

# HIGH STRENGTH STEELS FOR LIGHTWEIGHT CONSTRUCTION

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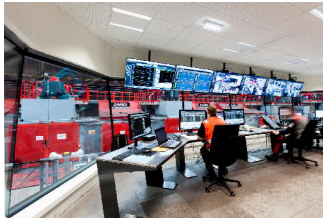
Franz M. Androsch

voestalpine AG  
[www.voestalpine.com](http://www.voestalpine.com)

**voestalpine**  
ONE STEP AHEAD.

# voestalpine GROUP

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- » Leading technology and capital goods group
- » Combined material and processing expertise
- » Global top positions in its business units
- » Focused on product and system solutions based on steel and other metals of the highest quality
- » In technology-intensive industries and niches

# voestalpine GROUP

## KEY FIGURES



500 / 50 / 5  
Sites / countries / continents



48,650  
employees worldwide



11.26 bn  
revenue in 2020/21 FY



1.13 bn  
EBITDA in 2020/21 FY

### REVENUE BY INDUSTRIES

As percentage of Group revenue, business year 2020/21



# voestalpine GROUP

## FOUR DIVISIONS

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Steel  
4.216,7 Mio.  
Revenue (in EUR)  
36 % revenue share



High Performance Metals  
2.299,8 Mio.  
Revenue (in EUR)  
19 % revenue share



Metal Forming  
2.553,9 Mio.  
Revenue (in EUR)  
22 % revenue share



Metal Engineering  
2.667,3 Mio.  
Revenue (in EUR)  
23 % revenue share

BY 2020/21

voestalpine AG

4 | Nov. 2021

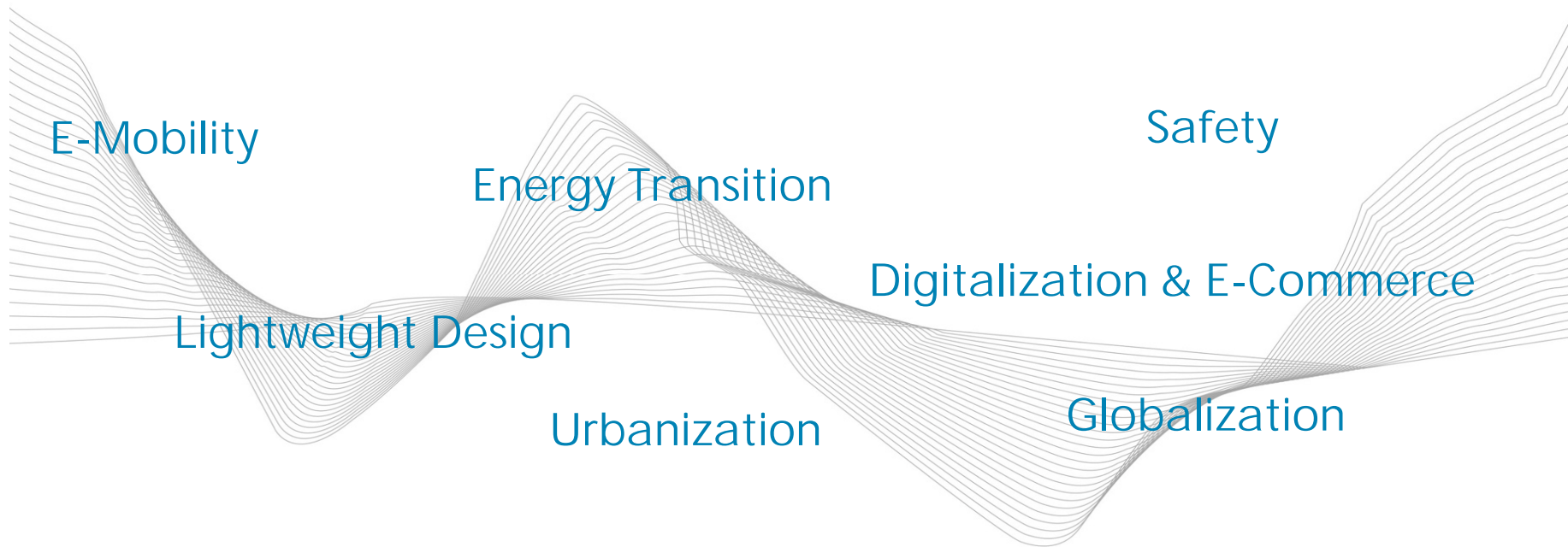
| A3PS Eco Mobility Conference Vienna

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# TRENDS THAT MOVE OUR CUSTOMERS

