Pre-material for large-diameter pipes

EUROPIPE

THINKING AHEAD

1804. The Dillinger Hütte steel mill rolls its first steel plate. In 1845, a company which later became part of Mannesmannröhren-Werke produced continental Europe's first welded steel pipe. In 1991, these two steel industry pioneers – AG der Dillinger Hüttenwerke and Mannesmannröhren-Werke AG – decide to pool their experience and know-how to create EUROPIPE.

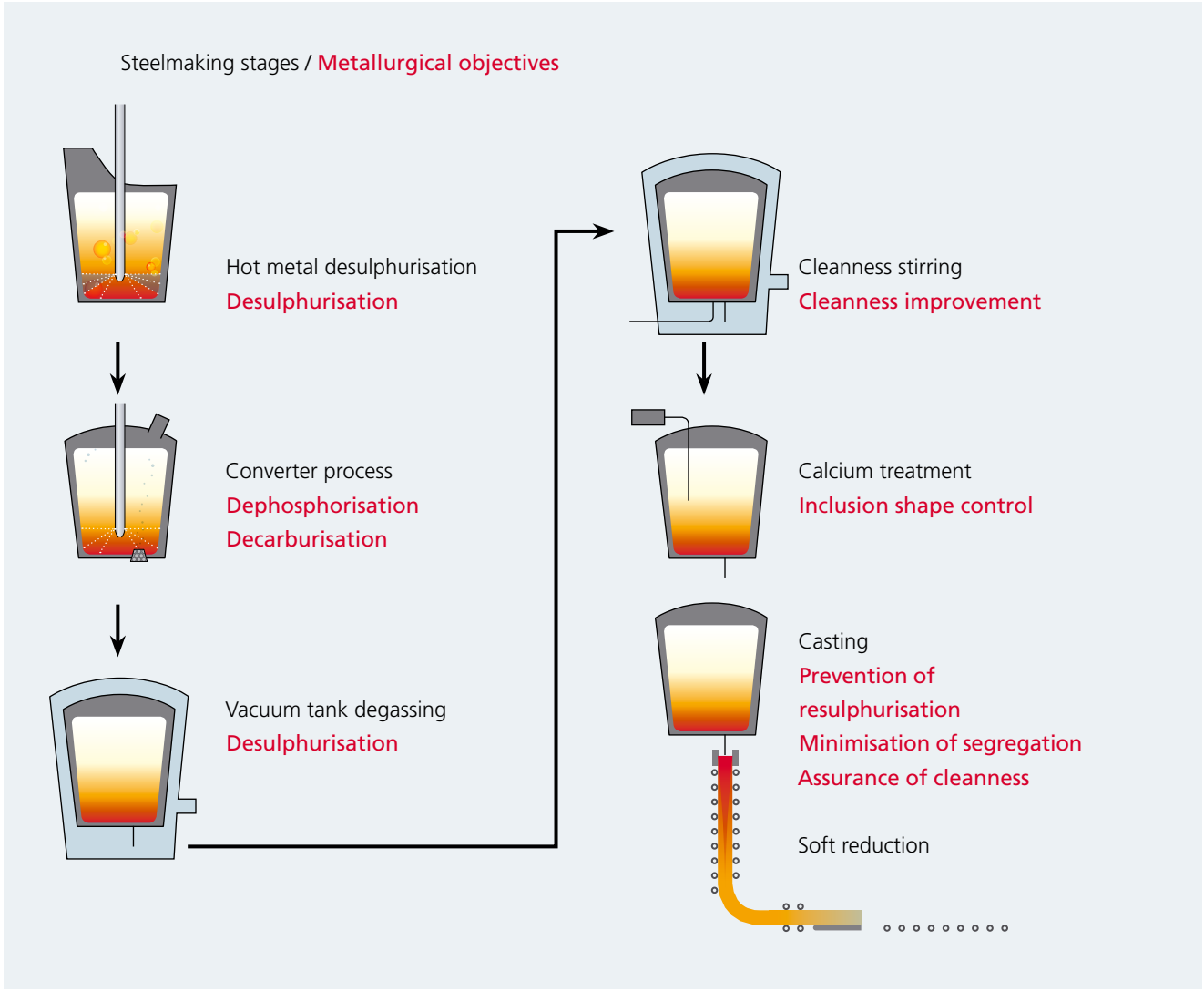
Our rich heritage in terms of steel technology and manufacturing expertise, plus the dedication and hard work of our employees, have enabled us to achieve some very ambitious goals.

