Metso Pyro Processing Solutions

Minimizing fuel consumption, reducing carbon footprint
Developing sustainable practices is vital for the continued success and productivity of the mining industry. Advanced technologies are needed to help minimize waste and energy consumption and help make plants more competitive in the face of increased industry pressures and demands.

With 100+ years of expertise in designing kiln systems & equipment of all types for the minerals industry, Metso offers superior pyro technology and integrated product and service packages for different operations. Our reliable and proven solutions help in reducing operating costs as well as environmental footprint for customer applications.
Metso Pyro Processing Solutions

Metso designs, engineers & supplies equipment and systems that increase the intrinsic value of ores, minerals, waste and related materials, while also protecting the environment. Our solutions are designed to optimize fuel efficiency and the overall heat balance.

100+ years of legacy and a proven track record of excellence

Sustainable and energy efficient solutions for ore enrichment

Metso has a complete line of pyro processing equipment that can be custom designed for special applications. Metso Pyro constantly thrives on new product development along with improvement of existing products and processes.

Pelletization

Metso’s pelletizing equipment is built to withstand severe process heat & a highly abrasive environment, delivering long term savings in the creation of indurated pellets.

Calcination

Metso provides the equipment and expertise necessary to design the right solution for limestone, coke, lithium, and other specialty calcining systems.

Heating, Drying and Cooling

Metso offers reliable and effective solutions that serve almost any industry’s heating, drying and cooling needs.

Extensive offerings based on core technology and design
Pelletization

Boosting production capacity and quality

Pelletization is the process of transforming iron ore fines into spherical pellets through agglomeration and induration to be used as feed to a blast furnace or direct reduction systems to produce iron. Metso is the only OEM in the world to offer both Straight Grate and Grate-Kiln technologies, therefore ensuring our customers get the best technology fit for their specific ore and product requirements.

With strength and expertise in both Straight Grate and Grate-Kiln technologies, Metso’s equipment, parts and services for pelletizing process are designed to increase capacity, reduce fuel & power consumption, and cut maintenance costs.

Increasing the economic value of ores and minerals with pelletizing

As high grade iron ore deposits become more limited, it is necessary to upgrade lower quality iron ore resources through concentration. The ground iron ore must be pelletized prior to feeding into a blast furnace or DRI plant. Our pelletizing equipment is designed to produce pellets of highest quality at the lowest cost.

Metso engineering experts work closely with customers to enhance mechanical and process parameters for all equipment systems for improving reliability and ease of maintenance.

Our extensive range of solutions

Our extensive range of solutions

Cutting-edge technology offering fuel efficiency and sustainability

<table>
<thead>
<tr>
<th>Straight grate</th>
<th>Grate-Kiln system</th>
<th>Ancillary equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>High output, lower capital cost</td>
<td>Consistent quality, lower operating costs</td>
<td>High capacity agglomeration</td>
</tr>
</tbody>
</table>

Our extensive range of solutions

- 46 Straight Grate pellet plants designed, with production capacity of over 131 MTPA
- 46 Grate-Kiln systems installed worldwide, with installed capacity of over 119 MTPA
- Up to 98% availability achieved, resulting in higher production output
- Up to 9% energy savings and 5% production increase proven with Optimizing Control Systems (OCS©)
- Ultra-low NOx induration machine installations
- ≥50% reduction in fuel and CO2 emissions with Metso induration machine system retrofits
- 120+ balling drums designed and supplied worldwide
- 180+ years of collective experience
- ≥50% reduction in fuel and CO2 emissions with Metso induration machine system retrofits
- Highest pellet quality requirements achieved

Read more:
- metso.com/straight-grate
- metso.com/grate-kiln
Calcination

Complete system capabilities for effective thermal processing

In addition to being a world leader in the design and supply of mature technologies such as lime and coke calcining, Metso is well positioned to develop the best calcining solutions for emerging industries such as lithium, nickel, vanadium, rare earths and fertilizer ingredients.

Our extensive presence in over 50 countries and expertise in various calcining processes allows local sourcing of major system components near the site to minimize the total project costs.

Unlocking mineral value with calcination solutions

Having experience with over 410 different types of ores, minerals, chemicals and wastes, Metso provides advanced solutions for thermal processing of solid materials to change their physical and/or chemical properties. Whether you are looking to improve upon a current calcining operation or develop a new calcining system, our know-how and ability to design, support and optimize complete system ensures the most efficient & productive operation.