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# OUR ANSWERS

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Safety

Advanced high-strength steels

ahss classic  
ahss high-ductility



Lightweighting



Energy Storage

Modular battery box  
flextric



Electrical  
Propulsion

Electrical steel  
isovac®

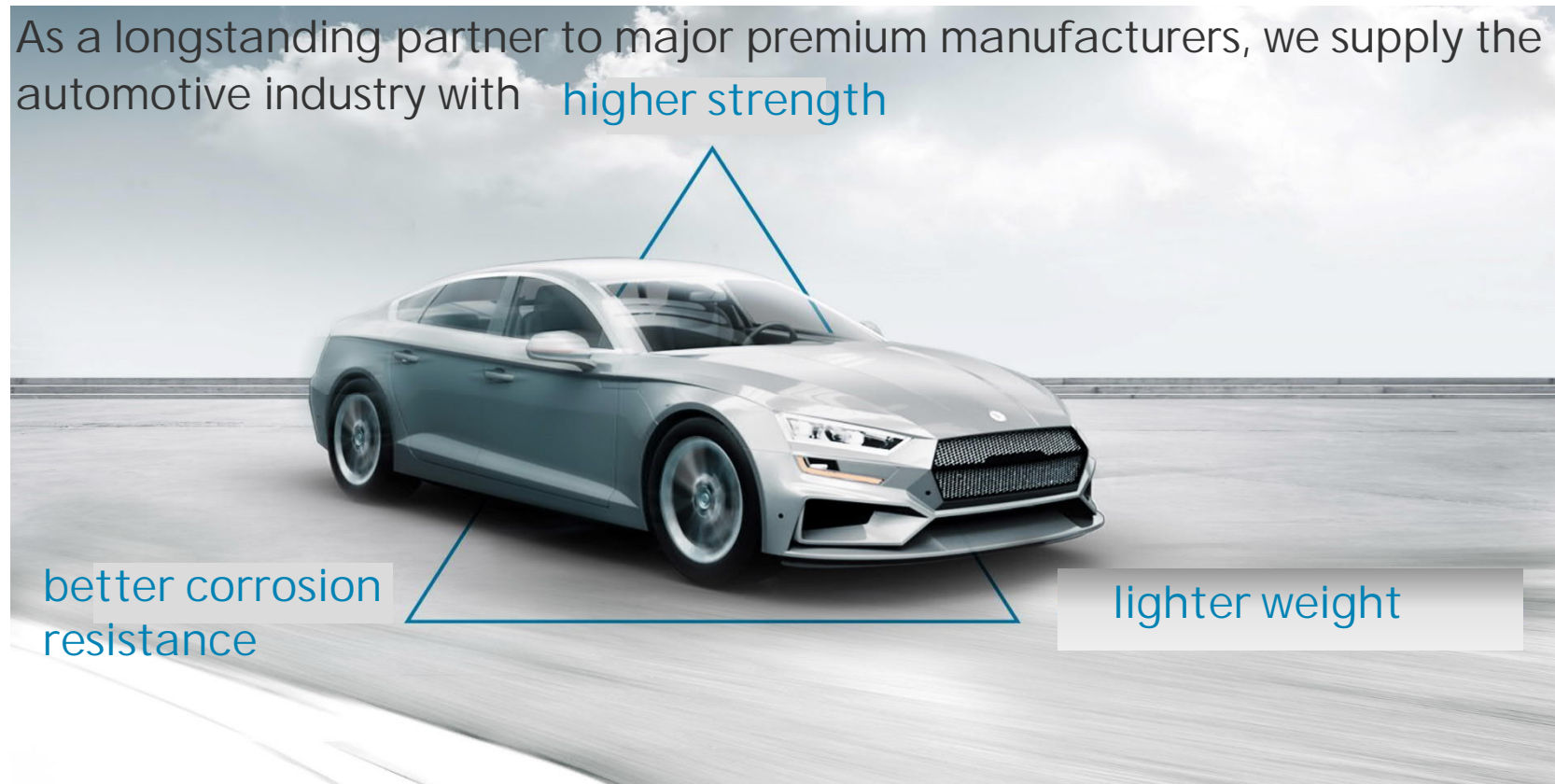
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## POSITION IN THE AUTOMOTIVE INDUSTRY

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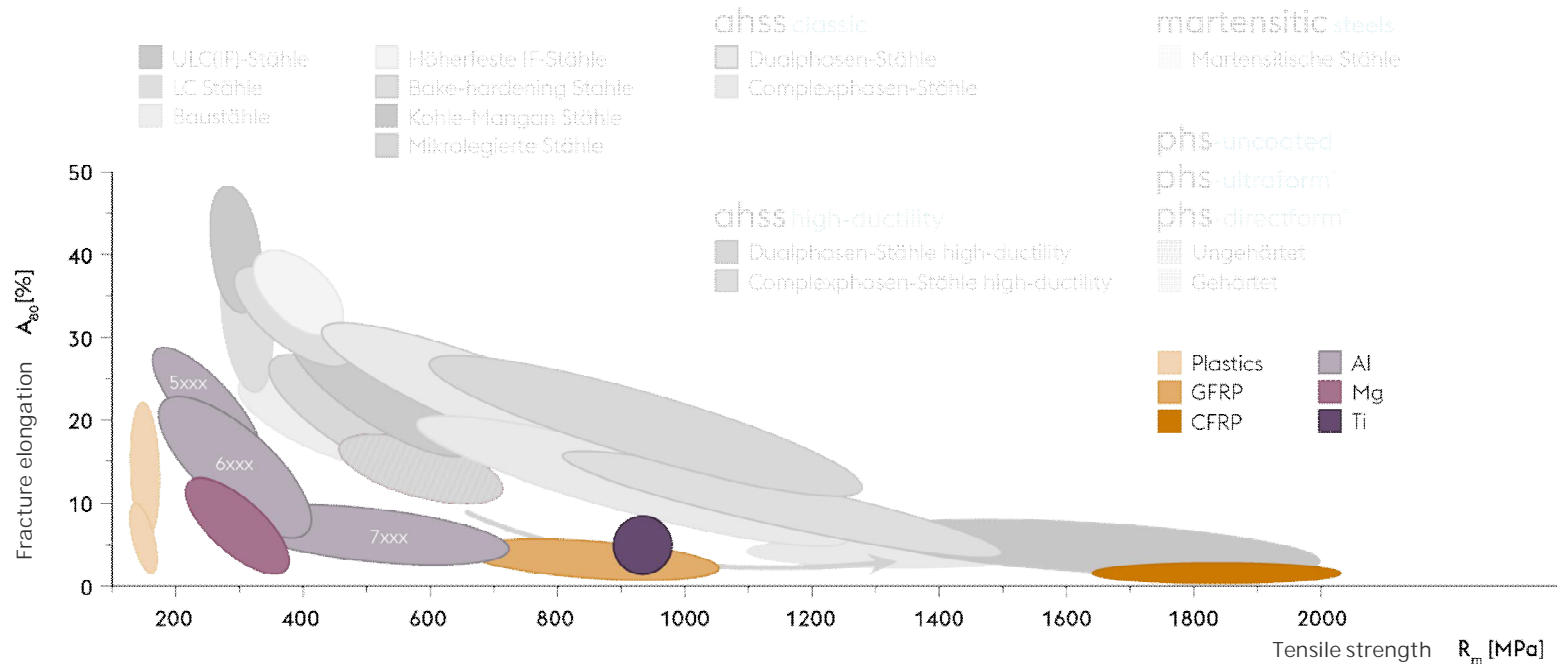
As a longstanding partner to major premium manufacturers, we supply the automotive industry with **higher strength**



