



POLITEKNIK EXPANSION JOINTS FOR STEEL INDUSTRIES



 Overview

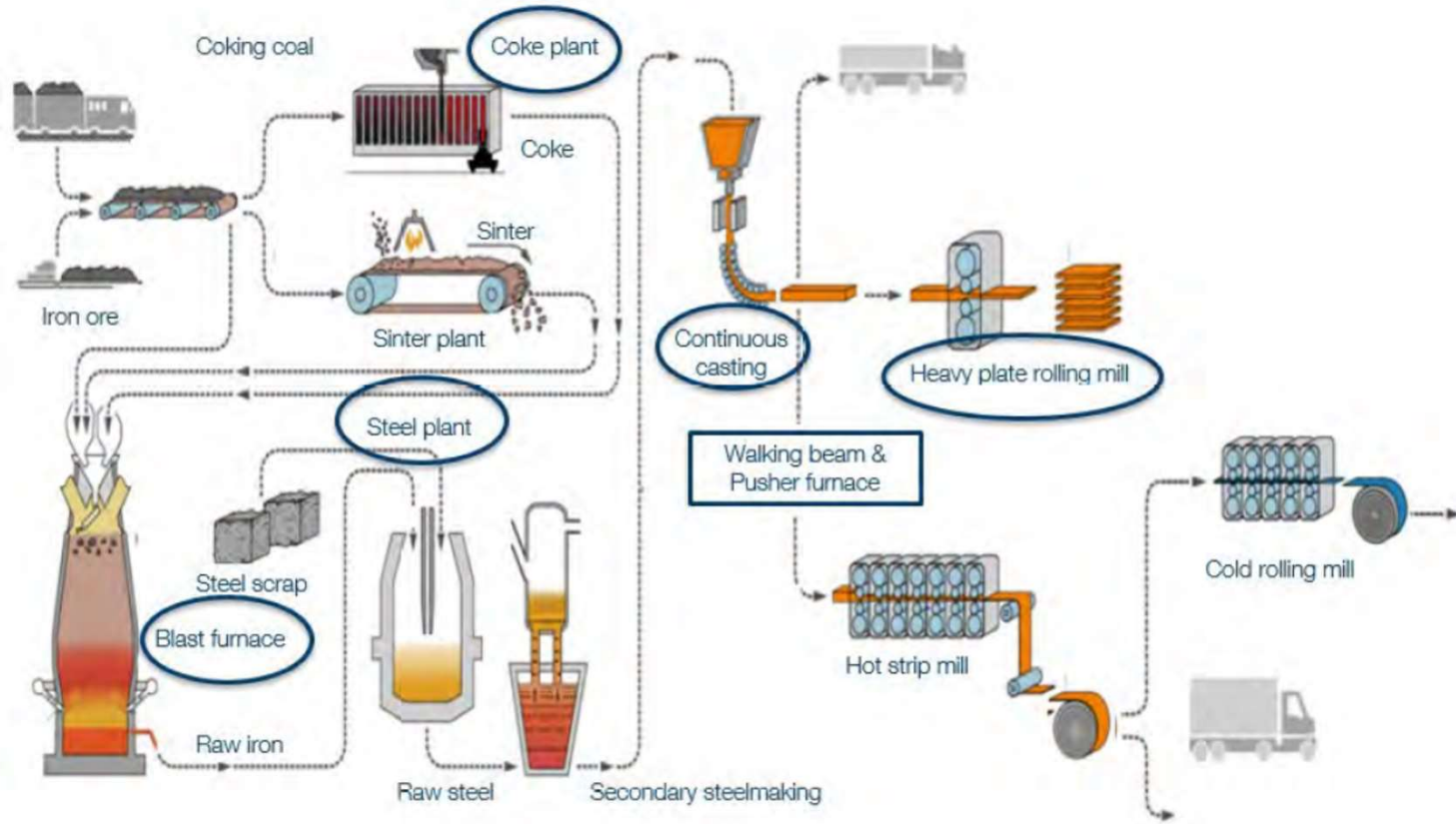
 Location & Media

 POLITEKNIK products

 References



OVERVIEW



OVERVIEW

Expansion joints in steel mills accommodate movement and absorb vibration in piping systems and, in doing so, they protect adjacent piping and equipment from damage.

Politeknik designs and manufactures a wide range of metal bellows and expansion joints for steel mills that play an important role in the functioning of key equipment such as blast furnaces.

