



BRITISH
STEEL

Rail production for tomorrow's railway

15 November 2022

BUILDING **STRONGER** FUTURES



Part of the Jingye Group

敬业集团
JINGYE GROUP

Who are we?

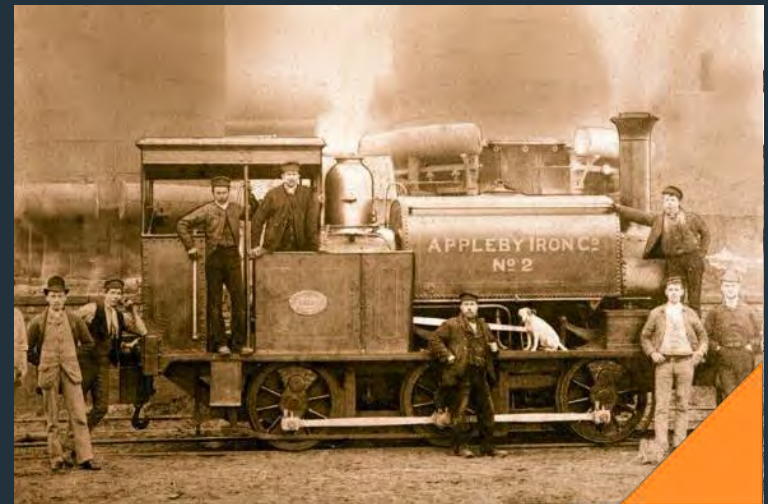
Who are we?

- British Steel is one of the leading steel manufacturers in Europe, producing around 3 million tonnes of steel products every year
- On 9 March 2020, we were bought by Chinese multi-industrial company Jingye Group
- This marked an exciting new chapter in British steelmaking



Who is British Steel?

- We supply high-quality rail, sections, special profiles and wire rod for some of the most demanding applications around the world
- We've a long heritage, making iron for 155 years and steel for 130
- And now we're embarking on a major modernisation programme to significantly improve our operations, efficiency and environmental performance



Who is Jingye?



- Jingye Group's journey started with Pingshan Chemical Factory in 1988
- In 2002, the Group started its steelmaking business
- Jingye Group now has 23,500 employees and focuses on the iron and steel industry
 - Steel products include bar, plate and coil products
- In 2018, total sales revenue was RMB 90.1bn (£10.2bn)
- Based in Hebei Province, China, the Group has branches and offices in 22 countries and exports to more than 80 countries and regions
- It also has operations in chemicals, hotels, real estate and trade
- Jingye Group has an admirable track record in community, environmental and sustainability work including:
 - more than RMB 800 million donated to support public welfare
 - preserving 67 million square metres of mountain

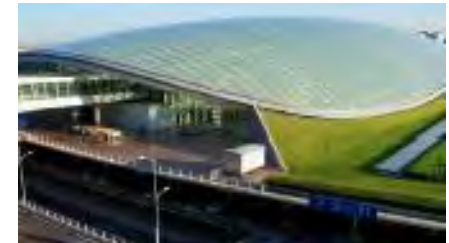
Key projects



China's Three Gorges Project



Beijing's Daxing
International Airport



Brunei's Cross-Sea Bridge

We supply into a range of demanding markets

Rail Infrastructure



Consumer Goods



Energy & Power



Construction



Automotive



Lifting & Excavating



Defence & Security

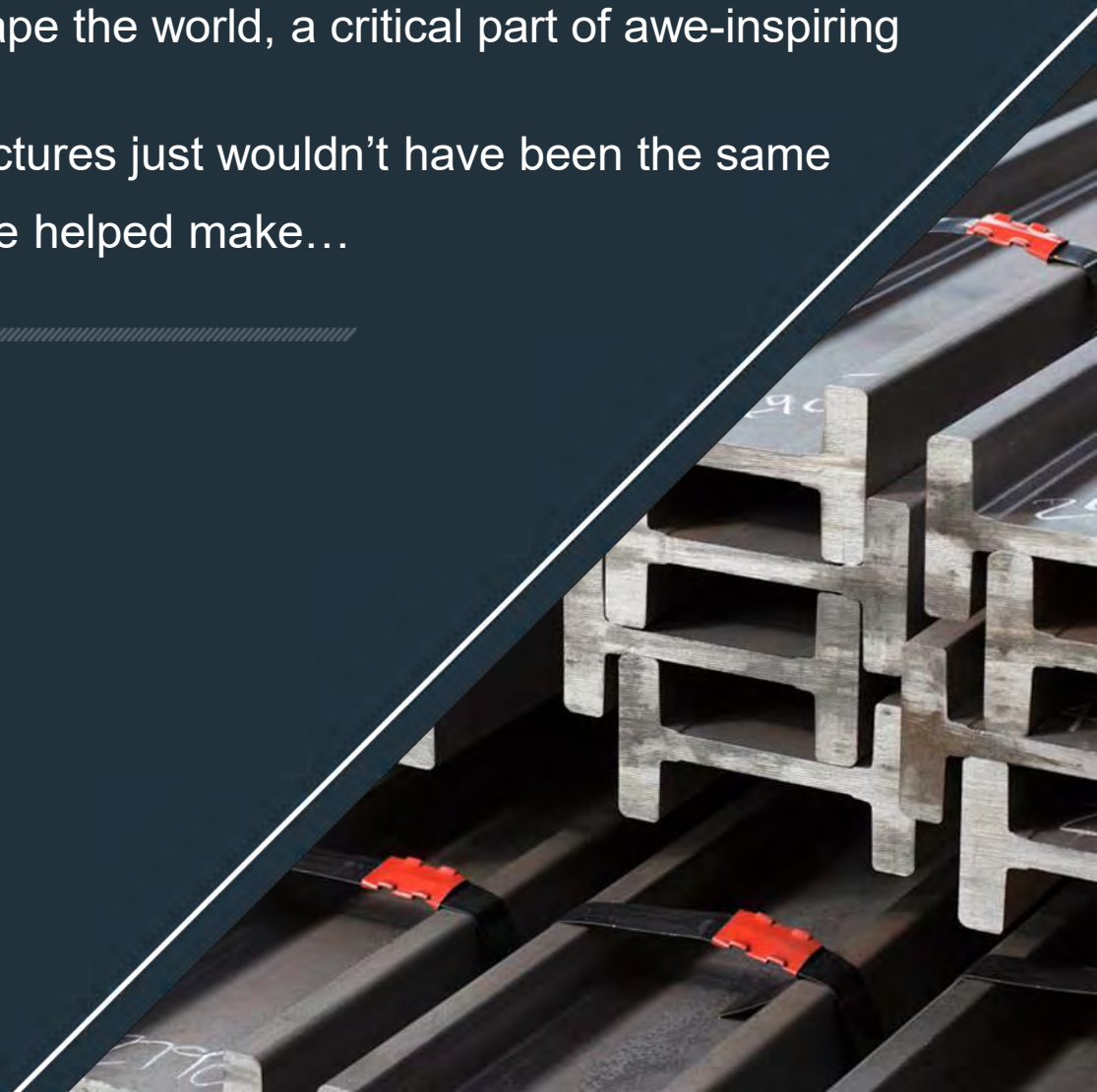


Some of our valued customers



We're a key supplier to remarkable projects around the world

- Our steel has helped shape the world, a critical part of awe-inspiring and iconic creations
- Without steel, these structures just wouldn't have been the same
- Take a look at what we've helped make...