**better corrosion  
resistance**

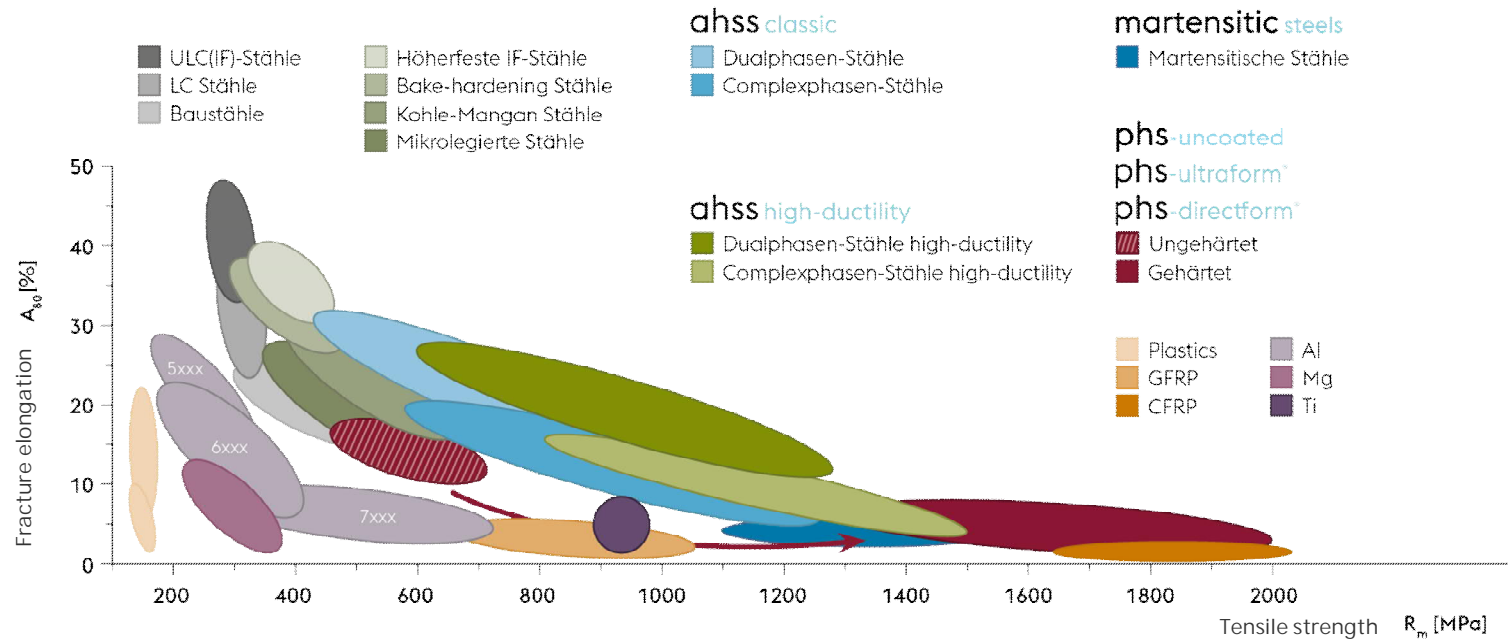
**lighter weight**

# MATERIALS FOR HOT AND COLD FORMING

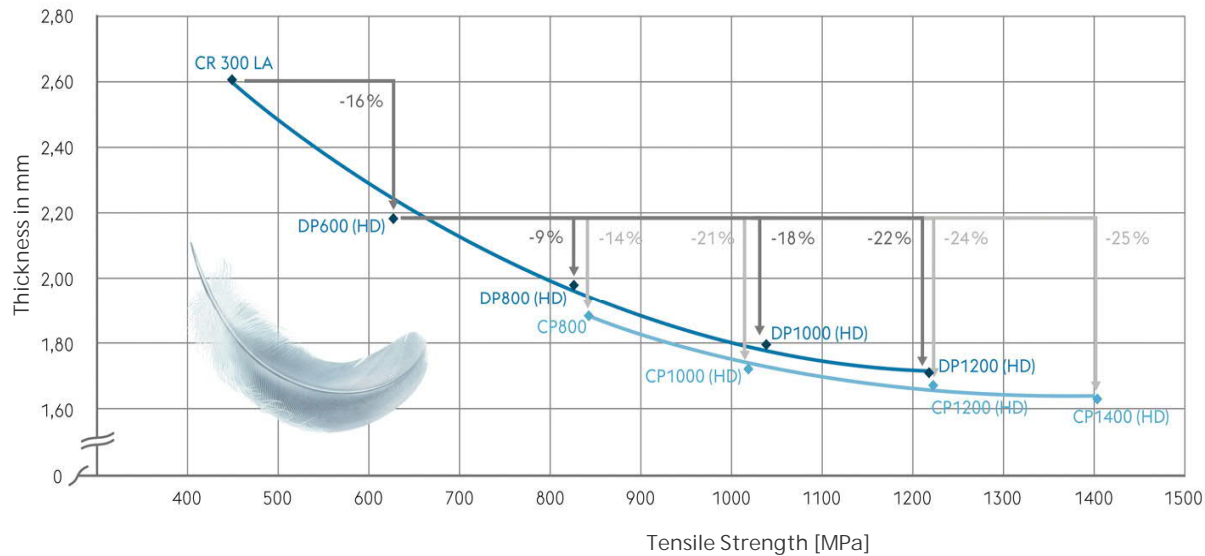




# MATERIALS FOR HOT AND COLD FORMING



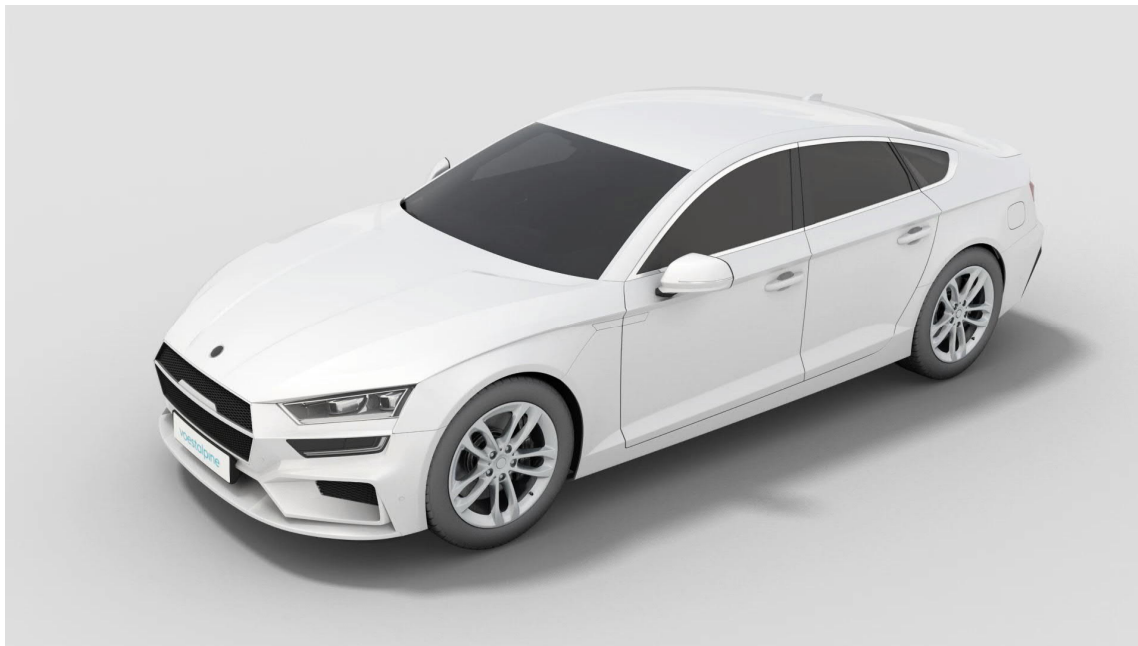
# AHSS HIGH DUCTILITY



- » Weight reduction up to 35% in component
