

# Metso Pyro Processing Solutions



Minimizing fuel  
consumption,  
reducing carbon  
footprint

# Emerging industry landscape for innovative and sustainable solutions

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 experience 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.

Rising fuel costs and energy consumption

Pressure for higher recovery and reliability

Carbon footprint from industrial processes & products

# 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

Pelletizing 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.

## Our extensive range of solutions



### Straight grate

High output,  
lower capital cost



### Grate-Kiln system

Consistent quality,  
lower operating costs



### Ancillary equipment

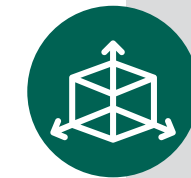
High capacity  
agglomeration

Cutting-edge  
technology offering  
fuel efficiency and  
sustainability

## 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.



**46** Straight Grate pellet plants designed, with production capacity of over **131 MTPA**



**120+** balling drums designed and supplied worldwide



**46** Grate-Kiln systems installed worldwide, with installed capacity of over **119 MTPA**



Up to **98%** availability achieved, resulting in higher production output



**180+** years of collective experience



**≥50%** reduction in fuel and CO<sub>2</sub> emissions with Metso induration machine system retrofits



Up to **9%** energy savings and **5%** production increase proven with Optimizing Control Systems (OCS<sup>®</sup>)



Ultra-low NO<sub>x</sub> induration machine installations



Highest pellet quality requirements achieved

Read more:

[metso.com/straight-grate](https://metso.com/straight-grate)

[metso.com/grate-kiln](https://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.

## 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

Custom designed  
**'Specialty Calcining'**  
systems for specific  
minerals

## Unlocking mineral value with calcination solutions

Having experience with over 450 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.



|  |   |   |
|--|---|---|
|  <p><b>50+</b> coke calcining plants designed &amp; supplied worldwide</p>          |  <p><b>250+</b> lime calcining systems installed worldwide</p>   |  <p><b>1500+</b> different limestone feed stocks tested and evaluated</p>  |
|  <p>Coke calcining plant capacity ranges from <b>50,000 TPY to 400,000 TPY</b></p> |  <p>Lime calcining systems capacity exceeds <b>1200 TPD</b></p> |  <p><b>80+</b> years of experience</p>  |
|  <p><b>85%</b> fuel efficiency achieved</p>                                       |  <p><b>130+</b> unique specialty calcining applications</p>    |  <p>Around <b>38</b> indirect and direct calcination, reduction, drying &amp; cooling technologies available</p> |

Read more:

[metso.com/petroleum-coke](https://metso.com/petroleum-coke)

[metso.com/limecalcining](https://metso.com/limecalcining)

[metso.com/specialitycalcining](https://metso.com/specialitycalcining)