Awe-inspiring creations

- Crossrail, London
- The Shard, London
- Olympic Stadium, London
- Petronas Towers, Kuala Lumpur
- Pancras Square, Kings Cross, London
- Çamlica Tower, Istanbul, Turkey
- Istanbul Airport, Turkey
- Tottenham Hotspur Football Stadium
- New York Yankees Stadium, USA
- One World Trade Centre (Freedom Tower), USA

Istanbul Airport, Turkey



The Shard



Our locations

- We supply into a massive range of applications, and can make 1,450 different steel specifications
- All are carefully tailored to their particular end-use applications
- We have manufacturing facilities in the UK and the Netherlands, supported by distribution facilities in the UK and Ireland
- We also have a global network of regional sales teams



Our products

What we do

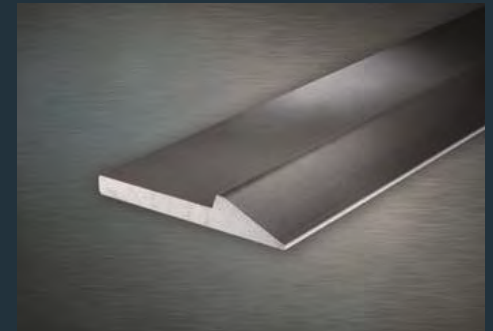
Sections

- Wide range of structural sections for the construction industry
- UK manufacturing mills coupled with further processing facilities provide a unique offering to satisfy customer requirements



Special Profiles

- Focused on supplying niche products predominantly for the yellow goods markets
- Rolling profiles up to a maximum of 260kg/m
- Develop long term relations with customers to provide bespoke and unique products



Wire Rod

- High performance wire rod products meeting the strictest of demands for a huge range of applications

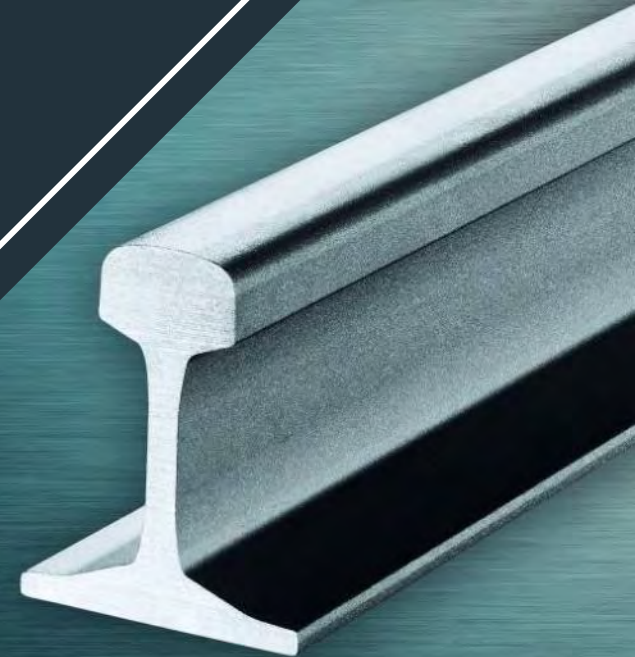


What we do

Rail profiles for mainline and urban applications

Rail

- For mixed traffic tracks, metros, high-speed lines
- Range of conventional rail sections in sizes from 39kg/m to 60kg/m
- Standard and premium grades available
- As-rolled up to 120m long
- Welded strings up to 216m long



What we do

Flat-bottomed rail

- 39E1 / 54E1 / 54E4 / 56E1 / 60E1 / 60E2



Bullhead rail

- 95lb bullhead rail



Conductor rail

- 75kg conductor rail



Investments

Investments

New service centre – Skinninggrove

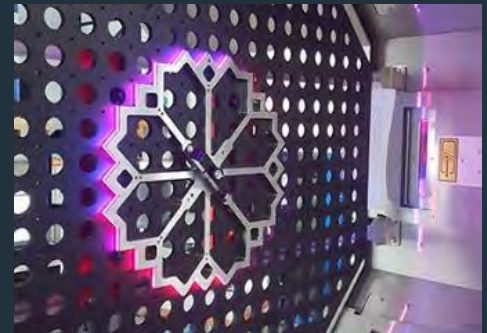
- Largest investment for more than 30 years for the Special Profiles business
- New downstream processing facilities
- Extended range of products

World-class laser measurement system

- State of the art laser measurement system
- World-leading dimensional tolerances

Further processing and inspection facility

- New facility with the installation of 2 new saws and an automated grinding machine



Investments

£80m investment programme

- £48 million for new billet caster
- £32 million for Scunthorpe Rod Mill & FN Steel

New cranes – Immingham Bulk Terminal

- 3 new cranes using the latest technical advances in dig depth optimisation
- Ensures continuous peak performance and eliminate inefficiencies

Installation of oil detection facility

- Installation of new £800,000 state-of-the-art environmental system
- Transforms monitoring of water network



Investments

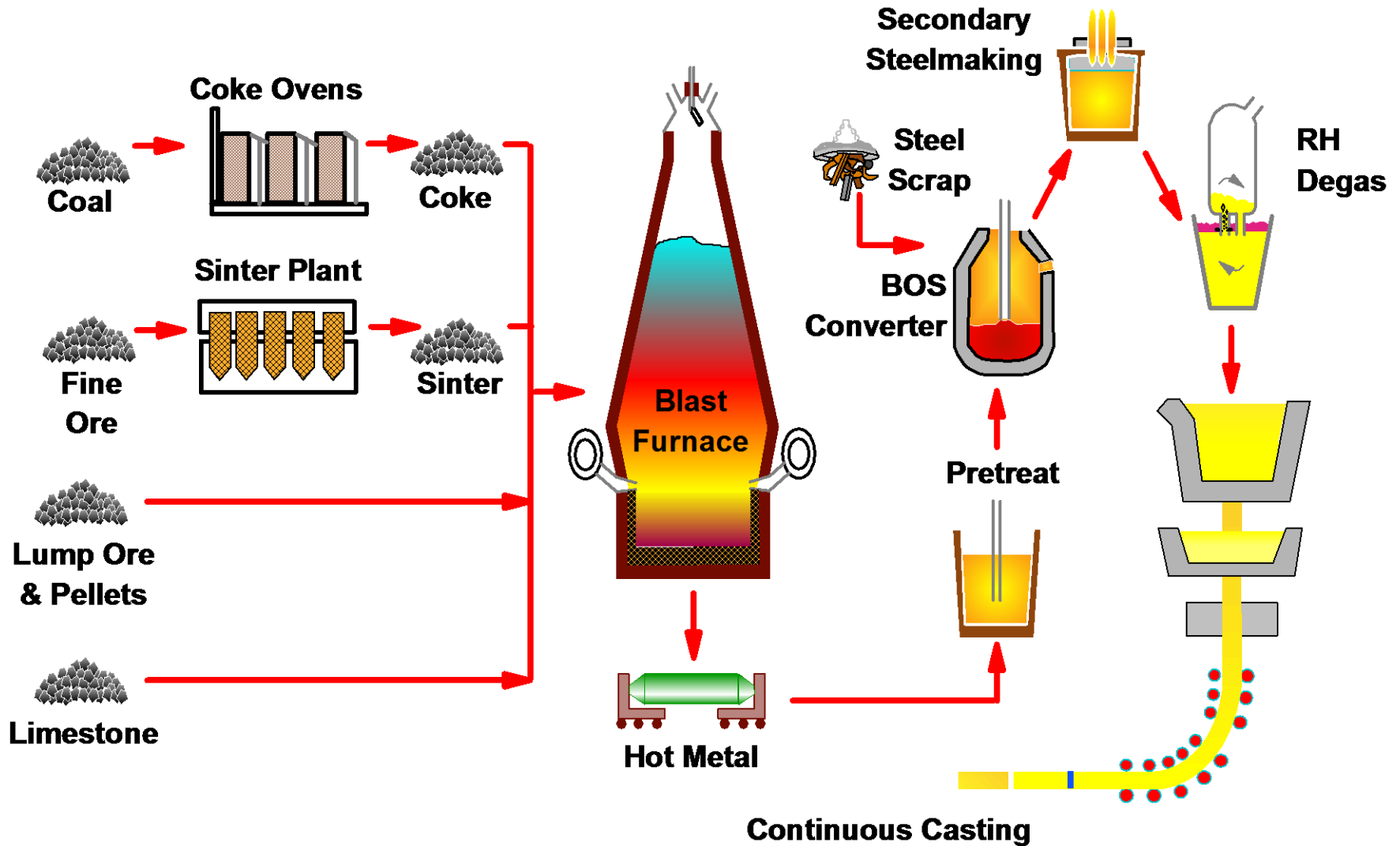
Network Rail supply contract

- 2-year contract extension retaining our position as principal supplier to Network Rail
- Additionally, we have committed to 2 major developments:
 - Multi-million-pound new storage facility for long-length rails
 - Dedicated train servicing facility to allow essential maintenance to Network Rail's Rail Delivery Trains