- » Better formability -> complex parts possible at highest strength
- » Best crash performance

# LIGHTWEIGHT CONSTRUCTION IN DOORS AND FLAPS

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ahss exposed

ahss classic

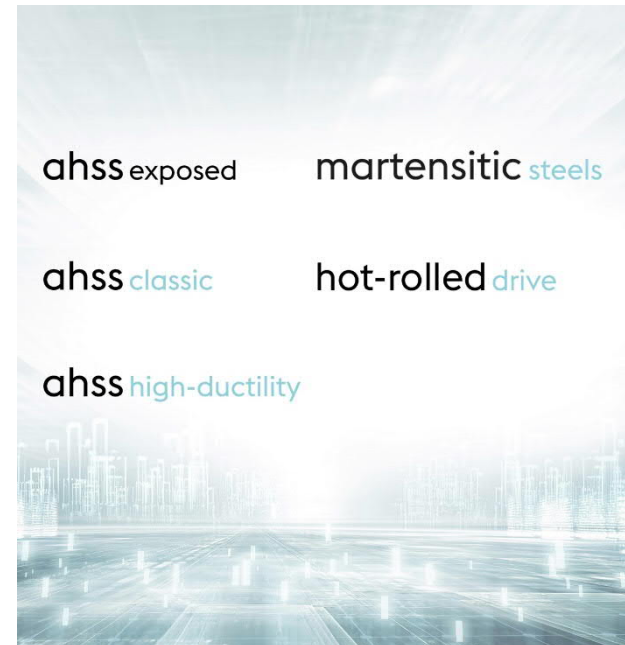
ahss high-ductility

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# LIGHTWEIGHT CONSTRUCTION IN CAR BODY