Our extensive range of solutions

- **Pet coke calcining systems**
  - Proven experience, high capacity

- **Lime calcining systems**
  - Advance equipment, in-depth expertise

- **Specialty calcining**
  - Efficient, productive operation

Read more: [metso.com/petroleum-coke](http://metso.com/petroleum-coke)  [metso.com/limecalcining](http://metso.com/limecalcining)  [metso.com/specialitycalcining](http://metso.com/specialitycalcining)

50+ coke calcining plants designed & supplied worldwide

250+ lime calcining systems installed worldwide

1500+ different limestone feed stocks tested and evaluated

Coke calcining plant capacity ranges from 50,000 TPY to 400,000 TPY

Lime calcining systems capacity exceeds 1200 TPD

85% fuel efficiency achieved

80+ years of experience

Around 38 indirect and direct calcination, reduction, drying & cooling technologies available

130+ unique specialty calcining applications

Since 1920, we’re the global expert in calcination.
Having worked decades with a broad array of effective direct and indirect heating, drying and cooling equipment, Metso has the right technical expertise to serve customer’s needs. With numerous installations offering excellent reliability, our solutions are in use in countless mining operations and specialty applications around the world. Optimized services and engineered parts, in turn, ensure higher efficiency and productivity in every mining application.

Metso’s combination of heating, drying and cooling solutions help improve processing applications across a wide range of traditional and non-traditional feed stocks such as coal, limestone, copper, iron ore, fertilizers, clays, wood fibers, polymers, waste sludge, precious metals, specialty chemicals, and consumer products, respectively.

Our unique experience and service capabilities translates into better performance, higher availability and easier maintenance.

Read more:
- metso.com/fluidbeds
- metso.com/holo-flite
- metso.com/dryers-and-coolers
Promising results

Delivering world class pelletization plants to Jindal Steel and Power Ltd. (JSPL), India

Challenge
As one of its growth initiatives, the company wanted to improve the availability and efficiency of its iron ore pellet plants, which provide the raw material for its steel mills across the country and even outside India.

Solution
To meet the desired quality parameters and running the facility at its optimum level, Metso delivered two pellet plants having capacity of 4.5 million tonnes each.

Result
The pellet plants are running at full capacity with 100% load and 99% availability. The indurating machines consume less power and furnace oil and run for extended periods non-stop.

Read more: metso.com/pellet-plant-jspl

Pyro process material evaluations and testing

At the forefront of developing energy-efficient, economic and environmentally friendly processes

Metso’s Pyro Research & Test Center (PRTC) is a fully-equipped test facility with the capabilities to perform complex material evaluations and process testing, as well as simulating a complete pilot flow sheet.

The Test Center is unique in its ability to pilot test a complete flow sheet with many different unit operations that can be assembled to represent a commercial plant.

Performed over 100 continuous pilot tests since 1950 to simulate commercial operations

99% uptime and 15 extra days of operation of pellet plant

9 million tonnes India’s largest pellet production capacity
Maximize efficiency, availability and longevity

Services built for performance

Spare and wear parts
Crafted to the same strict specifications and standards as our equipment, our genuine parts ensure complete compatibility for seamless operation. Our global distribution logistics network ensures that Metso OEM spare and wear parts are available when you need them.

Equipment upgrades and retrofits
Improve your equipment’s productivity without the large capital investment. Our upgrades are offered as easy-to-implement packages or custom-engineered for your specific requirements, with the aim of enhancing safety, operating and maintenance features.

Maintenance and repairs
Proper maintenance is key to running your equipment effectively. Metso offers end-to-end service ranging from inspection and diagnostics, equipment and part repairs, shutdown solutions, and planning, as well as emergency services.

Process optimization and controls
Metso process experts help in solving complex operational issues using analytical techniques, laboratory testing, and advanced control systems. Whether you need to optimize a piece of equipment, a circuit, or your entire plant, we have the tools and technology to help you make it happen.

Life cycle services and performance solutions
Metso’s pre-packaged solutions are designed to assist you in meeting your business goals, from start-up to shutdown to end-of-life. We can support you on a specific activity or over a larger scope, combining elements from our large portfolio of services with unique commercial models.

Get the most out of your equipment

Metso offers a robust portfolio of services to ensure that every part of your operations is maximized and working to its true potential.

With over 100 years of experience designing and supplying hard-working equipment, our services reflect what we have learned in the shop and in the field. Harnessing global knowledge, we bundle industry’s most comprehensive service offering.

Full range of parts and services for your mineral processing value chain

Over 1500 field service technicians
40 service & repair centers
150 strategically-located distribution centers
More than 350 active Life Cycle Service agreements

Read more: metso.com/services/mining-services/
The Metso Way -
Making the big difference to our customers

Everything we do is based on deep industry knowledge and expertise that makes the big difference to our customers. Decades of close customer collaboration and adaption to our customers’ ever-changing needs have transformed us into a knowledge company.

Through our knowledge and experience, we work with our customers to create solutions that enable them to attain their objectives. We call this The Metso Way, which focuses on creating value to our customers. The Metso Way is built upon knowledge, people and solutions.

Knowledge -
We have deep knowledge about our customers’ business environment, processes and challenges.

People -
Our committed and highly competent people make the difference to our customers.

Solutions -
We create the technology and services required to meet our customer needs.