Steelmaking

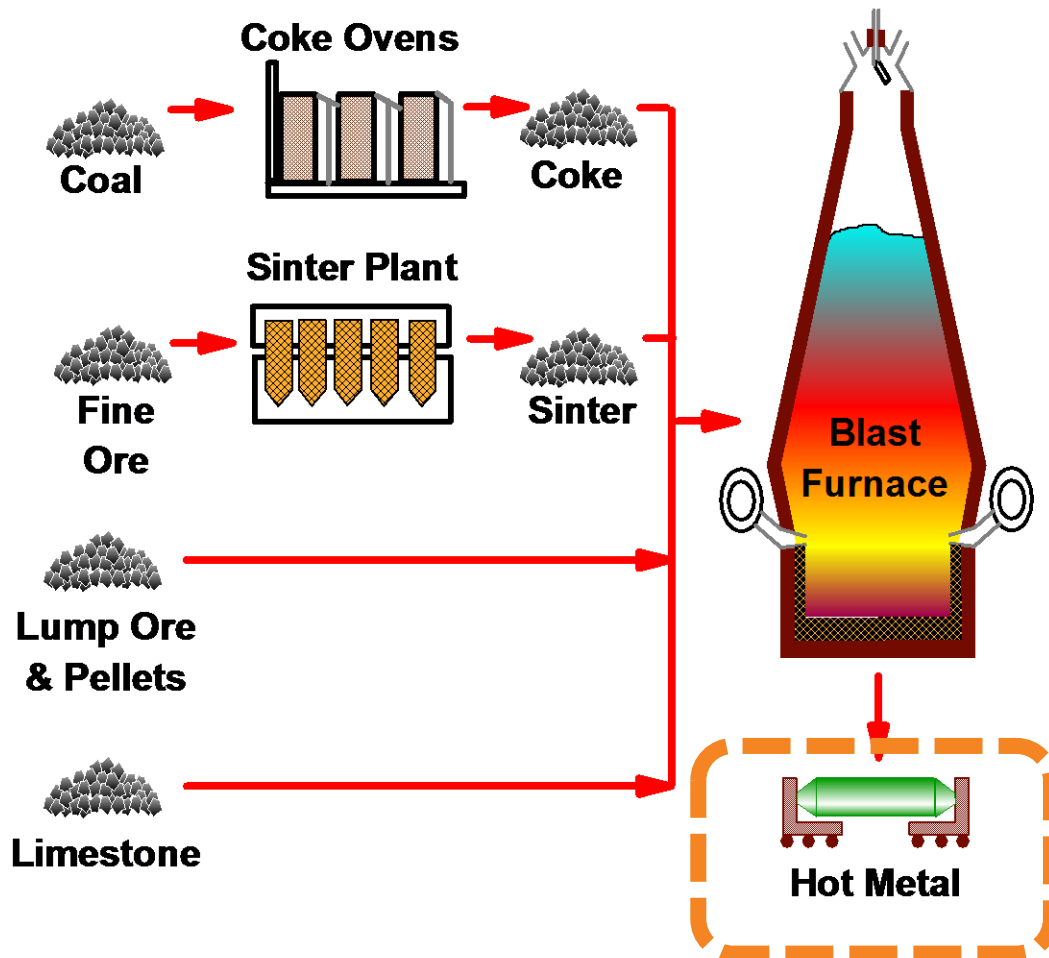
Making steel



The 4 Queens



Making steel



Hauling hot metal



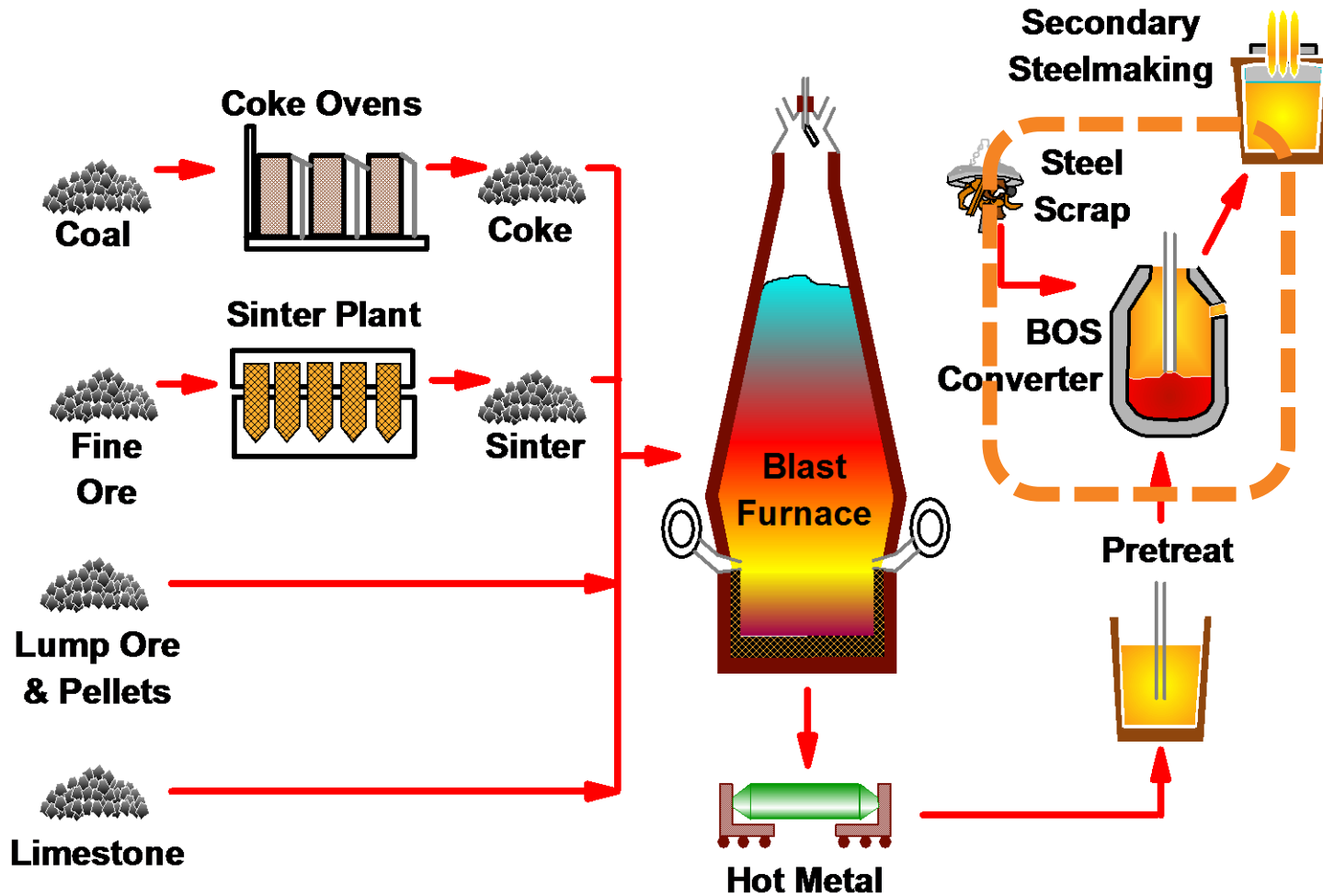
Torpedo pour



Empty torpedo



Making steel



Charging BOS vessel

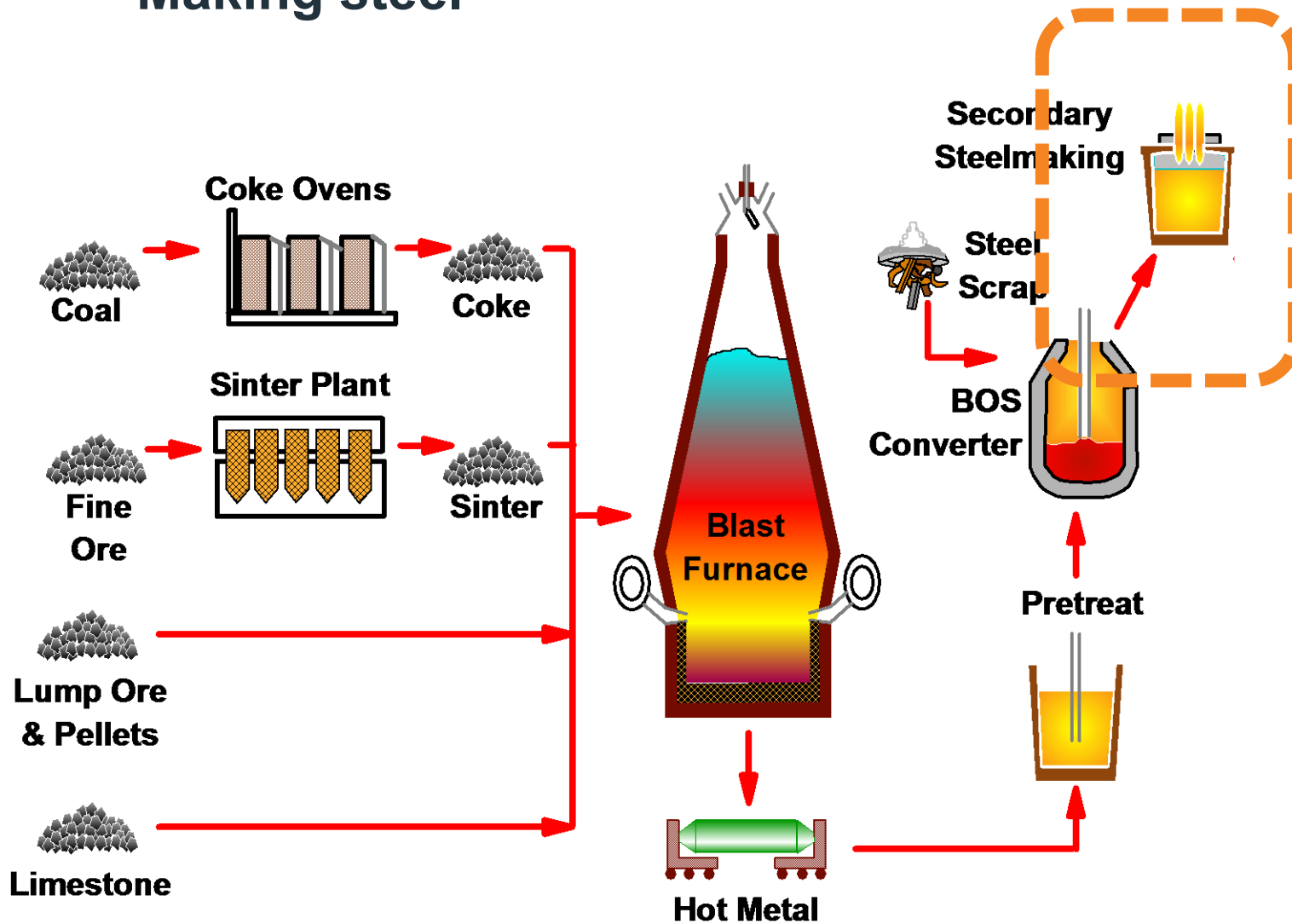


BOS vessel

- Vessel
 - Hood at the top
 - Rotates under the hood before oxygen blow
 - 25 minutes process time
 - Alloy elements are added as required