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ahss exposed

martensitic steels

ahss classic

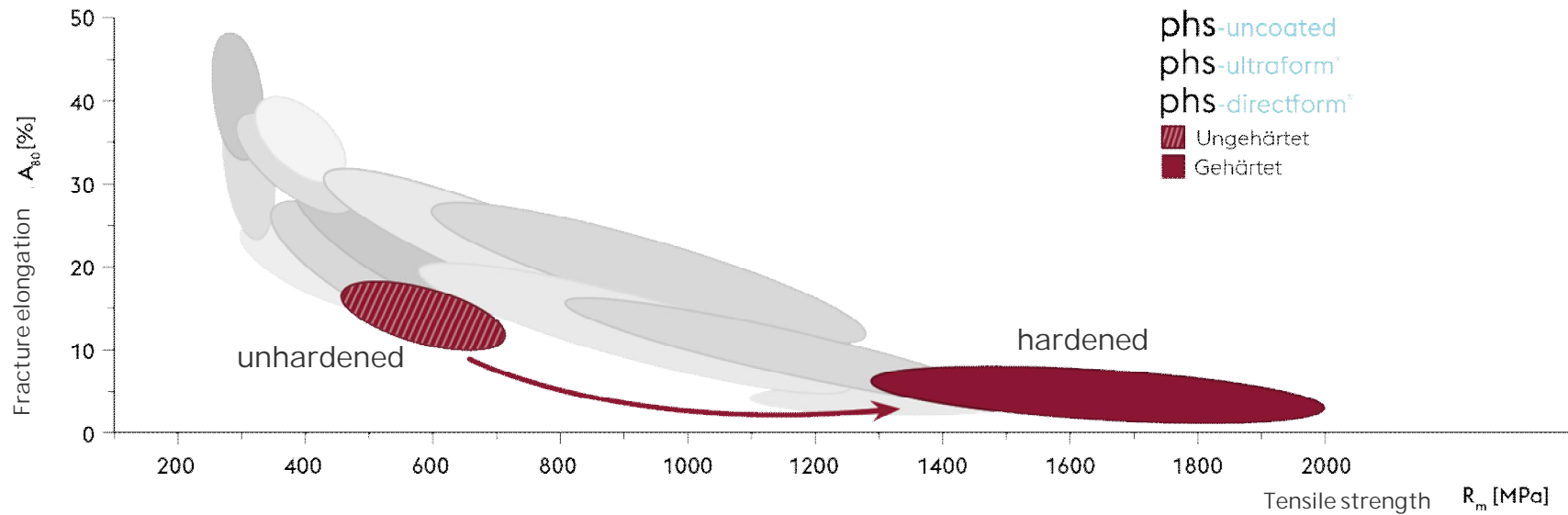
hot-rolled drive

ahss high-ductility

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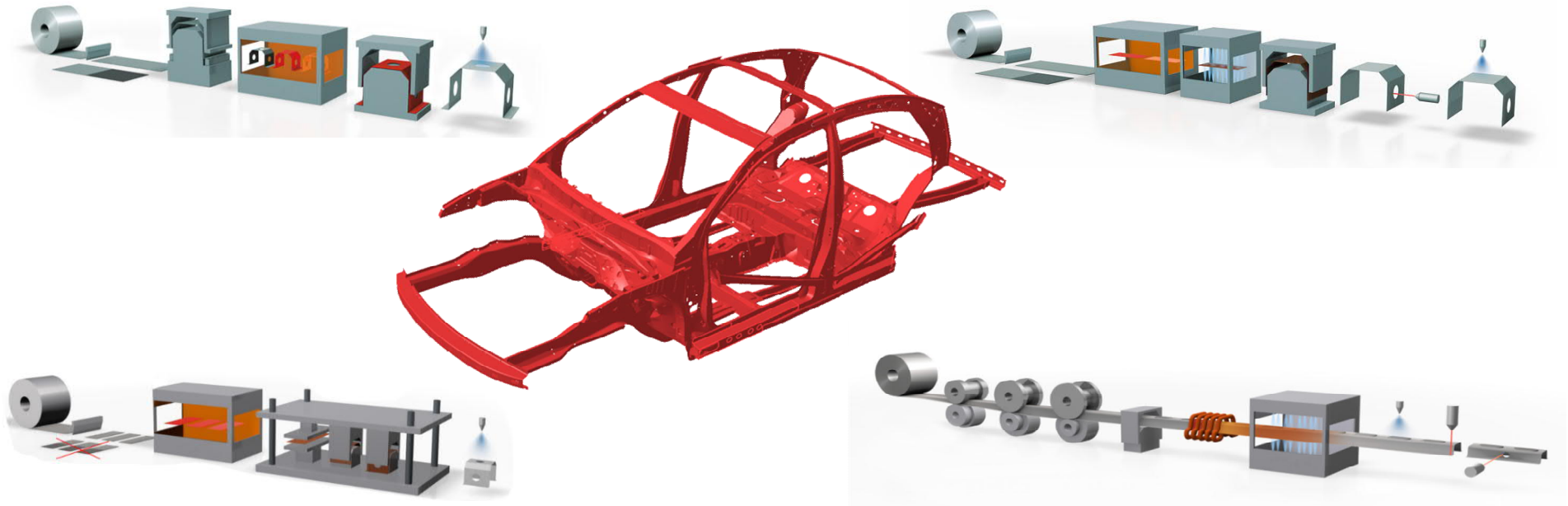
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# MATERIALS FOR HOT FORMING



