

RESEARCH & DEVELOPMENT

Divisional Focuses and Highlights

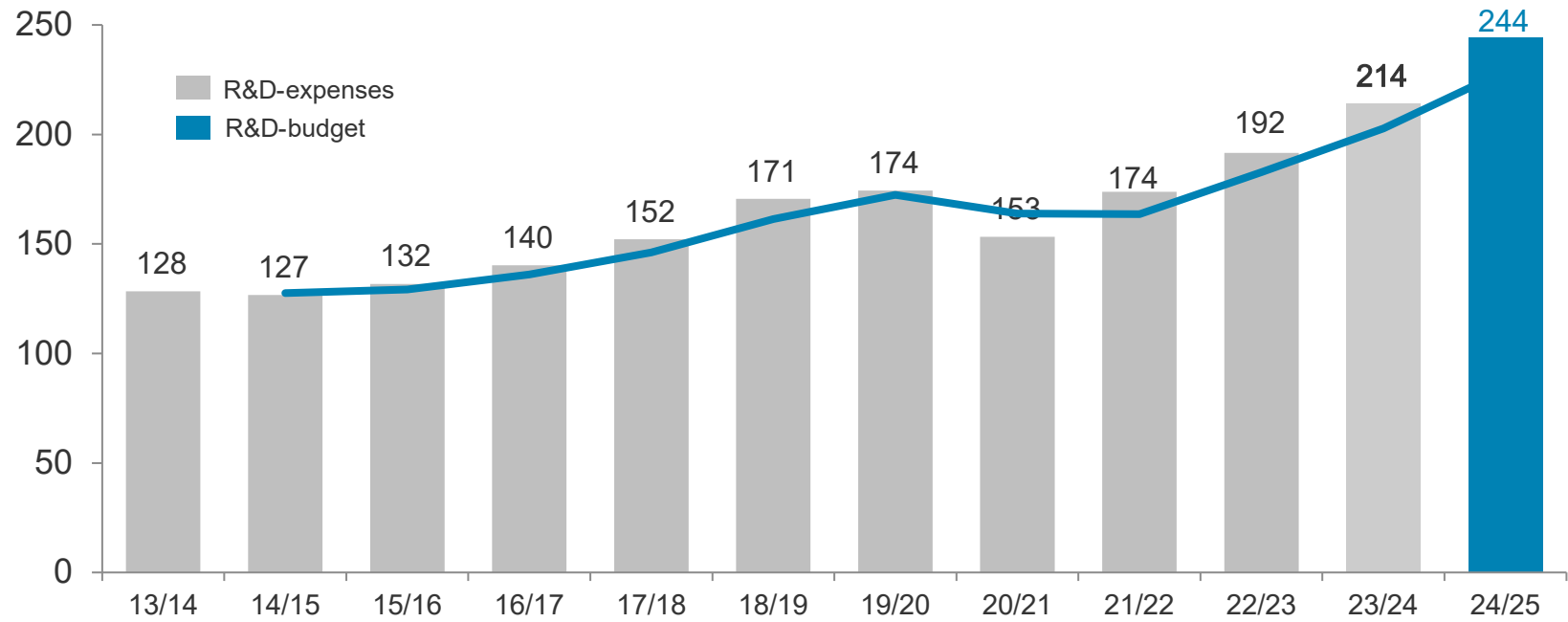
Public

RESEARCH & DEVELOPMENT



- » R&D budget of 244 mio EUR in BY 2024/25
- » Around 800 FTEs in R&D worldwide
- » Decentralized organization: over 70 R&D locations worldwide enable efficient and customer -focused research & development
- » Collaboration with 100 universities, technical colleges & research institutes worldwide
- » More than 3,300 registered patents

R&D-EXPENSES IN MIO. €



R&D-COOPERATION WITH SCIENTIFIC PARTNERS



Worldwide about 100
partners

- » Universities
- » Research institutes
- » Competence centres
- » CD-Labs

for **application -oriented**
basic research

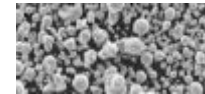
R&D – FOCUSES

Steel Division

- » Sustainable CO₂-reduced steel production (high energy efficiency, Zero Waste, use of HBI, use of hydrogen ...)
- » Highest strength steels (high ductility, pbs, hybrid materials)
- » Best surface qualities, functional coatings
- » Smart Production in steel production process

High Performance Metals Division

- » High performance alloys for tools, aircraft, oil and gas industry
- » Forged components from Nickelbase- and TiAl-alloys
- » Extreme resistant coatings for tools
- » Process development for Additive Manufacturing from powder production over design to the finished component



R&D – FOCUSES

Metal Engineering Division

- » Wear and rollcontact fatigue resistant rail steels
- » Digitalization of switch systems for optimized predictive maintenance
- » High strength thermomechanically rolled wire, sourgas resistant tubes and gastight tube connections
- » Welding additions for highest strength steels and heat resistant applications

Metal Forming Division

- » High sophisticated profiles and pipes from highest strength steels, with metallic or plastic coating, steel-plastic hybrid materials
- » Lightweight components (e.g. press hardening steel, 3D-welding of components, hybrid components)
- » New forming technologies for light metals



INNOVATION HIGHLIGHTS

STEELS FOR AUTOMOTIVE USE

Advanced high-strength steels



Safety

ahss classic
ahss high-ductility



Lightweighting



Energy Storage

Modular battery box
flextric



Electrical
Propulsion

Electrical steel
isovac®

voestalpine

ONE STEP AHEAD.

INNOVATION HIGHLIGHTS

ULTRAHIGH-STRENGTH STEELS AND FORMING



- » Advanced high -strength steels, high -ductility (AHSS-HD): Newly developed multiphase steels with unsurpassed strength and improved formability
- » Applications in safety -related automotive body parts

ADVANTAGES

- » High strength
- » Superb formability
- » Good welding properties
- » Outstanding crash behavior

INNOVATION HIGHLIGHTS

PRESSHARDENED LIGHTWEIGHT COMPONENTS (PHS)



- » Technology developed in our own labs: [phs-ultraform®](#) and [phs-directform®](#) for modern [lightweight design](#)
- » voestalpine is the only manufacturer worldwide to use both the indirect and direct method
- » Hot-dip galvanized steel strip and processing into high - strength components for the premium automotive industry
- » Superior corrosion protection, excellent crash performance
- » Applications in side members, A and B pillars, side panel stiffeners, doors, bodies in white

ADVANTAGES

- » Reduced consumption
- » Increased passenger safety

STEEL IS A SUSTAINABLE MATERIAL



- » Steel is one of the **most used materials worldwide** , and is indispensable to a sustainable society
- » Steel is **infinitely reusable**
 - » At the end of its product life cycle it is reintroduced into the **production cycle in the form of scrap**
- » Steel plays **an important role in achieving our society's low -carbon future**

KEY TECHNOLOGY GREEN HYDROGEN

CURRENT voestalpine RESEARCH PROJECTS



» H2FUTURE

Currently the world's largest pilot facility for the CO₂-neutral production of hydrogen in the steel industry

» SuSteel

Direct CO₂-neutral steel production with hydrogen plasma smelting reduction

» Hyfor

Hydrogen -based direct reduction of iron ore fines to produce ultra -pure sponge iron

» Methane pyrolysis

Alternative, climate -neutral production of hydrogen