

# GREENTEC STEEL

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Investor Relations  
March 2023

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

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ONE STEP AHEAD.

Good afternoon Ladies and Gentlemen,

A warm welcome to our webcast about the Supervisory Board approval of EUR 1.5 billion for our decarbonization project called greentec steel.

# voestalpine GROUP

## CORPORATE RESPONSIBILITY

- » Climate change is the major task of our generation
- » voestalpine is fully committed to the Paris Treaty
- » voestalpine is member of the Science Based Target Initiative (SBTI)
  - » All efforts in improving our carbon footprint are therefor in line with the Paris Treaty and the goals of Europe's Initiative "fit for 55"



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As a starting point, I would like to mention, that climate change is the major task of our generation.

voestalpine is fully committed to the Paris Treaty.

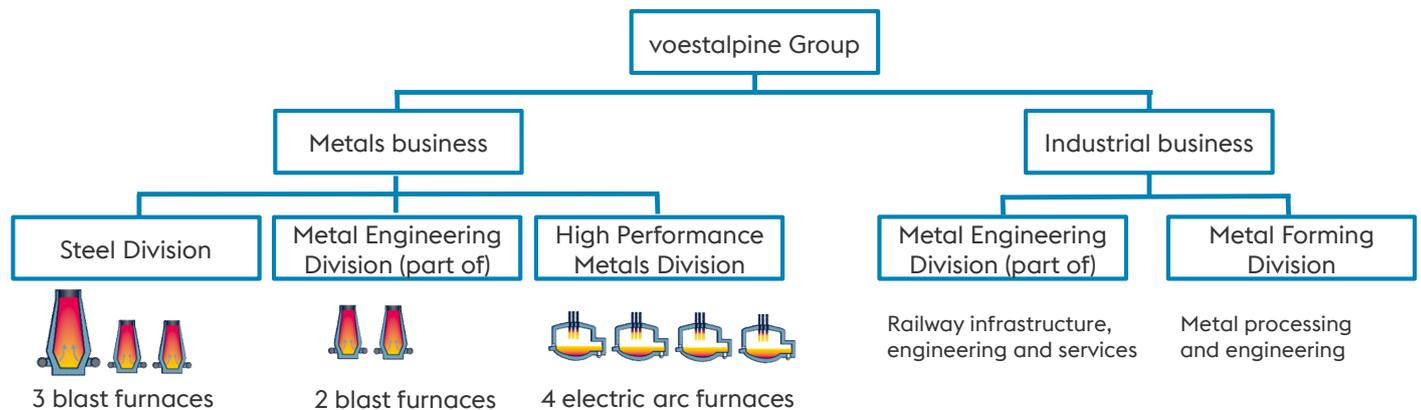
voestalpine is a member of the Science Based Target Initiative.

I am sure, many of you are quite familiar with this initiative. It ensures a systematic derivation of corporate targets from the Paris Climate Agreement.

Therefor all efforts in improving our carbon footprint are in line with the Paris Treaty and the goals of Europe's „fit for 55“ program.

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## PRODUCTION PROCESSES



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Speaking about decarbonization, it is important to take a look at the production processes in the voestalpine Group.

We run industrial businesses, which play no significant role in the decarbonization efforts. Those consists of the entire Metal Forming Division and around half of the Metal Engineering Division.

The production there are typical manufacturing, engineering and assembly-processes, that do not emit noteworthy CO<sub>2</sub> amounts.

In our metals business we run melting units with EAF-processes in the High Performance Metals Division and blast furnace processes in the Steel- and Metal Engineering Division.

The EAFs in the High Performance Metals Division are “state of the art” regarding technology and emissions. Decarbonization activities there focus on Scope 2 and Scope 3.