# HOTFORMING TOOL BOX

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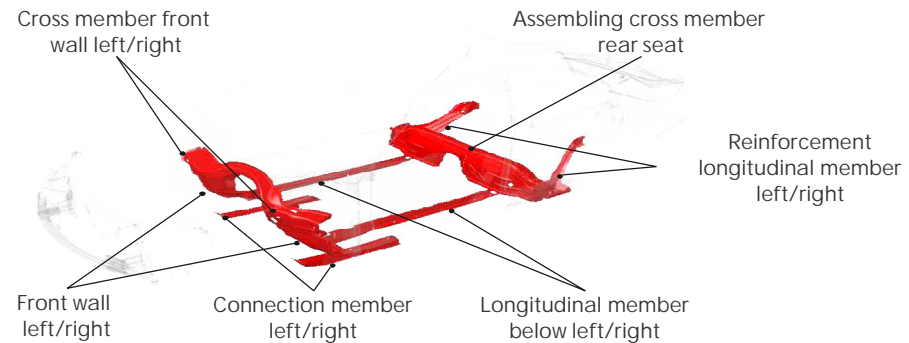
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# PRESSHARDENED STEEL



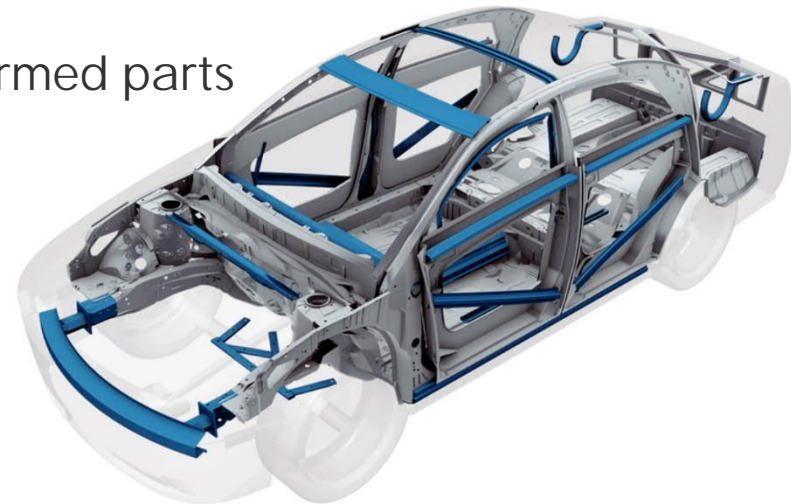
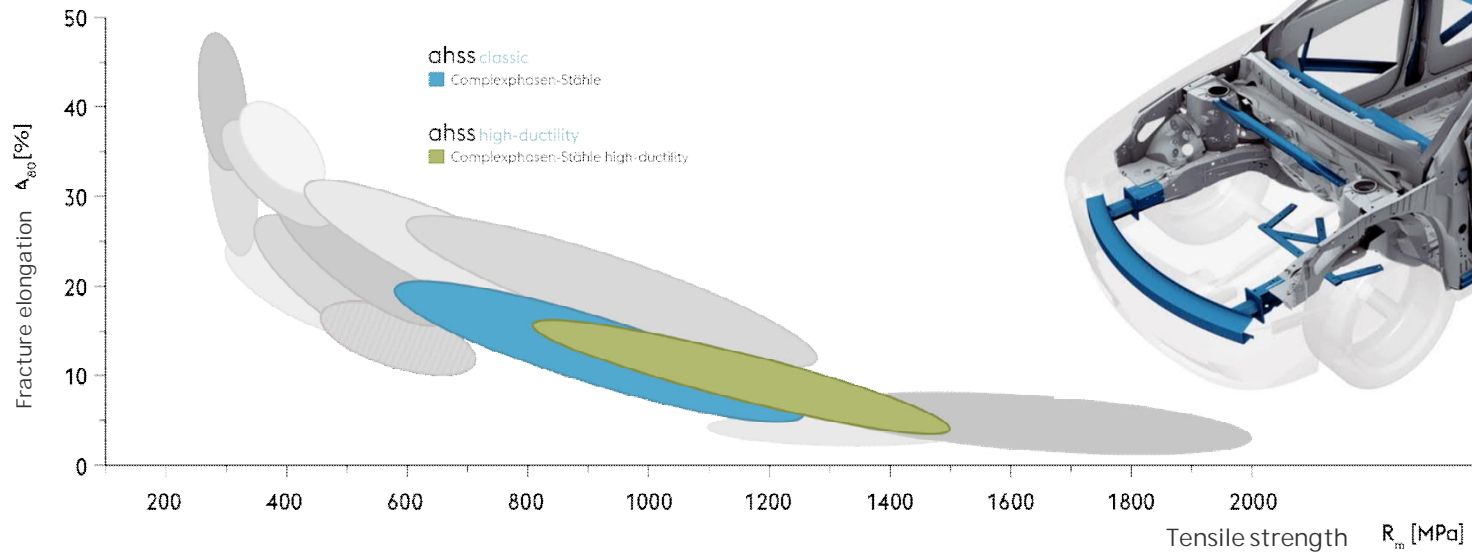
» **phs-ultraform**® + **phs-directform**®

- » Highest strength and corrosion resistance
- » Lightweight components of the future
- » Highest freedom of design



