



AEROSOL DEPOSITION

Heraeus High Performance Coatings

THE HERAEUS GROUP – A FAMILY-OWNED TECHNOLOGY COMPANY

Total Revenue in 2022

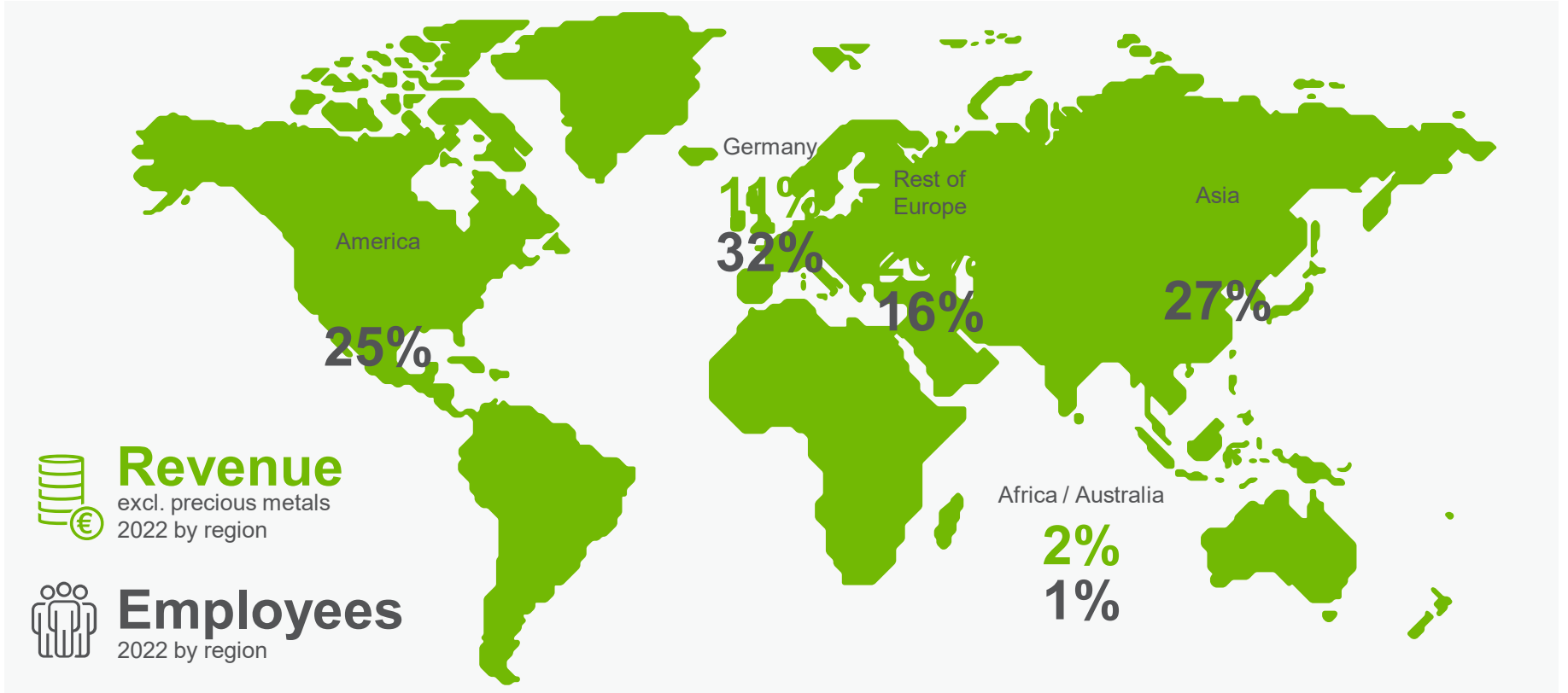
29.1 bn. €

(30.6 bn. US\$)

US\$ calculated with 2022 average exchange rate (1€ = 1.0530 US\$)



Approx. **100** sites in **40** countries



Revenue
excl. precious metals
2022 by region

Employees
2022 by region

market-oriented distribution
in **18** Operating
Companies



5.4%

R & D Expenditures
based on revenues
excl. precious metals



APPROX. **17,200**
employees
worldwide
incl. staff leasing



TOP 10 ↑

family-owned
companies
in Germany



OUR ACTIVITIES ARE DIVERSIFIED INTO FOUR BUSINESS PLATFORMS



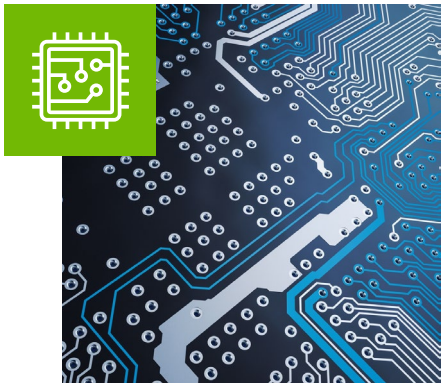
Metals & Recycling

Materials and technologies related to metals, especially precious metals, and circular economy



Healthcare

Materials and technologies related to medical technology, orthopedics, and infection management



Semiconductor & Electronics

Materials and technologies for electronics, e-mobility, semiconductors, optical fiber, and digital technologies



Industrials

Materials and technologies for industrial production and processes

THE HERAEUS BUSINESSES – BROADLY DIVERSIFIED

Heraeus Holding

Operating Companies, arranged in Business Platforms



Metals & Recycling

Heraeus Precious Metals
Heraeus Amloy
Heraeus Remloy
revalyu¹⁾



Healthcare

Heraeus Medical
Heraeus Medevio
Norwood Medical
Mo-Sci
ETS



Semiconductor & Electronics

Heraeus Electronics
Heraeus Epurio
Heraeus Conamic
Heraeus Comvance
Heraeus Printed Electronics
Heraeus High Perf. Coatings