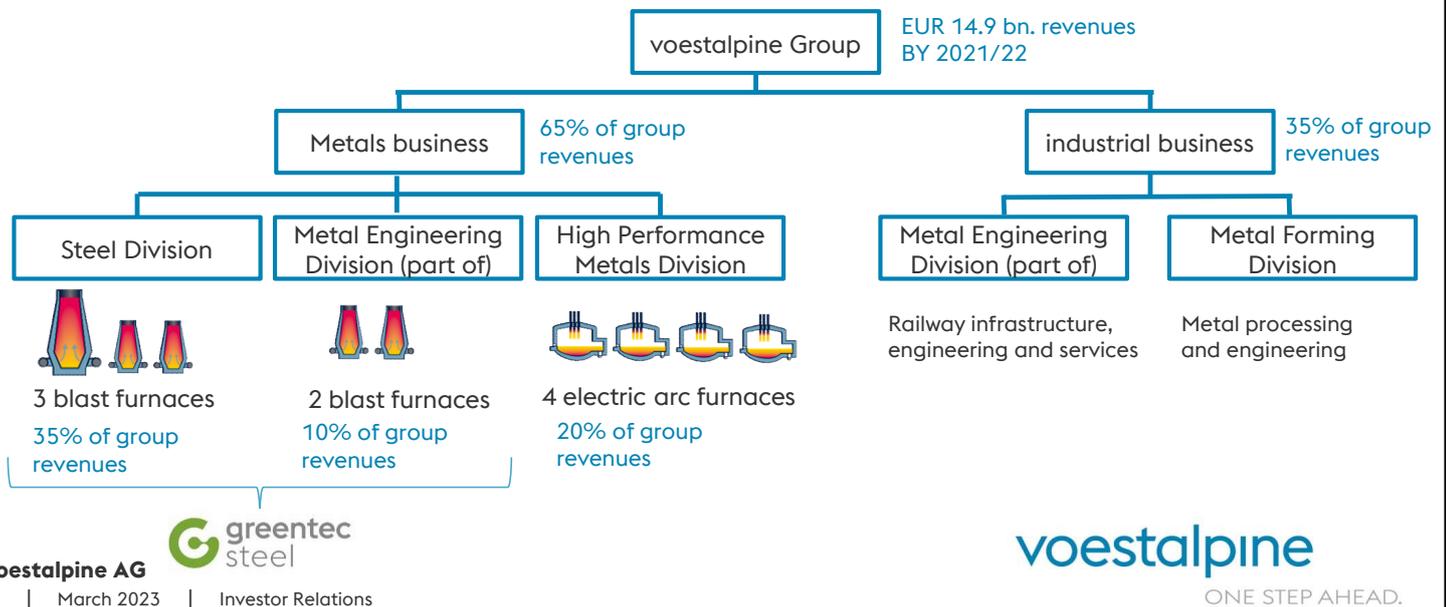
The blast furnaces in the Steel and the Metal Engineering Division are among the most efficient ones with regards to emissions globally.

Nevertheless this production technology produces large amounts of CO<sub>2</sub> inherent in the system.

The focus of our decarbonization efforts naturally is in the blast furnace operations. The program is called greentec steel.

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## PRODUCTION PROCESSES



To give you an overview of the size of the various businesses we broke down last year's revenues, of EUR 14.9 billion on group level.

As you can see, the industrial business accounted for 35% and the metals business of 65% of group sales.

In the metals business around 20% of group sales are generated via the EAF-route and 45% of group sales are generated via the blast furnace route.

So you can see, the decarbonization efforts and its huge CAPEX and the risk associated with it concerns less than half of our business.

This distinguishes us substantially from other pure steel companies in Europe.

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## DECARBONISATION STRATEGY

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- » Carbon footprint of voestalpine's industrial business is of very minor relevance
  - » Nevertheless, decarbonization plans also in downstream businesses
- » Metals production partly via EAFs and partly via blast furnace-route
  - » EAF-production is state of the art, decarbonization especially via green electricity
  - » Blast furnace route has by far the largest CO<sub>2</sub>-footprint in voestalpine's production portfolio (accounting for approx. 45% of group revenues in BY 2021/22)

»  is our strategy to decarbonize our blast furnace operations

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This text-chart reflects the explanations of the previous graphs.

# DECARBONISATION STRATEGY PRINCIPLES



- » voestalpine is a privately owned, stock listed, global company
- » The implementation of decarbonization must balance greenhouse gas emissions reduction and economic efficiency
  - » Starting point of all considerations is the market for green steel
    - » We increase our green steel capacity according to the development of the market volume
  - » Currently, there is great effort in development of green production technologies all over the globe
    - » We have to ensure to decide for the best available technology regarding emissions, OPEX, CAPEX and product quality requirements
  - » Green energy is the precondition and major OPEX-element for green steel production
    - » Availability and cost for green energy vary significantly across the globe: We have to ensure to decide for the best location for different stages of production
- » As a result, voestalpine's decarbonization strategy consists of a step-by-step implementation plan in order to minimize economic risk and maximize impact on GHG-emissions

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For the implementation of our decarbonisation strategy we follow basic principles:

First of all voestalpine is a privately owned, stock listed, global company. This means that the implementation of decarbonization must balance greenhouse gas emissions reduction and economic efficiency. Therefore – like for all investment projects – the starting point of all considerations is the market. In this case the market for green steel. This market is currently developing and we increase our green steel capacity step by step according to the expected market volume.

