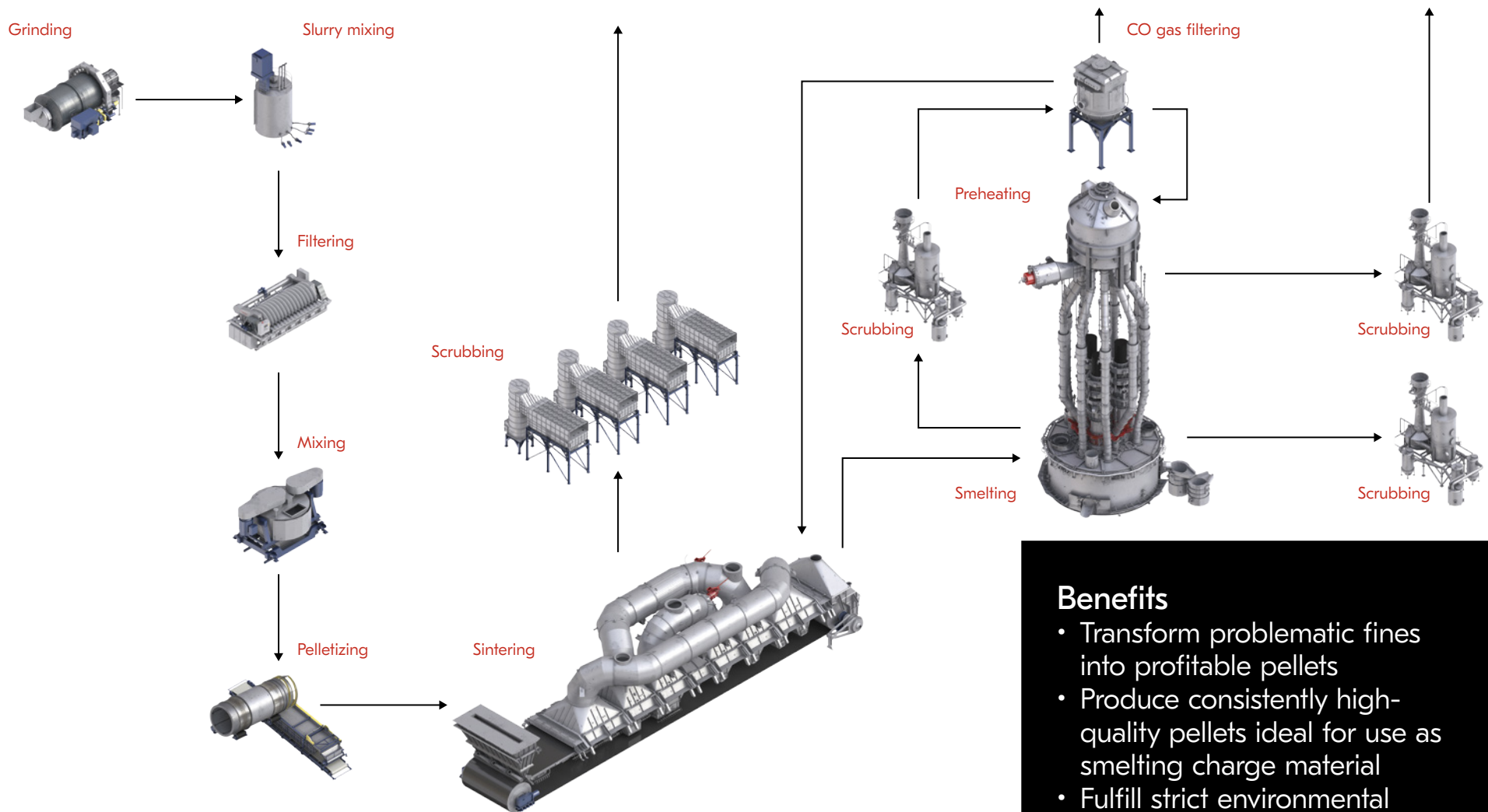


# Metso

## Steel Belt Sintering





Metso's Outotec Steel Belt Sintering (SBS) takes ferroalloy production efficiency to a new level. Pelletizing and sintering enable good charge uniformity, resulting in consistent submerged-arc furnace performance, lower power consumption, and higher recovery yields. It is the industry's most efficient and cost-effective process for pelletizing chromite and niobium ore, and can be adapted for iron ore, manganese ore and nickel ore, as well as steel-plant dust.