Today the EUROPIPE Group is the world market leader in large-diameter pipe production for the oil and gas sector and have the most extensive manufacturing footprint in the industry. With four mills in Europe and the USA, producing annually 3,000 kilometres of large-diameter pipes for pipeline projects throughout the world. Onshore and offshore, in the arctic ice, in the depths of the world's oceans and in the desert heat.

Our success is based on a simple principle: thinking ahead. Each and every one of our employees is committed to the philosophy of anticipating customer needs in order to make our products, processes and services even better. The ability to think ahead enables us to deliver top performance in every challenge we approach, especially when it comes to creating products, the quality of which has determined our market for many years.

COMBINED STRENGTHS

Our pre-material suppliers are also our shareholders. This has significant advantages in terms of supply security, supply chain management, quality assurance, and research and development. Many of our breakthrough innovations in the last decades resulted from the close collaboration between EUROPIPE and our pre-material suppliers.



A PROMISE AS STRONG AS OUR PIPES

One of the factors determining the quality of steel pipes is the material that is used in the manufacturing process. This is why we at EUROPIPE ensure that our suppliers' steel plants meet the highest quality standards. To achieve the best fit for service in operation EUROPIPE defines the plate properties. In cooperation with our steel and plate mill partners EUROPIPE specifies the technical approach through the entire supply chain.

As well as precisely meeting the clients' specifications, slabs also have to fulfil the requirements of EUROPIPE and our plate mill partners in the following fields:

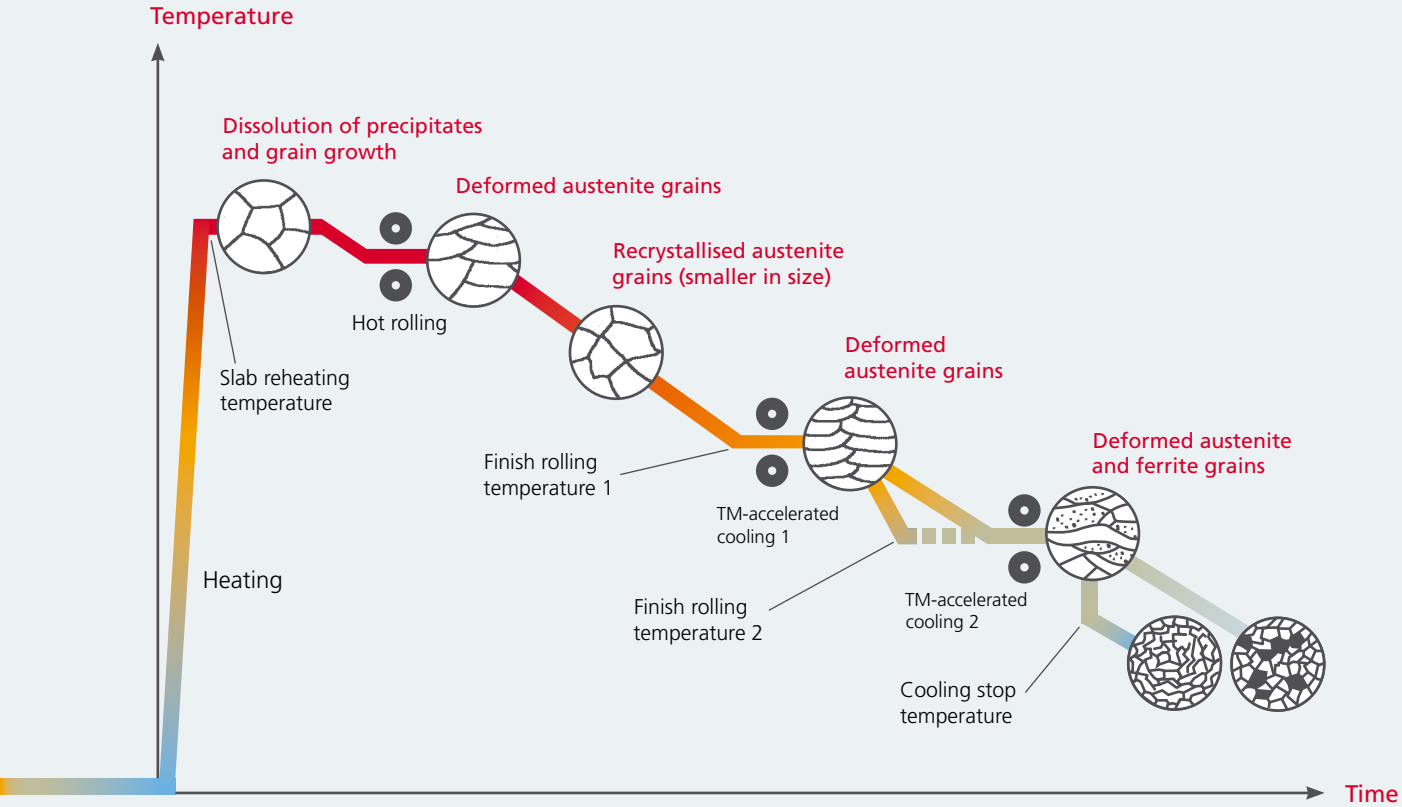
- cleanness / segregation,
- the uniform distribution of alloying elements,
- a smooth and flawless slab surface.