# MATERIALS FOR ROLLFORMING

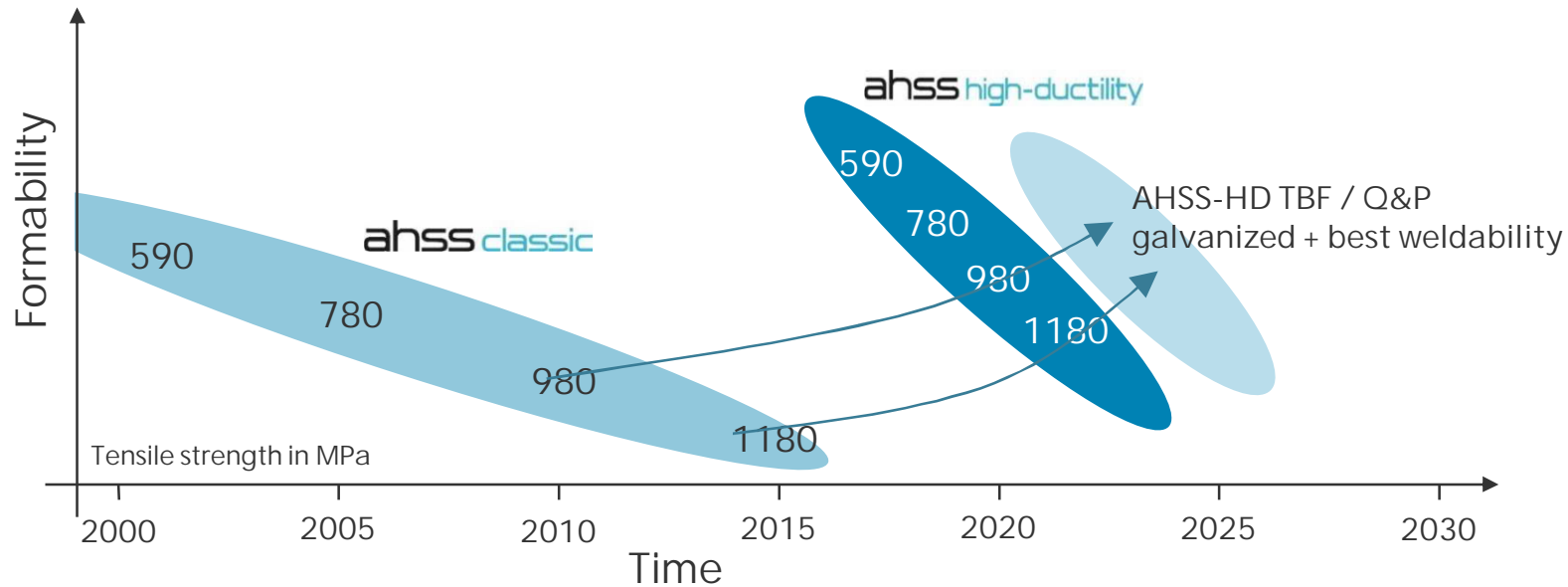
Application of rollformed parts





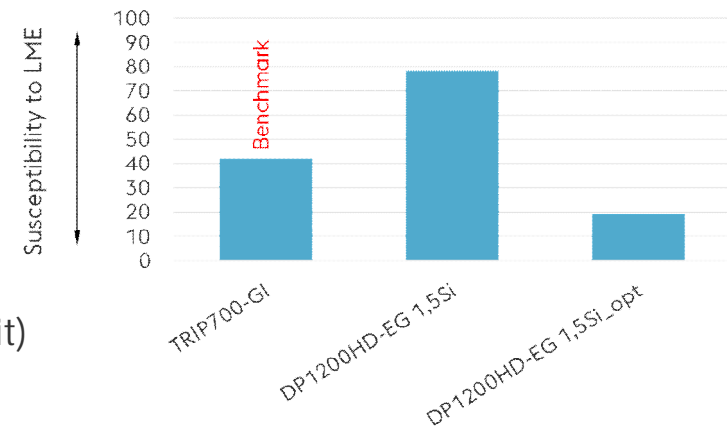
# DEVELOPMENT GOES ON ...

... with the focus on **weldability**



# DEVELOPMENT POTENTIALS

- » Optimization of alloy design
    - » Reduction of Si, addition of Bor
  - » Complex annealing cycles
    - » Optimal combination of structure components (Ferrit, Bainit, Martensit, tempered Martensit and Austenit)
- => Outstanding properties can be achieved
- » Better weldability, reduction of LME
  - » Increase of strength
  - » Better formability