Second important point is technology: Currently, there is great effort in development of green production technologies all over the globe. We have to ensure to decide for the best available technology regarding emissions, OPEX, CAPEX and product quality requirements to be successful in the long run.

Third point is green energy: Green energy is the precondition and major OPEX-element for green steel production. Availability and cost for green energy differ significantly across the globe. Therefore we have to ensure to decide for the best location for different stages of production. As of today we have many political statements of intent, but only little visibility to realistically assess developments of availability and cost of green hydrogen. But this is decisive to completely decarbonize steel production.

As a result, voestalpine's decarbonization strategy consists of a step-by-step implementation plan in order to minimize economic risk and maximize impact on greenhouse gas emissions.

# DECARBONIZATION STRATEGY STEP-BY-STEP APPROACH



timeline	Steel Division	Metal Engineering Division	voestalpine group		comment
Status Quo			5 blast furnaces 20% Stake DRI facility		„Synthetic“ green steel via banking model to develop market
Phase 1 2027-2030			3 blast furnaces, 2 EAFs 20% Stake DRI facility	2.5 mt green steel (up to) -30% CO2 emissions*	CAPEX: approx. EUR 1.5 bn. contains investments for Phase 2
Phase 2 2030-2035			1 blast furnace, 3 EAFs 20% Stake DRI facility	4 mt green steel -50% CO2 emissions*	CAPEX: act. estimation EUR 0.5 bn.** parts already invested in Phase 1 Make or buy decision additional HBI
Phase 3 2035-2050			3 EAFs + 1 EAF / Smelter 20% Stake DRI facility	7 mt green steel -100% CO2 emissions* = net zero	The final phase of decarbonization requires decisions on technology and location, which are economically decisive. Those decisions are made according to the development of technologies as well as legal and economic framework conditions.
			+ various options: → H2-DRI-process → Hyfor → SuSteel → CCU/CCS/sector coupling → ...		

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\*) relative to Status Quo  
\*\*) depending on final technical setup

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The step-by-step approach of our decarbonization strategy consists of three major phases.

But let me first start with the Status Quo: we run 5 blast furnaces and we own a 20% stake of a DRI-plant in the US, which ensures us access to 420.000 tons of HBI per year.

Already with the current production setup with blast furnaces we produce synthetic green steel, via a banking model to develop the market.

With yesterday's approval by the Supervisory Board, we can enter phase 1, where we will replace two blast furnaces by two EAFs.

Start of production of the EAFs is planned for 2027.

In this phase we will learn to produce our today's high quality steel portfolio on different production routes.

In this setup we will be able to produce up to 2.5 million tons of green steel and reduce our CO<sub>2</sub>-emissions by around 30%.

The CAPEX is the mentioned EUR 1.5 billion, which contains already significant parts for the second step.

Phase 2 will start after 2030. At this time we will replace another blast furnace by an additional EAF in the Steel Division.

Approximately mid of the 30s we will shut down the last remaining blast furnace in the Metal Engineering Division and open up the complete capacity of the EAF, already invested in phase 1.

There is no additional EAF-installation needed in the Metal Engineering Division in phase 2. This is (one of) the main reasons, why the CAPEX for phase 1 was increased to

EUR 1.5 billion.

For technical reasons – in particular the portfolio of steel grades produced – it is not possible to switch immediately from blast furnace to EAF in phase 1.

After phase 2 is completed, we will produce around 4 million tons of greens steel and reduce our CO<sub>2</sub>-emissions by around 50% compared to today.

A topic which is not yet to decide, is to what extent we need additional HBI, DRI or similar input material and whether we can source it, or we can take a stake in a DRI-operation or we have to build DRI-capacity on our own.

The latter option clearly is the least preferred. From a risk-perspective, buying from the market would be the best option. An additional possibility to be taken into account is the development of new technologies for the production of green input material. Hyfor might become an option by that time.

Leaving the input material aside, the CAPEX for phase 2 is expected to amount to around EUR 500 million. It is substantially smaller than in phase 1, as phase 1 already includes major CAPEX elements for phase 2.

The final phase to reach net-zero is planned for the period after 2035 until 2050.

In this phase the last blast furnace in the voestalpine Group will be shut down and replaced by a hydrogen based production technology.

The most common technology talked about today is the classical DRI-plant, where reduction of the iron ore pellets is performed by hydrogen.