While heat is often the main concern in steel mill applications, corrosion can also be a cause for concern in certain applications, such as those involving coke oven or furnace gases. Certain alloys, like 800H, Nickel 200, Titanium Grades 1 and 2 and Duplex 2205, can be used in extremely hot or highly corrosive applications.

STEEL MAKING PRODUCTION PROCESSES

Location and Media

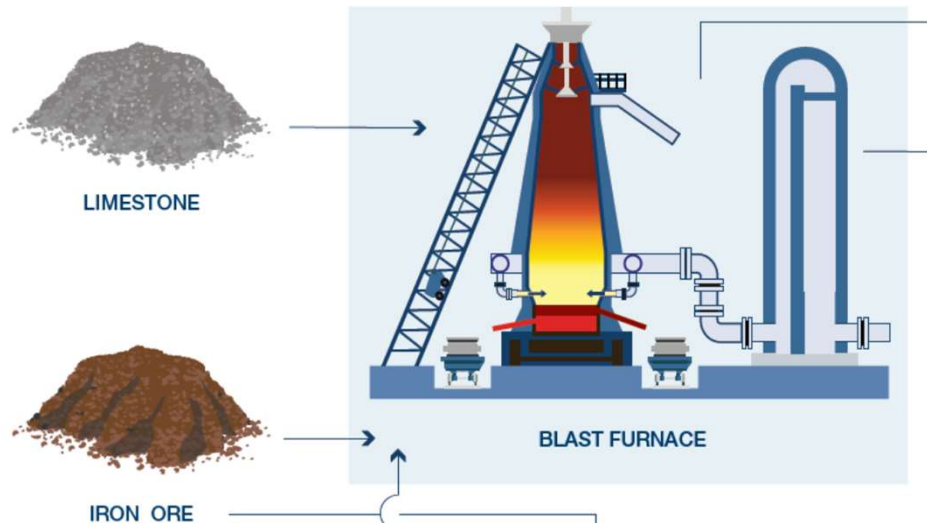
- BLAST FURNACE
- COKE GAS LINES AND COKE OVEN
- COMBUSTION LINES
- GAS CLEANING SYSTEM
- WATER COOLER DUCTS

STEEL MAKING PRODUCTION PROCESSES

BLAST SYSTEM FURNACE

Blast furnaces use chemical reactions between hot air and an iron ore-coke-limestone mix to produce molten slag and molten iron. The latter is then heated further with various other inputs to make steel.

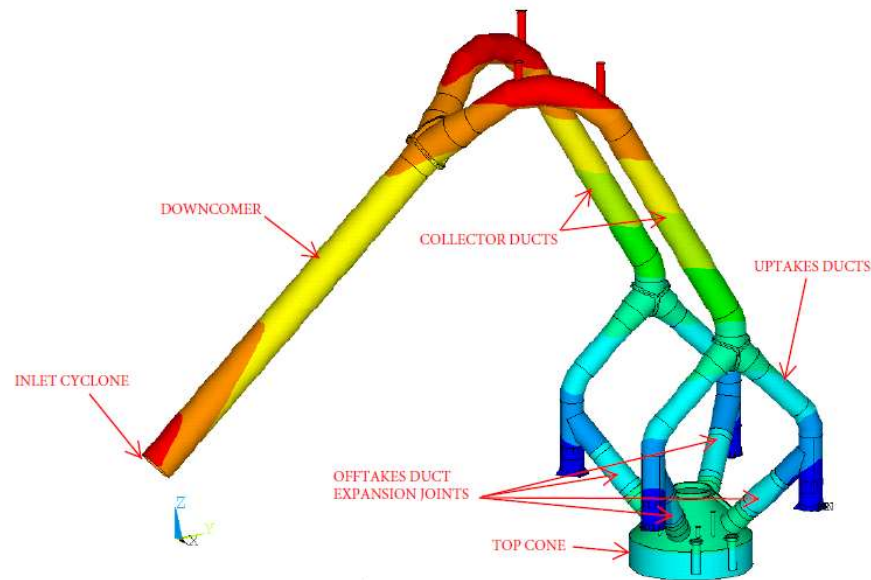
Expansion joints are used within piping in and out of the furnaces to help accommodate thermal expansion and contraction. Depending on proximity to the furnace, and ambient temperatures, the components may be made using a higher-nickel alloy, like Inconel 625, which is better suited for extreme temperature environments.