Industrials

Heraeus Electro-Nite
Heraeus Photovoltaics
Smart Steel Technologies²⁾

Service Platforms

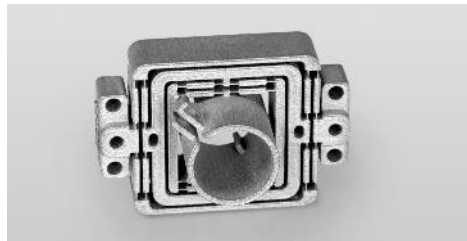
Heraeus Business Solutions
Heraeus Consulting & IT Solutions
Heraeus Health & Education Services
Heraeus Site Operations

1) Majority shareholding

2) Minority shareholding

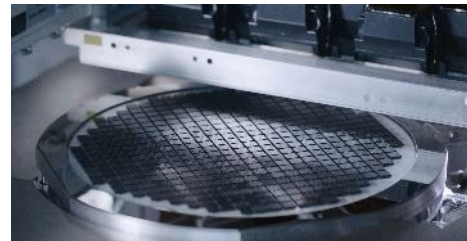
SHAPING TECHNOLOGIES OF THE FUTURE – HERAEUS START-UPS

Heraeus speeds up innovation with in-house start-ups. Thereby, we facilitate agile working methods, cross-linked thinking and interdisciplinary research and development.



Heraeus AMLOY

With 3D printed and injection moulded amorphous parts Heraeus AMLOY® enables new geometries and uses in diverse industries.



Heraeus Printed Electronics

The Prexonics® system solution makes inkjet printing of conductive inks possible on an industrial scale e.g. for EMI shielding of electronic parts.



Heraeus High Performance Coatings

With aerosol deposition, ceramic coatings can be realized at room temperature e.g. for electronic and automotive applications.



Heraeus Remloy

By recycling end-of-life rare earth magnets, Heraeus Remloy® offers a sustainable solution to meet the high demand for neodymium magnet materials.

UNPRECEDENTED MATERIAL FREEDOM

Aerosol Deposition – a unique coating method



Room Temperature Coating

- Ceramics
- Metals
- Unprecedented material combinations and mixtures



Coating Quality

- Very good adhesion
- Minimum surface roughness increase
- Very high compactness
- 1 – 70 μm



Cost Effective

- High deposition rates
- Moderate equipment costs
- Low energy consumption

APPLICATIONS



E-Mobility

e.g. electrically insulating coatings (sintered permanent magnets, roller bearings)



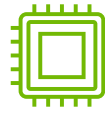
Electronics

e.g. electrically insulating coatings, functional coatings (MLCC, storage devices, piezoelectric sensors)



Sensors

e.g. protective coatings for high-temperature sensors



Semiconductor Production

e.g. etch resistant coatings for plasma etch chambers



Industrial Equipment

e.g. anti-corrosion coatings for high temperature alloys (furnaces), electrically insulating coatings (heat exchanger)

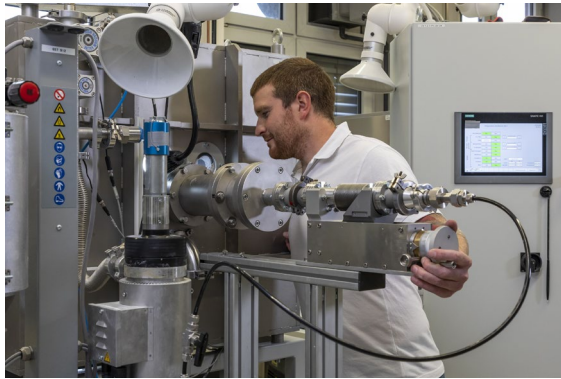


Medical Technology

e.g. development of antiseptic coatings

OUR SERVICES

We accompany customers from initial feasibility study to introducing this new process into series production.



Evaluation

- Material screening
- Feasibility studies
- Process customization



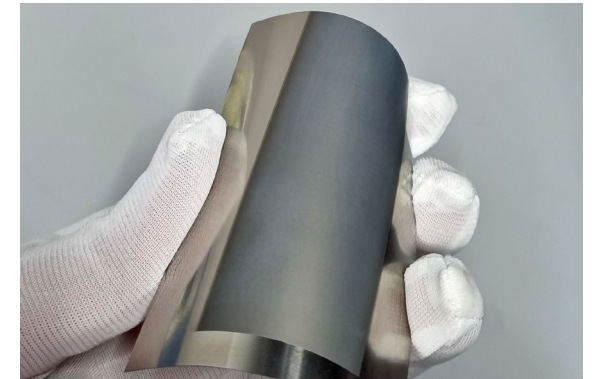
Equipment Supply

- Customized production equipment tailored to your application
- Standardized R&D equipment



Material Supply

- Reliable material supply
- Guaranteed result if material & equipment by Heraeus



Prototype & Small Series

- Prototype manufacturing
- Small series production

KEY FACTS



3 aerosol coating chambers at the application lab at the headquarters in Hanau.

Contact partners in Europe & Asia to **globally support customers.**

Connected to Heraeus' global footprint with more than **100 sites in 40 countries.**

More than **15 tested ceramic and metallic coatings** that are available of-the-shelf.



**THANK YOU FOR YOUR
ATTENTION**

WWW.HERAEUS-HIGH-PERFORMANCE-COATINGS.COM.COM