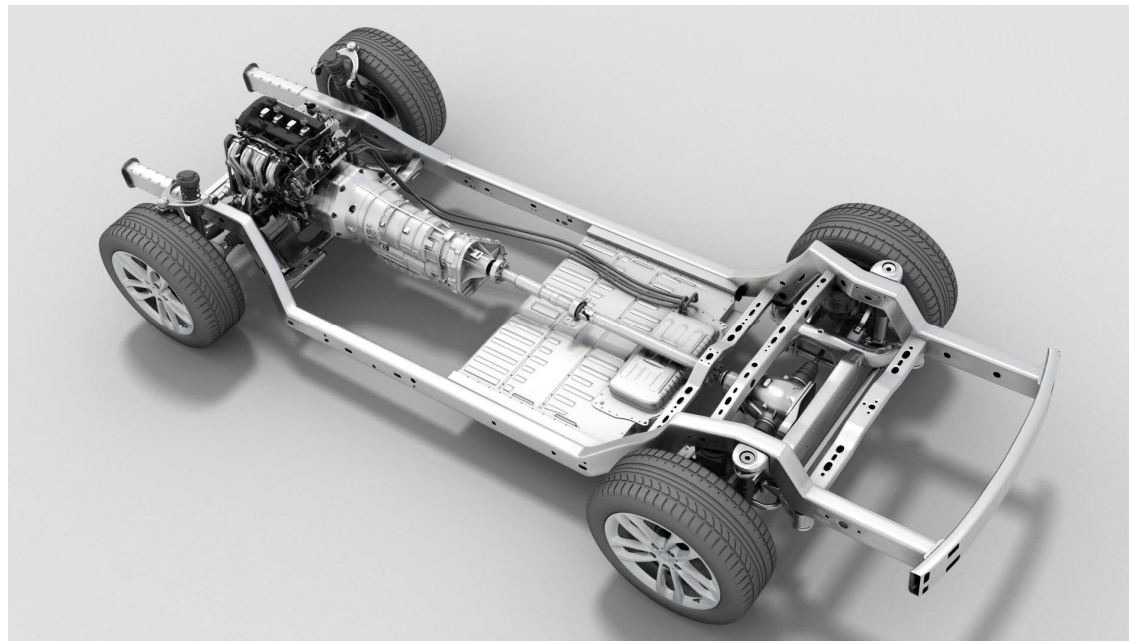


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# ELECTRO-MOBILITY @ voestalpine

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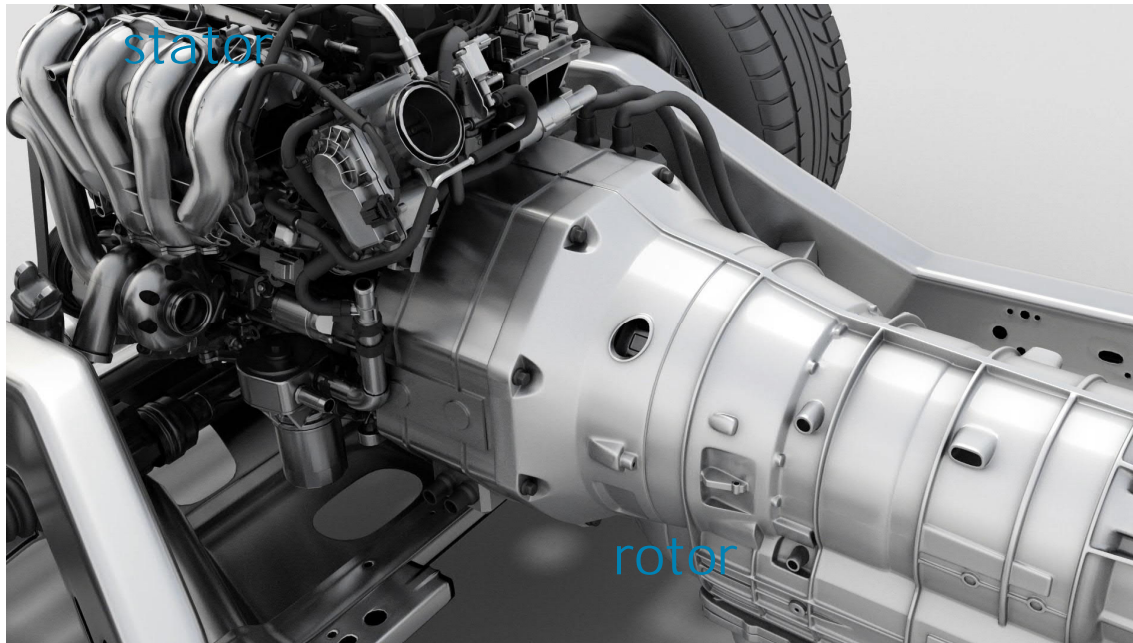
# BATTERY BOX

- € Focus on cost efficiency  
1/3 of material costs
- 🌍 Focus on sustainability  
94 % recycling rate
- ☰ Various design concepts  
steel tray, steel-Al hybrid, steel frame
- 🔥 Demand on fire protection  
crash safe and fireproof



# HIGH PERFORMANCE ELECTRIC STEEL

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- » **isovac**<sup>®</sup>
  - » Electrical steel for highest energy efficiency
- » **compaCore**<sup>®</sup>
  - » compact, inline-bonded lamination stacks that significantly improve efficiency

# CLEAR COMMITMENT TO GLOBAL CLIMATE GOALS



- » EUR 2.4 billion in environmental expenditure over 10 years
- » Since 1990: reduction of CO<sub>2</sub> emissions by around 20%
- » Potential to reduce CO<sub>2</sub> emissions in steel manufacturing exhausted
- » Further significant reductions in CO<sub>2</sub> emissions only possible with new technologies

# 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**

# CLEAR AND AMBITIOUS PHASED PLAN



- » Consistent, long-term strategy to directly avoid CO<sub>2</sub> emissions
- » To 2030: **hybrid concept**
  - » Gradual shift from blast furnace route to steel production using electricity
  - » Potential to reduce CO<sub>2</sub> emissions by around 30%
- » To 2050: **focus on green hydrogen**
  - » Long-term, successive increase in green electricity and green hydrogen
  - » CO<sub>2</sub>-neutral production feasible



# INNOVATIVE HYBRID CONCEPT



- » Gradual shift from coal-based blast furnace route to steel production using green electricity
- » Two electric arc furnaces at the sites in Linz and Donawitz by 2030
- » Rapid and significant CO<sub>2</sub> savings of 3–4 million tons of CO<sub>2</sub>/year
- » Highest product quality remains guaranteed
- » Prerequisite for hydrogen-based transformation by 2050



# THANK YOU

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