The output material is DRI or HBI, which is fed into an EAF and transformed into steel.

A technology, where voestalpine recently signed a MOU together with Primetals and Fortescue is Hyfor. This is a hydrogen based reduction process like the DRI-process, but uses iron ore fines instead of DRI-pellets. This gives this process an economic edge. The output of this process is processed further in a smelter and can either be used in an EAF or a traditional steel shop.

Susteel is a process, where iron ore is reduced and melted in a single step with hydrogen-plasma. We run a small Susteel-testplant in the Metal Engineering Division today.

Last but not least we also have CCU/CCS technologies on our radar screen. I think it is a high strategic value to keep open several different technology routes with potential.

The decision on technology is decisive for the cost-structure and therefor for the economics of future green steel production. For this reason, we will take this decision at due time, according to the development of technologies but also according to the development of the legal framework like CBAM and the economic framework conditions, like the availability and cost of green hydrogen in Europe or locations outside Europe. It is not

# DECARBONIZATION STRATEGY

## ENTERING PHASE 1



- » Decision Supervisory Board is 1<sup>st</sup> milestone of implementation
  - » Capital expenditures released: EUR 1.5 billion
  - » This CAPEX figure already includes significant investments for phase 2 to leverage economics
  
- » Next steps
  - » Final negotiations on subsidies
  - » Request for offers and project allocation
  - » Installation of EAFs (planned 2024)
  - » Start of production of EAFs (planned 2027)

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Now coming back to yesterday's supervisory board approval and entering Phase 1: The increased CAPEX, I explained at the previous chart: It's a pull forward of investments for Phase 2 to leverage economics

The next steps to be taken are now the final negotiations on subsidies.

In Phase 1 we follow a low risk approach by using well established technologies. For this reason we expect subsidies to be of minor size (approx. 5-10% of total CAPEX)

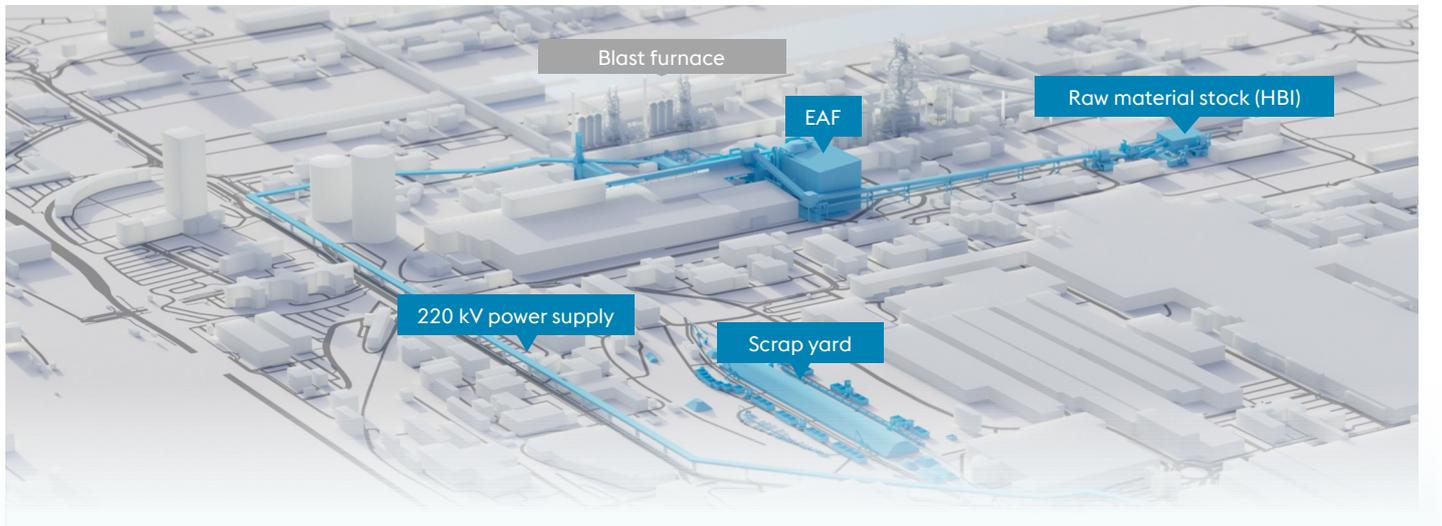
At a later stage, when we enter hydrogen based technologies, we expect subsidies to play a bigger role.

After that we enter the phase of requests for offers and project allocation.