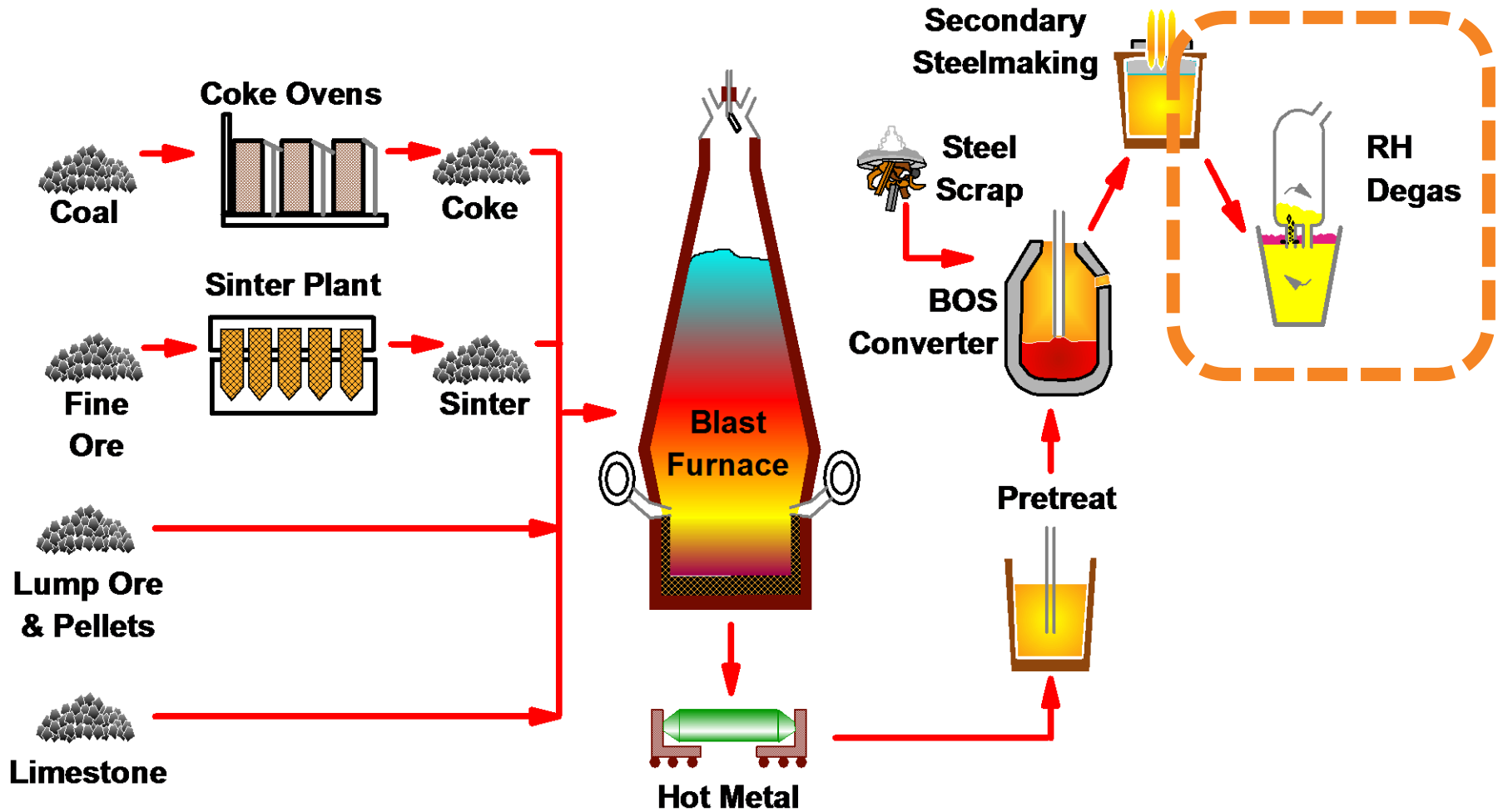
Making steel



Secondary steelmaking



Making steel



Vacuum degasser

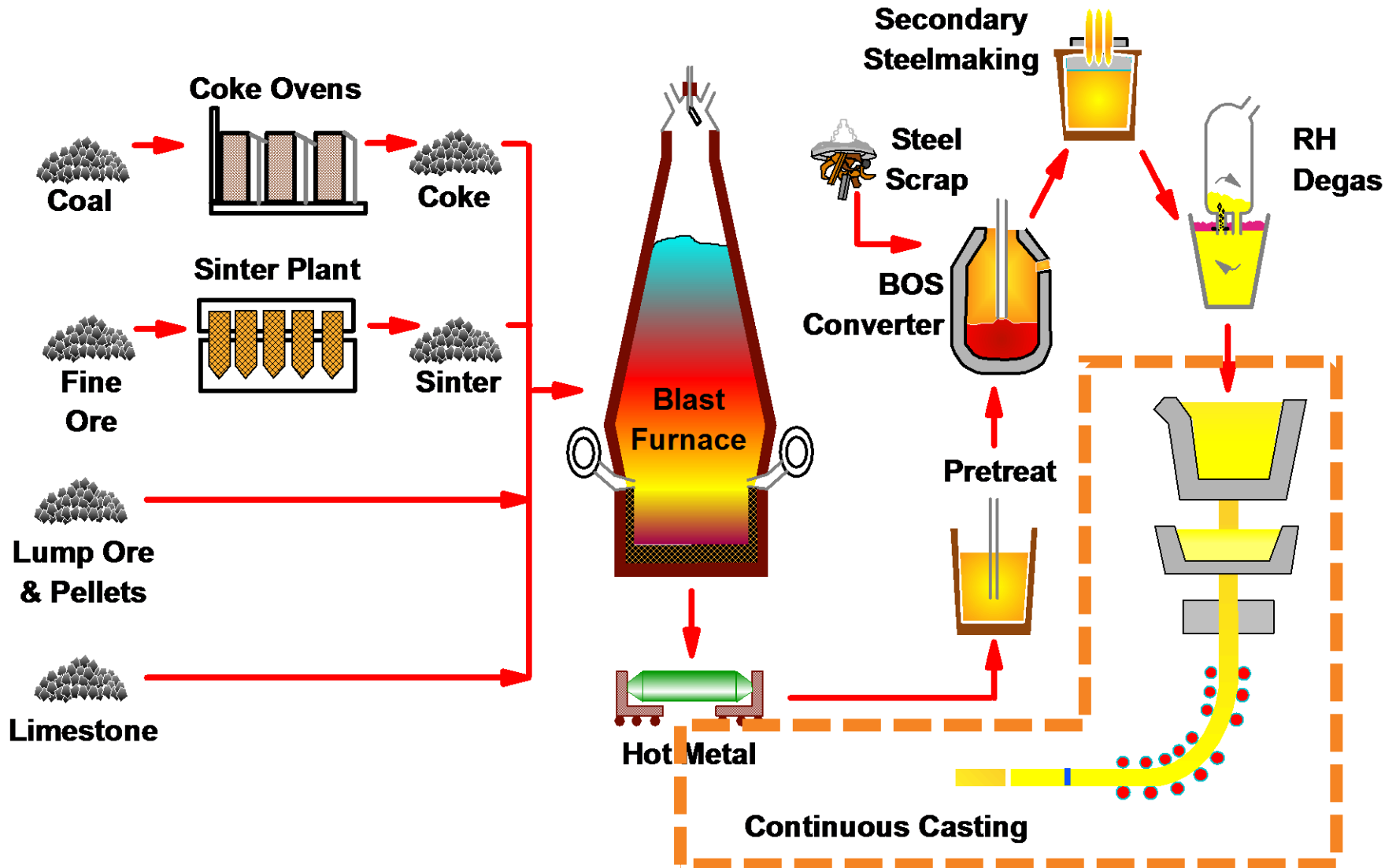


Hydrogen induced tache ovale

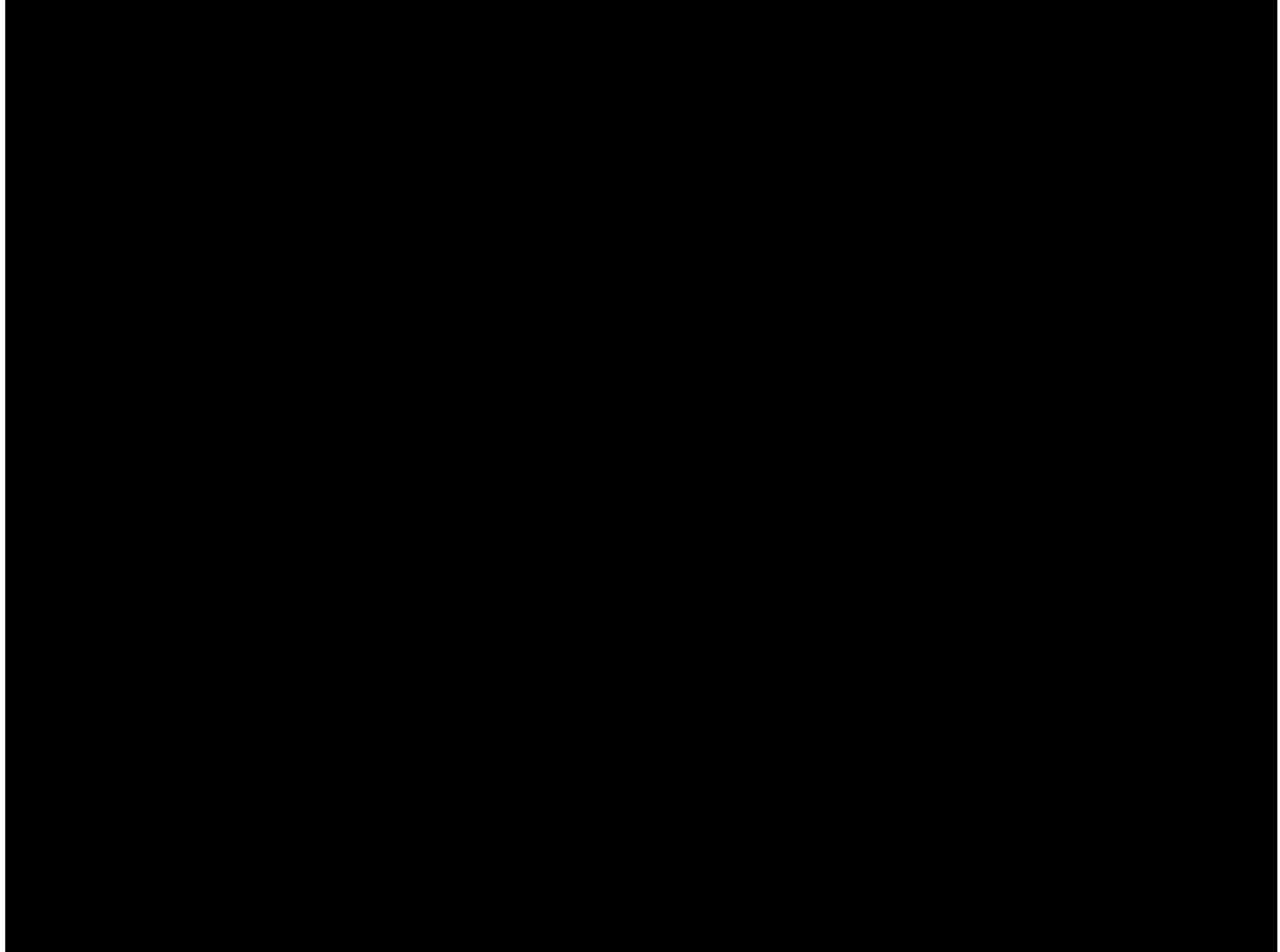


Casting steel

Making steel



Continuous casting

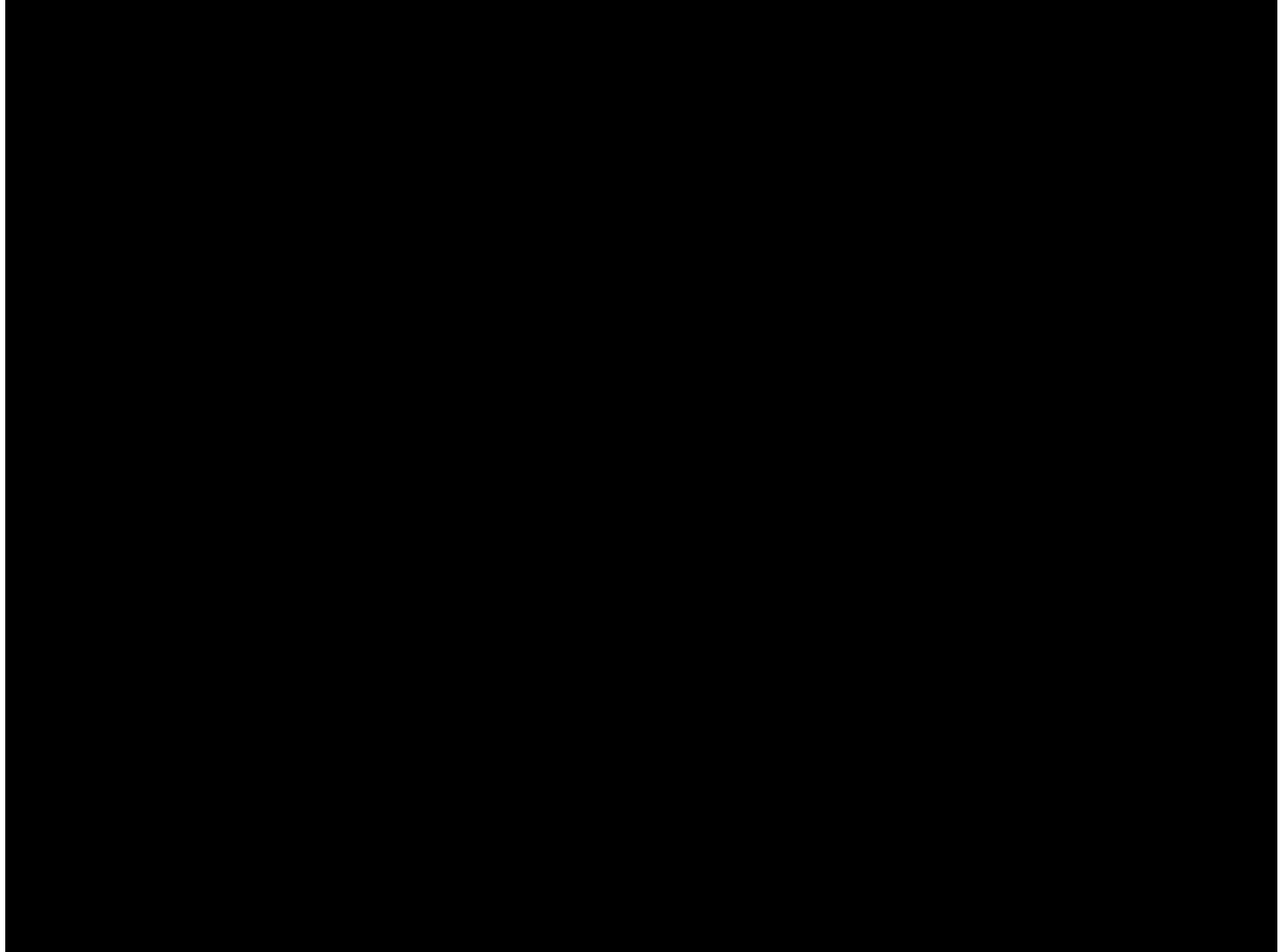


Continuous casting



Rail rolling

Rail rolling



Rail rolling



Low-Carbon Roadmap

