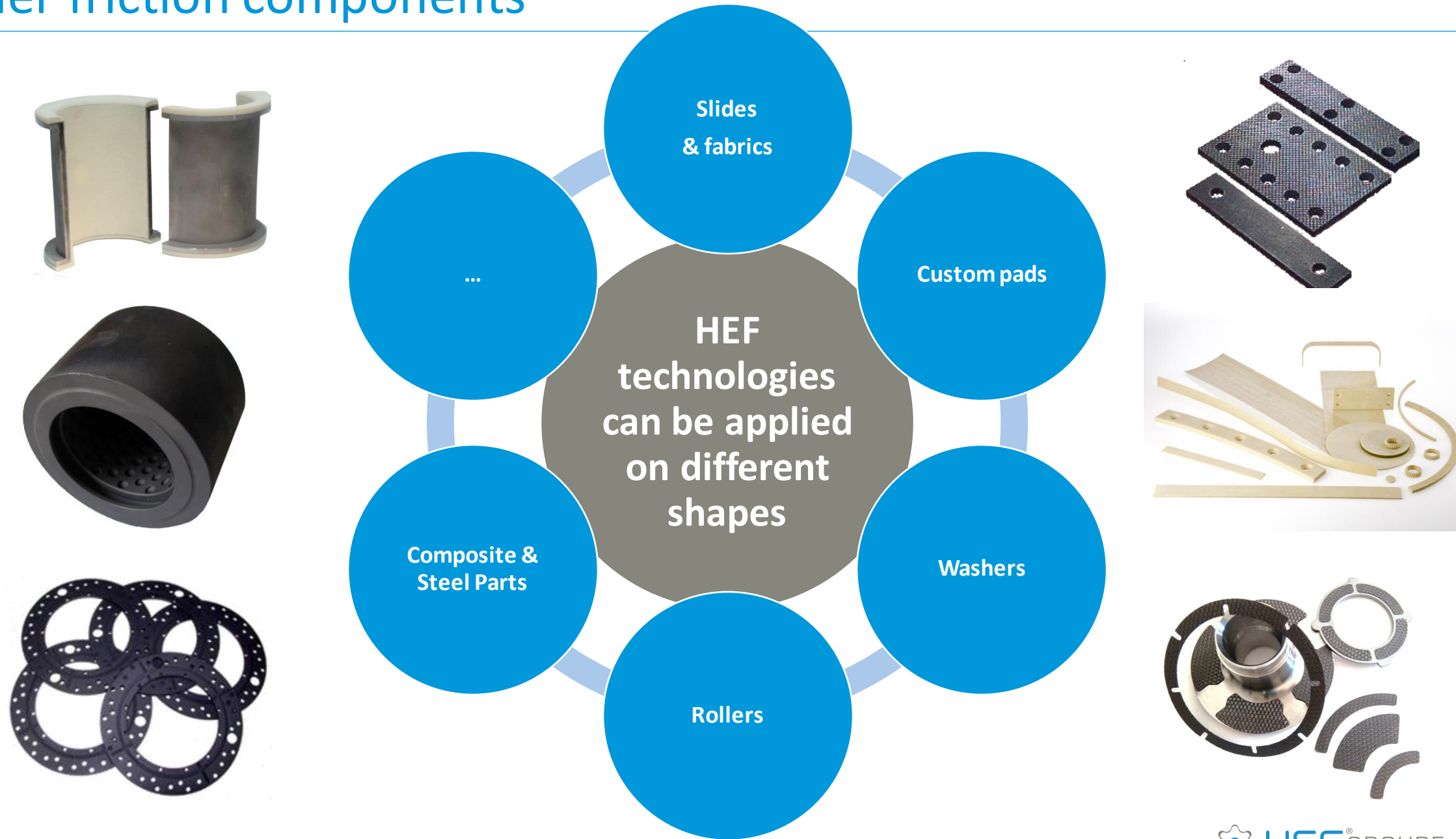
PEL[®] range: High load & long greasing intervals



PEL[®] range: High load & optimised grease dispersal



Other friction components



HEF Friction components – Application examples

Construction & mining equipment



Railway



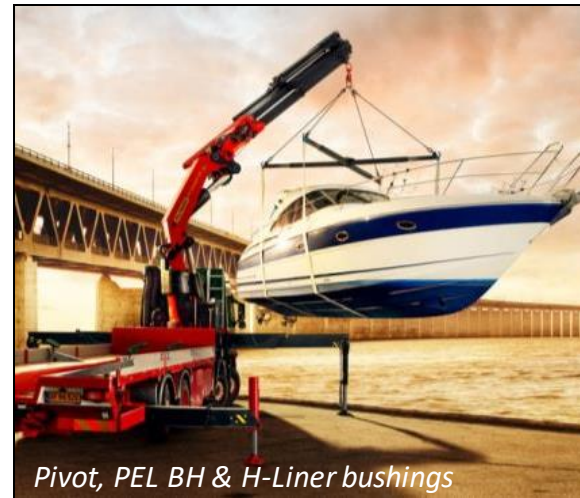
Energy



Agriculture & forestry equipment



Handling & shipyard



Steel industry



To be an actor of Progress by transforming Science
into Industry in a free and pioneering company.

HEF.fr