The installation of the EAFs is planned for 2024

Start of production is planned for 2027

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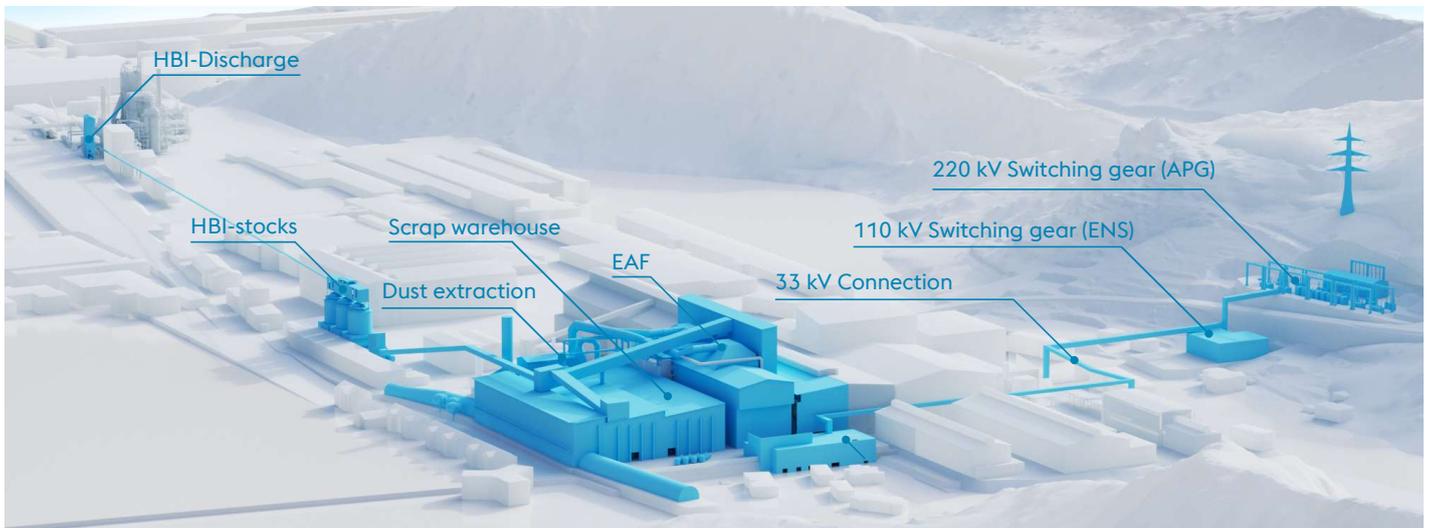
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This picture gives you an overview, how the plant setup will change in the Linz plant in the Steel Division

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## METAL ENGINEERING DIVISION, DONAWITZ PLANT 2027



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ONE STEP AHEAD.

This picture gives you an overview, how the plant setup will change in the Donawitz plant in the Metal Engineering Division.

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## CURRENT H2 ACTIVITIES

### » H2FUTURE

- » voestalpine runs one of the largest PEM-electrolyzers for the production of green hydrogen at the steel plant in Linz (Steel Division)

### » Hy4Smelt

- » voestalpine signed a MoU with Primetals and Fortescue to build a prototype of an industrial scale Hyfor plant with a smelter, using hydrogen, from the H2Future plant in Linz (Steel Division)

### » Susteel testplant in Donawitz (Metal Engineering Division)

- » Partnerships with industrial partners for development of sector coupling projects (CCU)



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Finally some remarks on the R&D work and preparations we are doing today for phase 3: The final decarbonization of the steelmaking process.

→ As you are well aware we run a PEM-electrolyzer for the production of green hydrogen at our steel plant in Linz.

The hydrogen from this plant is used in our existing operations to learn how to handle Hydrogen in a steel producing plant.

→ As I mentioned, we signed a MoU with Primetals and Fortescue to build a prototype of an industrial scale Hyfor plant with a smelter, using hydrogen from the H2Future plant in Linz (Steel Division). Planning phase is in 2023, and in case it works out, we will build the plant in 2024 and 2025 and start production in 2026.

→ The hydrogen-plasma based susteel process is performed in a test plant in Donawitz, the location of the steel plant of the Metal Engineering Division.

→ Apart from the hydrogen based production processes we entered several partnerships for the development of sector coupling projects. This means, we are linking our production process, which produces CO<sub>2</sub> to other industries, which use carbon in their production processes. That's the carbon capture and usage technology.

I hope you got an impression about the strategy of voestalpine's road to net zero and I am happy to answer your questions.