Decarbonisation – targets 2035 and 2050

UK national targets

- UK to achieve a 78% reduction in emissions by 2035 from 1990 levels
- UK Net Zero by 2050 (in alignment with the Paris Accord)

Paris Agreement goal is to hold the global temperature rise to **well below 2 degrees** and pursue best efforts to limit the increase to 1.5°C

Customer and non-governmental targets

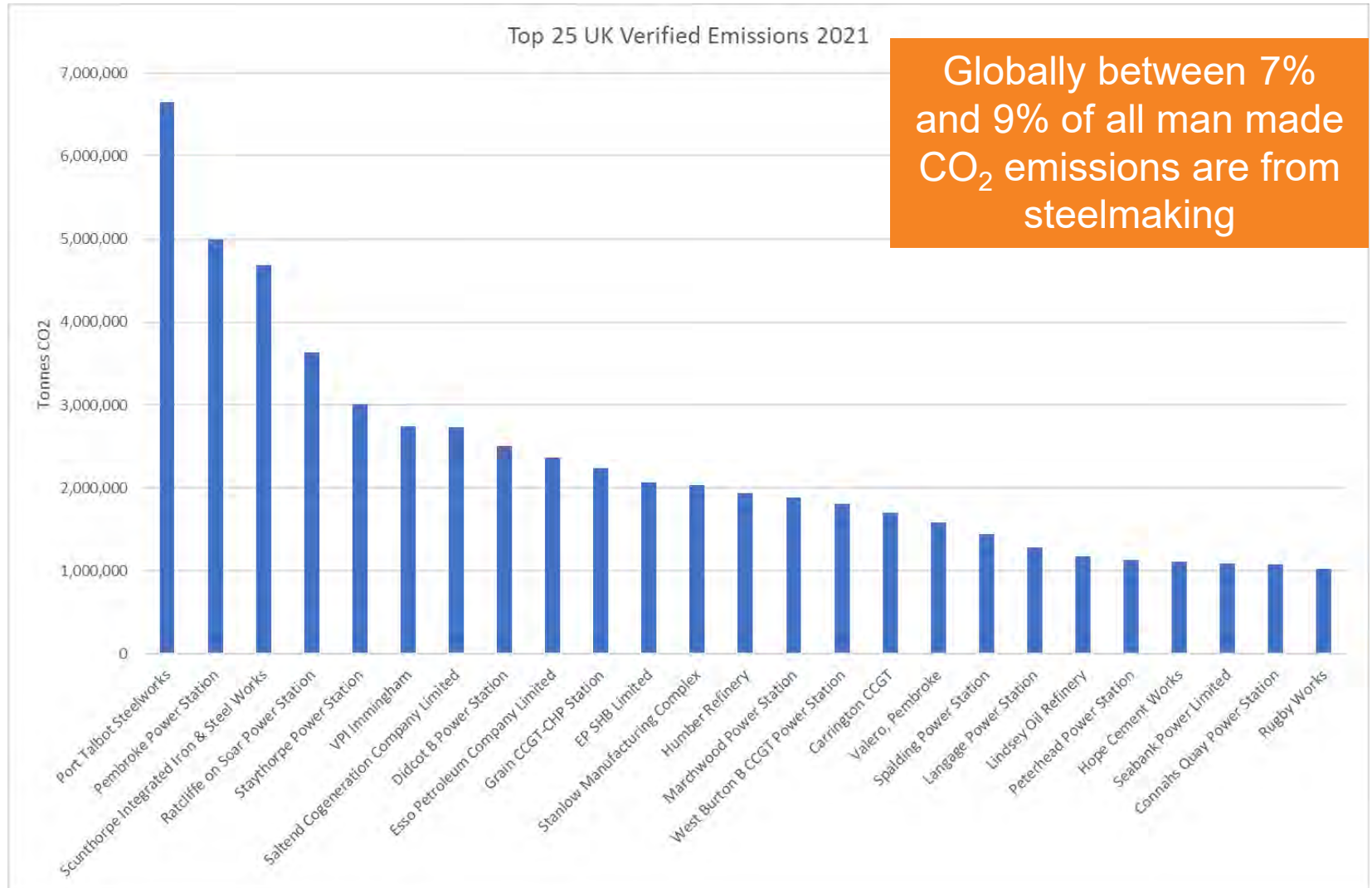
- Science Based Target Initiative (SBTi)
 - Network Rail
 - Customers signing up to SteelZero (*BHC, Bourne Group, Grosvenor, Landsec, Lendlease, Mace Group, Multiplex, Orsted, Severfield, WSP*)
- Science-based targets are greenhouse gas emissions reduction targets that are in line with the level of decarbonisation required to meet the goals of the **Paris Agreement** – to limit global warming to **well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C**