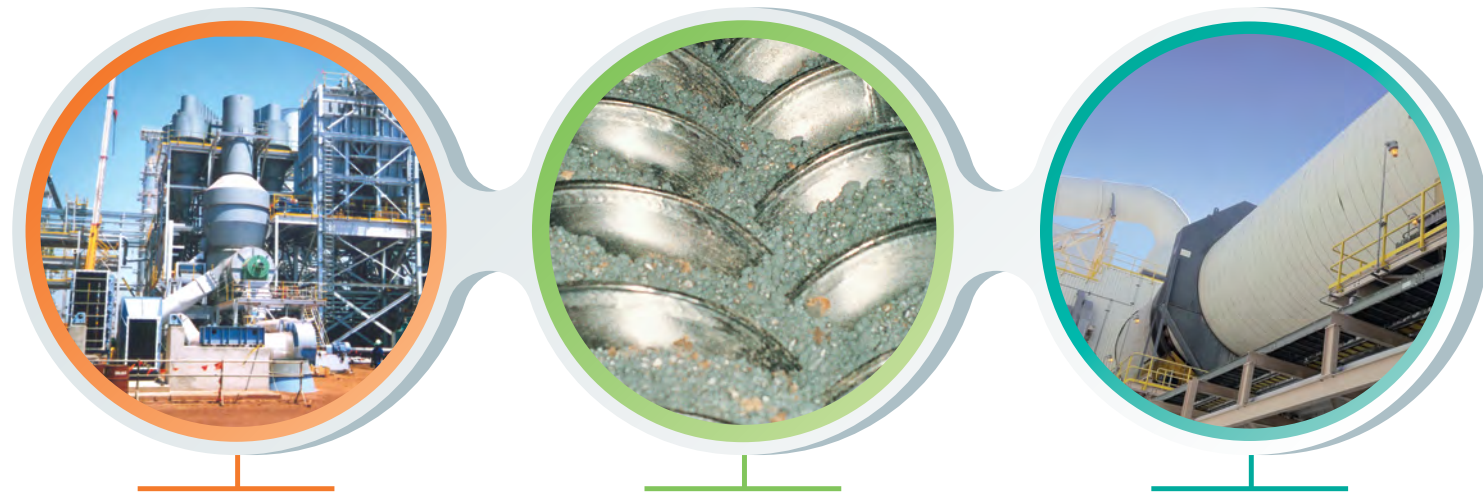
# Heating, Drying and Cooling

## Versatile solutions to fit your specific need

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.

## Our extensive range of solutions



### Fluid bed technology

Proven experience and technology

### Holo-Flite® thermal processor

High thermal efficiency

### Rotary systems

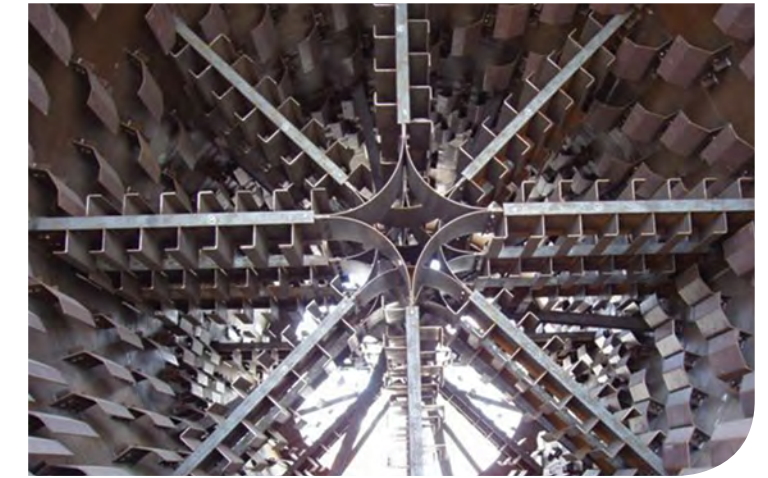
Mechanical simplicity and flexibility










Proven experience to guarantee unmatched performance

# Address your diverse needs with heating, drying and cooling solutions

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.



|   |   |   |
|---|---|---|
|  <p><b>1500+</b> rotary dryers installed globally</p>              |  <p><b>1700+</b> Holo-Flite systems installed globally</p>             |  <p><b>170+</b> years of collective experience</p>                         |
|  <p><b>400+</b> materials processed</p>                           |  <p>More than <b>30% w/w</b> moisture removal with rotary systems</p> |  <p>Feeds up to <b>75%</b> moisture content handled by Holo-Flite®</p>    |
|  <p><b>250+</b> Heating, Drying, and Cooling tests completed</p> |  <p><b>&gt;95%</b> Holo-Flite® dryer efficiency</p>                  |  <p><b>85%</b> typical rotary and fluid bed systems dryer efficiency</p> |

### Read more:

[metso.com/fluidbeds](https://metso.com/fluidbeds)

[metso.com/holo-flite](https://metso.com/holo-flite)

[metso.com/dryers-and-coolers](https://metso.com/dryers-and-coolers)

## 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

### 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](https://metso.com/pellet-plant-jspl)

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

**9 million tonnes** India's largest pellet production capacity

# Services built for performance

## Maximize efficiency, availability and longevity

### 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 ensure 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.



Over **1500 field service technicians**



**40** service & repair **centers**



**150** strategically-located **distribution centers**



More than **350 active Life Cycle Service** agreements

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

Read more:

[metso.com/services/mining-services/](https://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