STEEL MAKING PRODUCTION PROCESSES

COMBUSTION LINES

Combustible gases produced from coke ovens, blast furnaces, and basic oxygen furnaces are repurposed at different stages of the steelmaking process and expansion joints are often used to help accommodate movements in the piping system as these byproducts are moved within the mill.

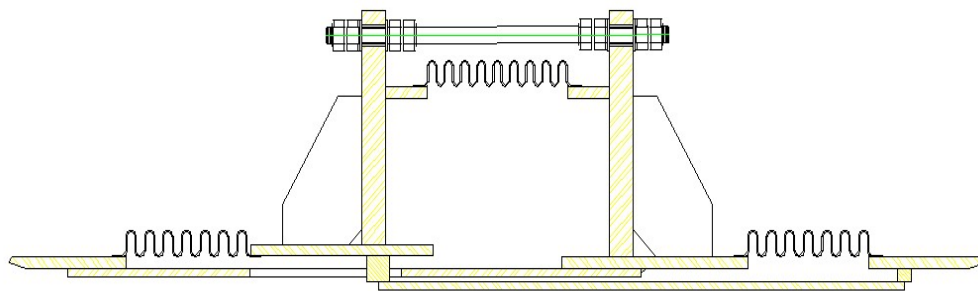


STEEL MAKING PRODUCTION PROCESSES

GAS CLEANING SYSTEM

Gas cleaning systems in steel mills clean exhaust gases, reducing air pollution. To compensate for vibrations and movements caused by thermal expansion and contraction, expansion joints are often required. This protects surrounding piping and equipment from damage.

Similar to the gas cleaning system, reverse air fans, also called the baghouse, control emissions of pollutants from the blast furnace specifically.



CROSS-SECTION

STEEL MAKING PRODUCTION PROCESSES

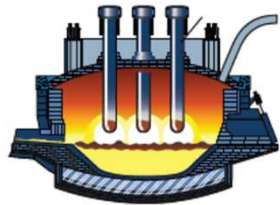
WATER COOLERS

Expansion joints for water cooler ducts are designed for low pressure and low spring rates with high flexibility. These components are desired to damp vibration. Steel mills rely on a range of metal hoses and expansion joints for successful operation.

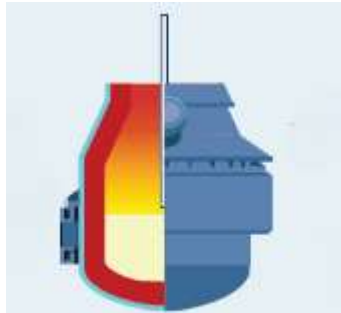


STEEL MAKING PRODUCTION PROCESSES

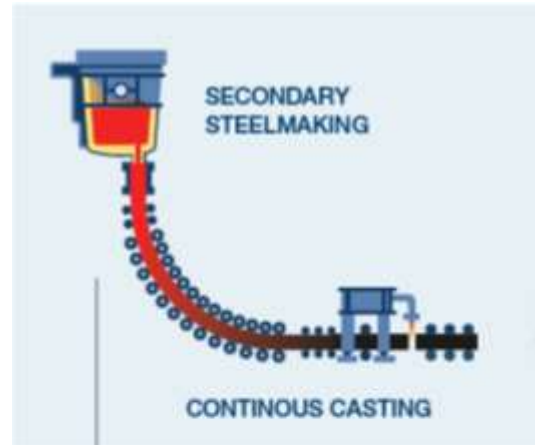
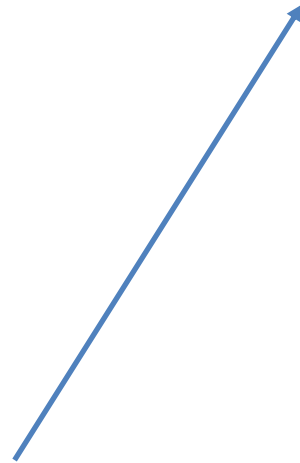
SECONDARY STEEL MAKING