Both are aligned through the commitment to limit global temperatures well-below 2°C

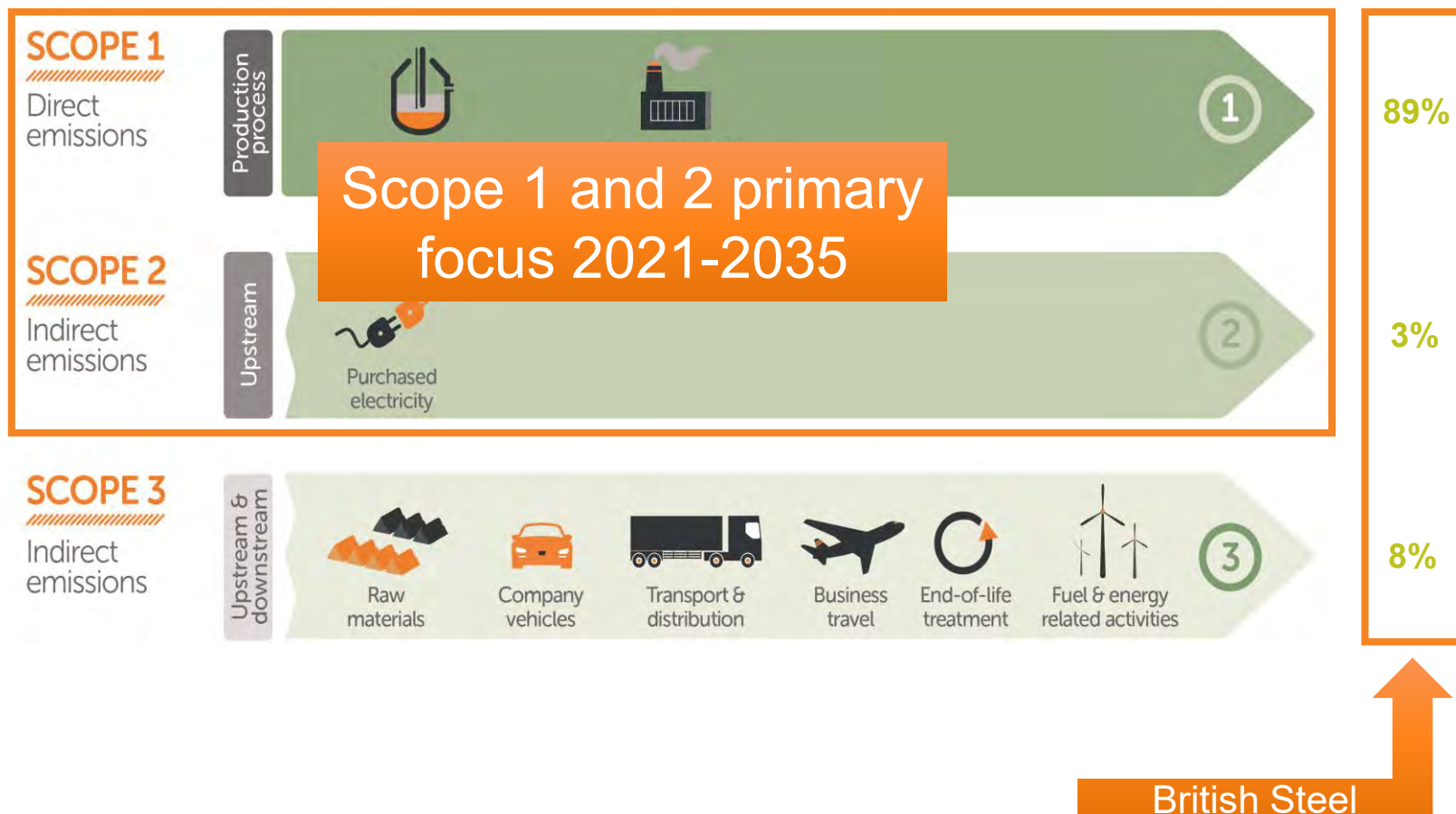
<https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035> 20 April 2021

<https://sciencebasedtargets.org/about-us>
<https://www.theclimategroup.org/steelzero-members>

Decarbonisation – why the focus on steel?



Decarbonisation – where is our focus?