For the tailored production of pre-materials, the steel plants' processes include:

- vacuum degassing
- calcium treatment and
- soft reduction.

Due to these capacities, EUROPIPE can take on the challenge of supplying sour gas resistant pipes, no matter how large the order.

Schematic illustration of thermomechanical rolling with and without accelerated cooling after the 2nd and 3rd rolling stage



High-quality steel plate for EUROPIPE large-diameter pipe is produced at our group members in Dillingen and Mülheim an der Ruhr in Germany and Dunkerque in France.

In a thermomechanical rolling process supported by state-of-the-art process control, plates are rolled at precisely defined temperatures and with exactly controlled reduction levels.

The required fine-grained, homogeneous microstructure, resulting in optimum strength and toughness, is obtained via recrystallisation, transformation and precipitation. This process, which combines thermomechanical rolling with the possibility of accelerated cooling, can produce steel plate of extremely high strength and toughness.

Because our plate mill partners have invested in some of the strongest roll stands in the industry and proprietary cooling equipment, they have a broader range of rolling parameters and thus alloying concepts.

In all rolling mills, the plate undergoes stringent ultrasonic examination before being sent to the large-diameter pipe mill. The inspection covers 100 % of the plate surface.

Our customers know that all our plate mills deliver pre-material with high quality and uniform material properties due to their comparable technological capabilities.

QUALITY – IN DETAIL

All our pre-material partner facilities are equipped with the latest in technology and software to capture, transmit, archive and evaluate all relevant quality data. Our pre-material suppliers guarantee and prove full traceability, from casting to the released plate. This therefore enables us to trace every step in the production process, from the molten metal to the finished pipeline.

All our pre-material suppliers are ISO 9001 certified, and certified for health and safety (OHSAS 18001) and environmental standards (ISO 14001). In addition, the EUROPIPE Group conducts yearly audits based on customised requirements that go beyond the ISO standards.

MATERIAL DEVELOPMENT

Grade X80 line pipe is now considered to be an established grade for onshore pipelines. Economical transport over long distances however requires additional cost reductions. Grade X100 may be a solution to this. Since the first production runs of X100 line pipe, manufacturing parameters have been optimised to find the best balance of strength, toughness, deformability and weldability. For high-pressure pipelines made of high-strength low-alloyed steels, X80 material can be produced with outstanding results in full-scale burst tests, confirming their crack arrest properties. EUROPIPE's production range covers grade X100 pipes with wall thicknesses of up to 25 mm. Initial results of development work on grades above X100 are encouraging with respect to base material properties, weldability and forming.

We achieve very good results with fit for service sour gas pipes of grade X70 and even higher, as well as with products that have to adhere to strain-based design principles.

EUROPIPE constantly focusses on the low temperature toughness steels in line with market challenges.

Experts from EUROPIPE and our plate mill partners are organised in permanent working groups that examine methods for enhancing our already advanced processing technology and develop tailored new material solutions. Because, after all, we have our reputation to defend: the best in the business. Just ask our customers.

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