Metso

Digital solutions for iron ore pelletizing plants

Modern tools to boost your plant performance





Allow your plant to do more

Our digital solutions incorporate decades of process and operation know-how to boost plant performance

Metso digital solutions for iron ore pelletizing plants provide a vital building block for the development of a state-of-the art plant that leverages our leading-edge digital technologies to ensure optimal operation and maintenance over the entire plant life cycle. Using our extensive experience as the original inventor of the pelletizing process, we have developed a suite of solutions that will improve process performance, production capacity, and product quality while at the same time reduce energy consumption, environmental impact, operation and maintenance costs.

Benefits:

- Improve process performance, production capacity, and product quality of iron ore pelletizing processes
- Reduce energy consumption, environmental impact, and operation and maintenance costs
- Provide comprehensive, risk-free operator training with advanced simulation technology
- Gain valuable process insights with real-time information on pellet size distribution
- Improve preventive maintenance planning and execution with real-time equipment condition monitoring

Provide comprehensive, risk-free operator training with advanced simulation technology

The Metso training simulator for iron ore pelletizing plants enables training and certification of operators in a risk-free virtual plant environment. The simulator provides comprehensive, realistic training to ensure that personnel can operate your processes safely and efficiently. Training can be tailored to simulate different operating conditions, standard procedures, emergency situations, and any other operational scenarios that are deemed to be beneficial.

The simulator enables operators to familiarize themselves with plant operational procedures, learn how to react to changes in process conditions or raw materials, and train for standard procedures such as plant start-ups and shut-downs. Scenarios can be run at an accelerated speed to make training on longer or more complex procedures less time consuming.

Properly trained personnel help to ensure a stable, optimized process, which in turn reduces operational and maintenance costs by reducing the consumption of energy, raw materials, and utilities and minimizing equipment wear and tear.



Achieve and maintain a high level of operator competence

Ensure personnel is familiar with standard operating procedures and ready to react quickly to both changes in process conditions and emergency situations

Reduce the risk of accidents and damage to assets

Improve process performance, productivity, and product quality

Reduce operational and maintenance costs

Ensure a stable, efficient, and safe process with advanced process control

Metso's OCS-4DTM and Optimus advanced process control (APC) systems combine real-time plant measurements and our unrivalled process know-how. This combination ensures operational stability, optimal plant operation and efficiency through automatic detection and correction of detrimental process deviations.

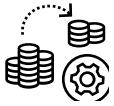
APC systems control the main process inputs such as temperatures, gas fans, and dampers in order to ensure process stability, maximize pellet production, minimize energy consumption, and maintain consistent product quality.

Process stability and efficiency is achieved through automated process expertise and various advanced techniques to determine new set points, typically several times per minute. A virtual process based on proven scientific flow models of gases and solids runs in parallel in real-time dynamic reconciliation with the plant. The system estimates unknown parameters such as quality, temperature profiles, and the extent of chemical reactions to provide the optimum set points.

Metso APC solutions are designed specifically for process control applications and are simple to configure and easy to maintain. They can be enhanced with the addition of various condition-monitoring systems. A core part of our implementation methodology is to involve operators and other plant personnel to develop robust and reliable process control strategies that ensure the best possible outcome for the plant.



Ensure operational stability, optimal plant operation and efficiency with real-time process measurements



Optimize overall operational costs with improved fuel and energy efficiency and reduced maintenance costs



Achieve consistent end-product quality



Increase plant safety



Reduce the environmental impact of your operations



React quickly to variations in process parameters and changes to process requirements or production rates