ELECTRIC ARC FURNACE



BASIC OXYGEN FURNACE



SECONDARY STEELMAKING

CONTINUOUS CASTING

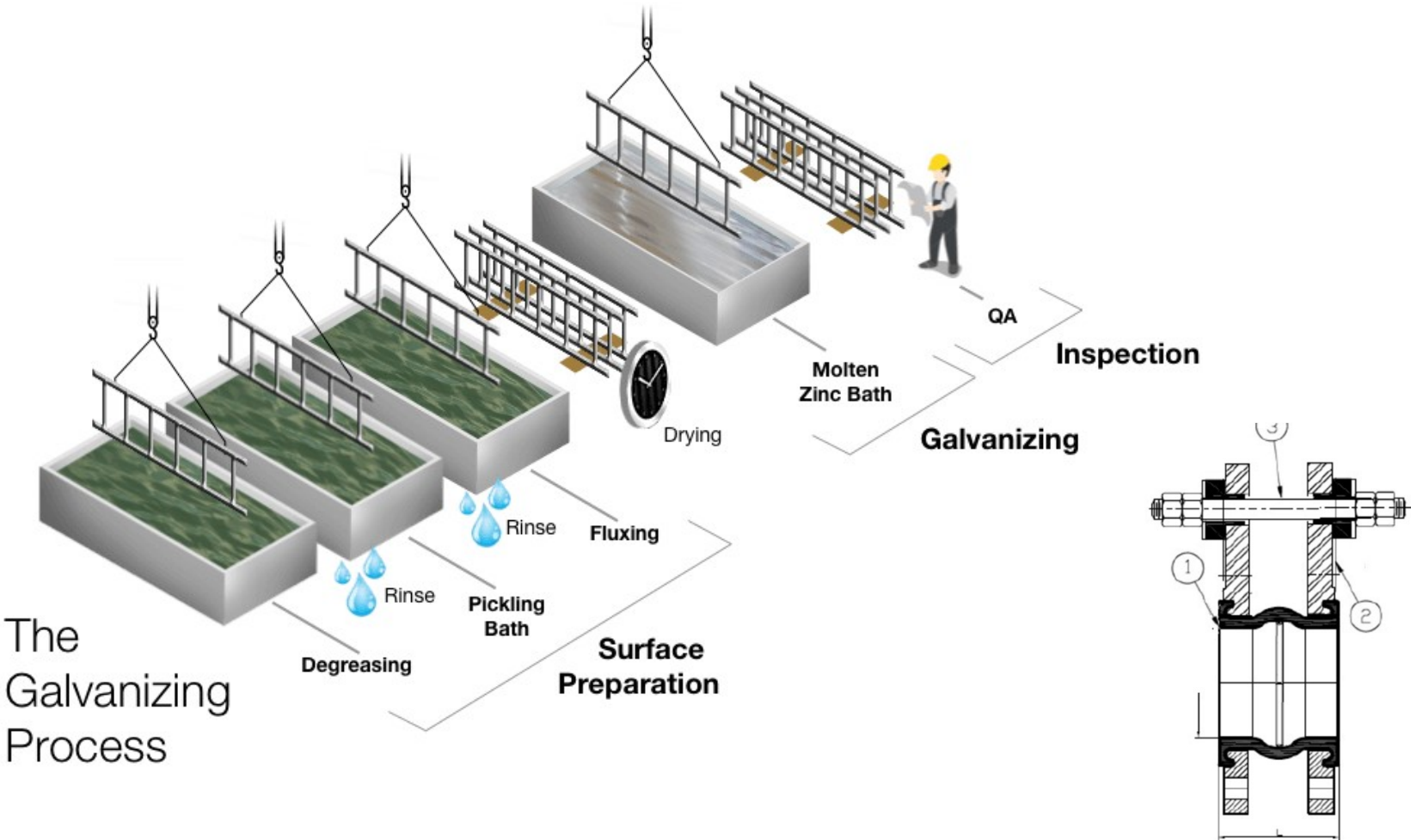


SLABS/THIN SLABS



BILLETS/BLOOMS

HOT DIP GALVANIZING PLANT



HOT DIP GALVANIZING PLANT

Expansion joints are used for prevented of oxidation «blue acid gas and hydrochloric acid» This media has abrasive and corrosive properties. **Hydrochloric acid** causes general corrosion, pitting, and stress corrosion cracking of austenitic **stainless steel** like 316. The 300 series **stainless steels** are attacked by even dilute **hydrochloric acid**. Because of that the selection is very important.



HOT DIP GALVANIZING PLANT

Also in HDG process, specially drying with the saturated steam, some expansion joints may be preferred however condensate and wet steam.