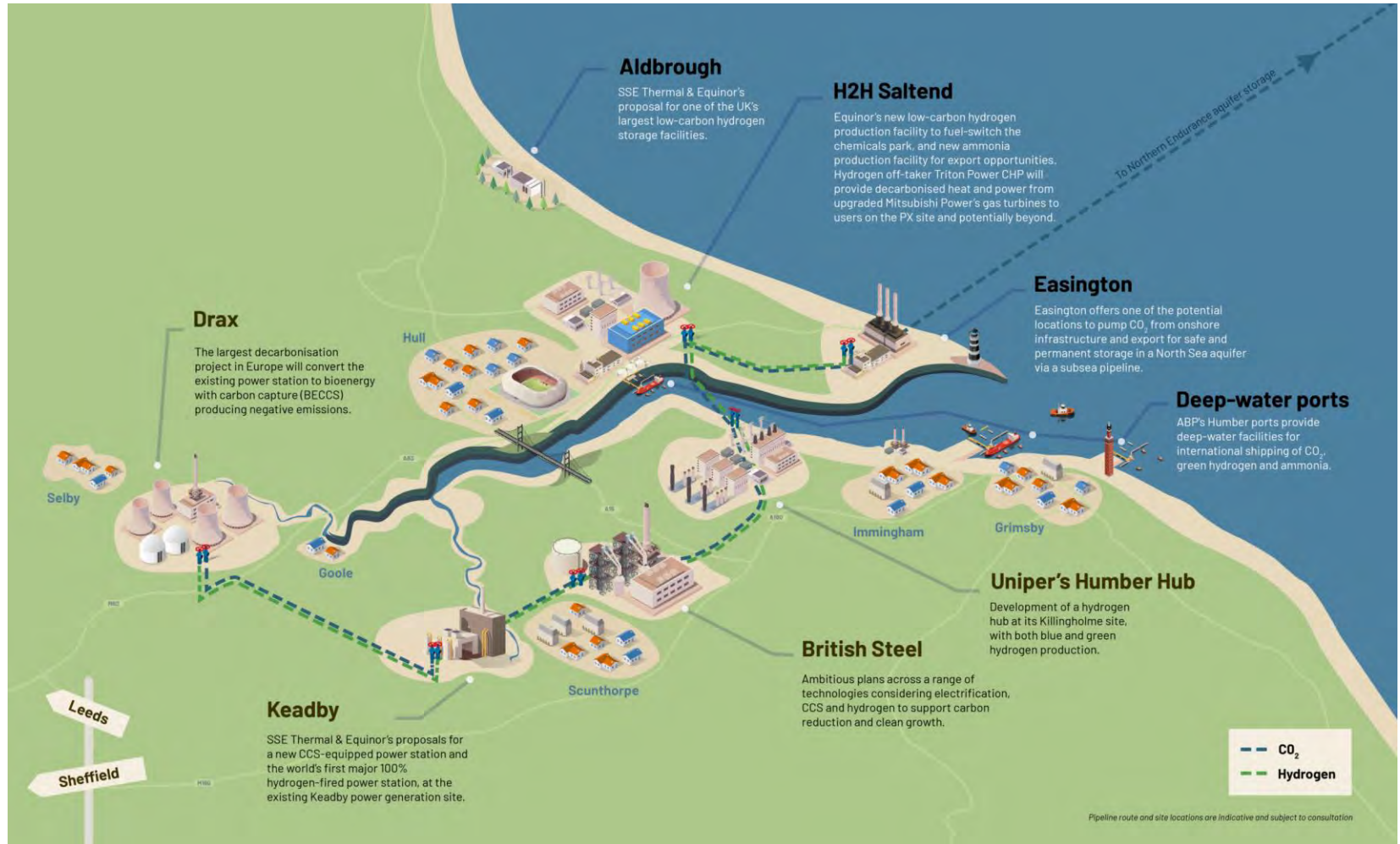


Our Low-Carbon Roadmap



Our roadmap will deliver an **82% CO₂ reduction by 2035**
via a range of techniques and innovations

Zero Carbon Humber

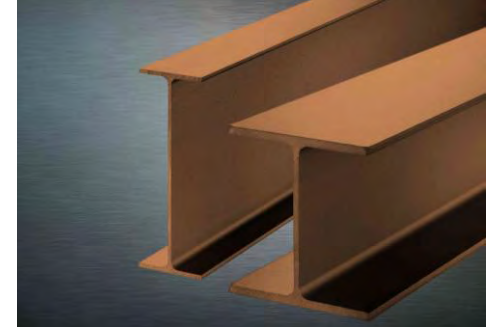


Low-Carbon Roadmap hybrid model

Products for a sustainable future

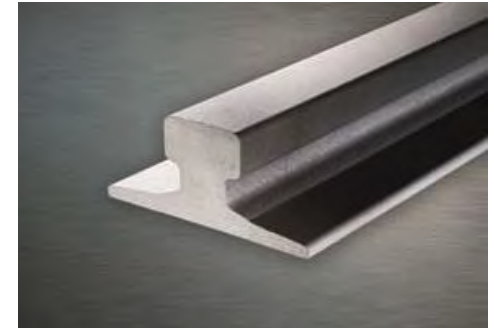
Weathering steel structural sections

- Oxide layer extends product life
- Ideal for exposed locations e.g. bridges, buildings, catenary gantries



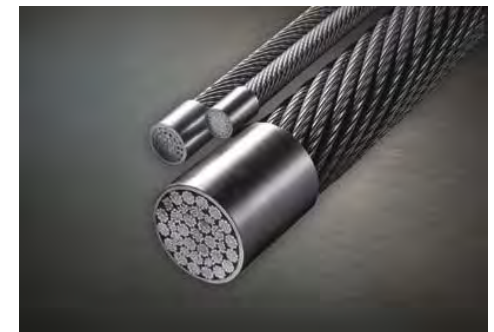
Higher strength crane rail

- Offers better durability in service with the potential to use lighter sections
- Reducing installation/transport costs and associated GHG emissions



High-tensile wire rod

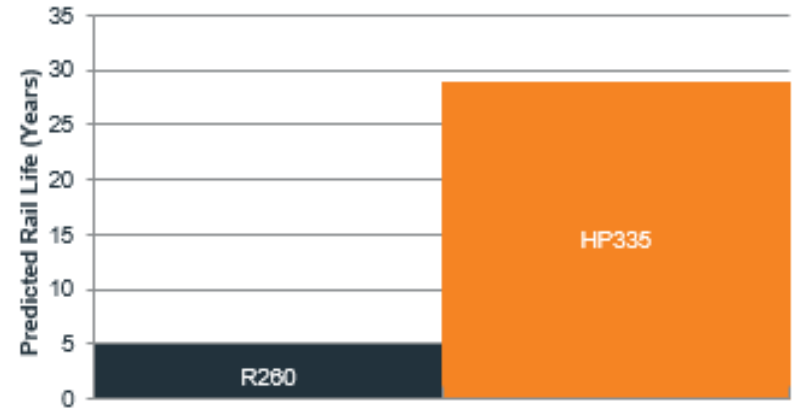
- High strength-to-weight ratio reduces energy consumption in rope/cable production/installation
- Reduces cable and superstructure weight



Premium rail – HP335

Hett Mill

HP335 Installation date:	21/1/11
Maximum line speed:	110mph
Curve radius:	1186m
Traffic type:	Mixed passenger and freight
EMGTPA:	~38



R260 - 27mm surface crack length (3 months after grinding)



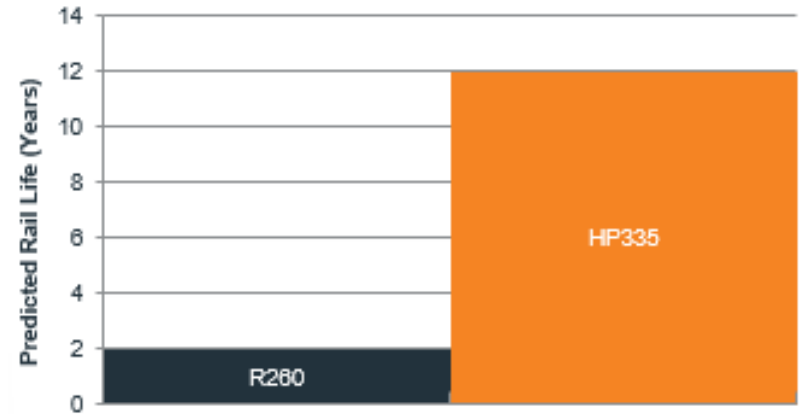
HP335 – no cracks (3 months after grinding)

- HP335 now ground every 29 EMGT (R260 – 12 EMGT)
- RCF initiated within 8-12 months after installation of R260
- HP335 clear of RCF
- Life now determined by head wear
- R260 needed replacement every 5 years
- HP335 estimated to have 29 year service life

Premium rail – HP335

Shipley

HP335 Installation date:	26/03/11
Maximum line speed:	30mph
Curve radius:	241m
Traffic type:	Mixed passenger and freight
EMGTPA:	~13



R260 – Pre-install. Age 30 months



HP335 – 82 month (Last ground 12mths previous)

- HP335 now ground every 12 months (R260 – 5 months)
- R260: Low rail suffered from RCF, plastic flow and spalling
- HP335: No spalling or plastic flow
- R260 needed replacement every 2 years
- HP335 estimated to have 12 year service life

Premium rail – Zinoco®

Level crossing, UK

Line speed:	100mph
Life in track:	~3 months
Traffic type:	Mixed passenger and freight



Above: rapid rail corrosion in new rail installed only 3 months earlier

Below: Corrosion-protected rail after 20 months' service

- Stray current and corrosive environment
- Salt run-off from road
- Road covers provided environment for material and moisture build-up
- Rail foot heavily corroded
- Unprotected rail life of 3 months observed
- Corrosion-protected rail life +5 years



Q&A

For any commercial or technical questions after the webinar, please contact:
rail@britishsteel.co.uk



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