Achieve maximum efficiency and obtain incremental and sustainable gains
Measured
Control
ON
154.0
114.5
567.0
Limits (L / H)
260.0 / 340.0
338.5
/ 140.0
103.0
Limits (L / H)
Setpoints
Control
45.0 / 100.0
86.6
35.0 / 100.0
83.4
35.0 / 100.0
86.1
35.0 / 100.0
86.9
35.0 / 100.0
72.2
35.0 / 100.0
83.1
30.0 / 100.0
67.9
0.0 / 100.0
40.4
0.0 / 100.0
0.0
0.0 / 100.0
4.9
0.0 / 100.0
23.8
7a 7b 8a 8b 9a 9b 10a 10b
B1 B2 B3 B4 B5 B6 B7
B8 B9 B10 B11
Temperatures (°C)
05:50 06:00 06:10 06:20 06:30
WB DDD 154.0 °C
WB PRH 114.5 °C
Discharge belt 103.0 °C
Hood pressures (mbar)
Hood UDD -3.0 mbar
Hood DDD -1.0 mbar
Hood FIR -0.6 mbar
Hood Cool. 3 -2.5 mbar
Fan speeds (%)
Hood Exh.
WB Exh. 1
WB Exh. 2
UDD
WB Recup.
Cooling 1
Cooling 2

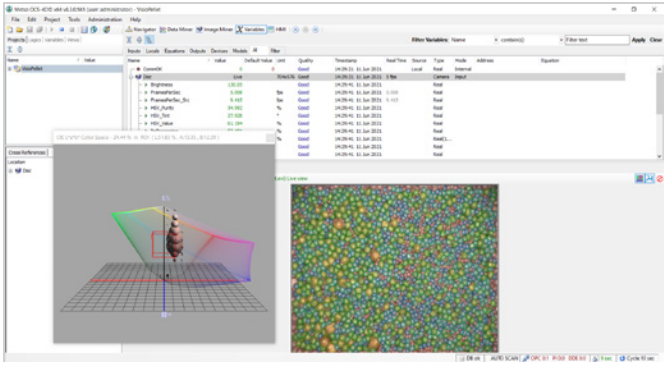


Optimize your pelletizing process with Metso VisioPellet™

Metso VisioPellet is a pellet size-control system that measures the size of green pellets using proven camera technology installed in a pelletizing disc or drum. Based on the measurement data the plant's process control system can optimize the rotation speed of pelletizing discs/drums and the feed rate in real time.

The performance of an induration furnace is heavily determined by the gas permeability in the pellet bed. Real-time optimization improves the size distribution and quality of green pellets and maximizes the performance of the indurating process in terms of process stability, plant productivity, product quality, and energy consumption.

Metso VisioPellet has a proven track record in numerous pellet plants around the world. We can provide a complete upgrade package to retrofit pelletizing discs/drums with motorized inclination control, which further optimizes the pelletizing process by enabling the DCS to control the feed rate, disc/drum speed, and inclination.



VisioPellet™ calculated variables including many statistical functions and indexes

Improve plant productivity and product quality – and reduce fuel and power consumption – with improved green pellet size distribution

Gain valuable insights into your process with real-time information on pellet size distribution that can be used to optimize the process further

Further improve plant efficiency by reducing return fines in the green pelletizing loop

Maintain process stability regardless of fluctuations in raw-material properties such as moisture or particle size distribution

Improve preventive maintenance planning and execution with the Metso Pallet Car Condition Monitoring System

Improve reactive and preventive maintenance planning and execution with accurate, real-time monitoring of pallet car condition

Minimize downtime and optimize spare-part ordering with easy integration of pallet-car operation and maintenance data into the plant control and maintenance systems

Optimize the process performance of the travelling grate thanks to improved gas permeability of the pellet bed and improved sealing

The Metso Pallet Car Condition Monitoring System provides online measurement of pallet car deflection using contactless sensors in addition to tracking the pallet cars that are in operation. This enables center castings to be replaced at the optimal time, significantly extending equipment lifetime. The system can also detect cars with missing wheels or grate bars and includes a pallet car identification system with optical cameras or RFID technology.

The system provides a highly accurate overview on the condition of every single car, supporting the planning and execution of preventive maintenance on these key pellet furnace components. This helps to improve overall plant performance, extend the lifetime of equipment, and reduce maintenance and spare-part costs.

The modular design concept enables easy upgrades and ensures a fast return on investment. No standalone software is required as car condition data can be viewed on any PC with a web browser and internet connection.



Metso is a frontrunner in providing sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. By helping our customers increase their productivity, improve their energy and water efficiency and environmental performance with our process and product expertise, we are the **partner for positive change.**

Metso

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