### Benefits

- Transform problematic fines into profitable pellets
- Produce consistently high-quality pellets ideal for use as smelting charge material
- Fulfill strict environmental requirements with efficient off-gas cleaning and low water consumption
- Reduce operational costs
- Maintain performance and get the best long-term return on investment with a complete range of lifecycle services

# Low energy consumption and efficient off-gas utilization

Metso's Outotec Steel Belt Sintering Furnace is an effective, multi-compartment furnace through which pellets are conveyed on a perforated steel belt. This treatment gives the pellets a strong structure that can withstand mechanical and thermal treatment.

The counter-current flow of cooling gases recycles heat from finished pellets to those entering the front-end compartments. This heat is used for drying, heating, and sintering the pellets, meaning that the process has very low external energy consumption. The off-gas flows are cleaned in the Metso Cascade Scrubbers. The efficient utilization of CO gas from the smelting furnace further reduces operational costs by reducing the need for expensive external fuel sources. Dust is effectively recycled back to the pelletizing process.

## Convert problematic fines into profitable pellets

The primary raw materials in the process are ore fines and/or concentrates, as well as fine anthracite or coke. These feed materials are ground in a ball mill, de-watered in capillary-effect ceramic filters, and then pelletized in a drum before being fed to the sintering furnace.

The furnace produces spherical, uniform, hard and porous pellets with consistent physical and chemical properties. They are an ideal charging material for ferroalloy smelting in the Metso Submerged Arc Furnace.

## The most sustainable ferrochrome production concept on the market

The design of the Metso's Outotec Ferrochrome Process combined with our state-of-the-art process control systems

guarantees high availability and reliability, as well as a clean working environment. It also features low energy consumption, recycling of process gases for maximum energy recovery, and closed process water circulation, making it attractive from an environmental perspective. Metso's Outotec Ferrochrome Process is used to produce 35% of the world's ferrochrome.

## Benefits of high-quality pellets for closed-furnace ferroalloy smelting

- Increased metals recovery
- Higher average load and power factors
- Significantly lower energy consumption
- Continuous and consistent furnace operation
- High furnace availability
- Ability to use low-cost fines
- Possibility to use Metso's Outotec Preheating Kiln for charge preheating
- Increase smelting furnace capacity by up to 20%

## Comprehensive support for the entire plant lifecycle

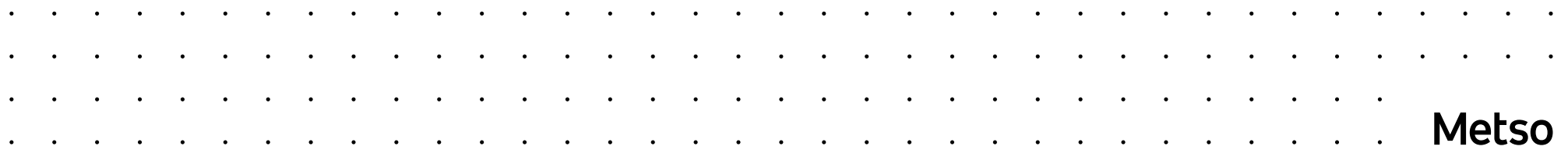
Metso is committed to supporting your operations throughout the plant lifecycle, helping you achieve and maintain high performance levels and guaranteeing the best long-term return on your investment. Our global network of service and competence centers provides lifecycle services for both brownfield and greenfield plants, covering everything from spare parts and technical services to modernizations, operations and maintenance agreements, shutdown services, training, and advisory services.

## Typical technical specifications for chromite applications

Design capacity	300,000–700,000 t/yr.
Total length	30–45 m
Belt width	4–6 m
External energy consumption	150–250 kWh/t
Total electricity consumption	50–80 kWh/t
Green pellet feed	50–110 t/h
Sintering compartment temperature	1,300–1,400 °C
Total off-gas volume	100,000–250,000 Nm <sup>3</sup> /h
Off-gas temperature	50–150 °C
Total cooling air usage	100,000–250,000 Nm <sup>3</sup> /h
Sintered pellet production	45–90 t/h

Metso is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. We improve our customers' energy and water efficiency, increase their productivity, and reduce environmental risks with our product and service expertise. We are the **partner for positive change**.

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