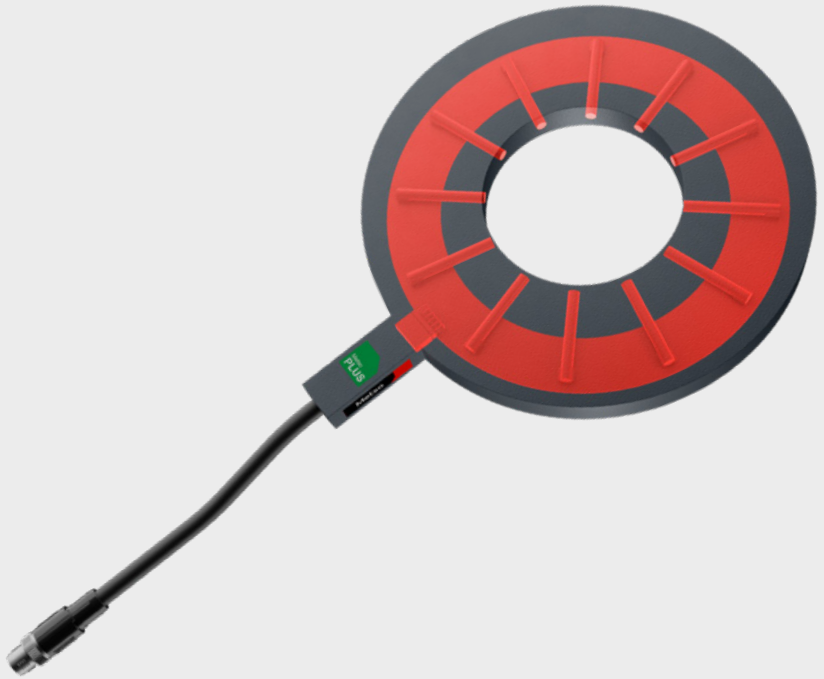
# Metso

## Enabling optimization through sense

# CycloneSense™



**Benefits**

CycloneSense™ increases uptime and production. By identifying optimal operating point for hydrocyclones, this enables maximized optimization of grinding and flotation circuits.

CycloneSense™ provides a direct, continuous and robust online measurement of the hydrocyclones air core shape, size and location. Smart monitoring technology enables optimal hydrocyclone performance to improve your grinding circuit efficiency and plant availability.

**Intelligent mining solutions**
At Metso, we offer frontrunning automation and digital solutions that help to redefine and digitalize the mining industry.

Hydrocyclones are an important contributor in the effective operation of a plant. They provide the classification that ensures liberated material is passed through to flotation and define the circulating load in the comminution circuit. If the hydrocyclones are not performing in the way they should, it can result in lost recovery, grade, reduced throughput and capacity in flotation.

Although hydrocyclones have a large impact on circuit optimization, they have usually been under-instrumented. But what if you could see inside a hydrocyclone and prevent issues?

**Simple start up and easy maintenance**
Available for all new Metso hydrocyclones, or it can be installed on existing Metso/other manufacturer hydrocyclones. The gasket is installed between the lower and upper cones and is easy to change at the time of relining. CycloneSense™ is easy to install, operate and maintain with no moving parts.

CycloneSense™ is delivered as a ready-to-install package containing measurement assemblies, connection cabinets, proprietary analysis software and licenses.

**Seeing inside the hydrocyclone**
CycloneSense™ enables smart monitoring by combining visualizations and measurements.

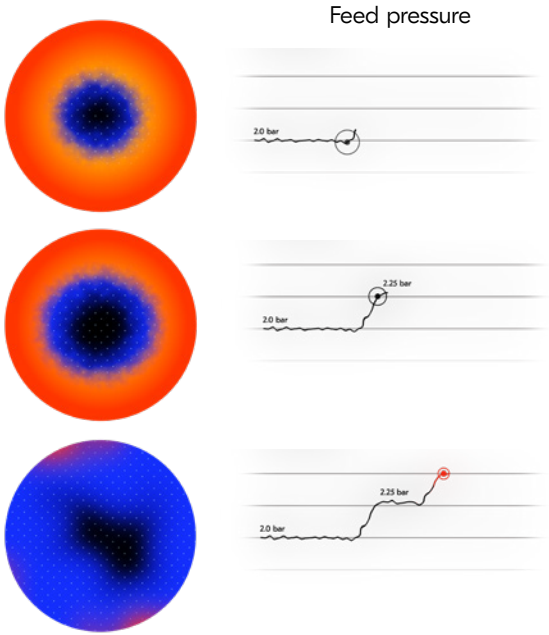
CycloneSense™ visualizes the hydrocyclones air core through direct measurement and allows you to see the points where roping and other issues are experienced. The continuous and direct measurement provided by CycloneSense™ enables real-time analysis and an automatic cyclone control. This information helps in finding the optimal operating point for hydrocyclones by controlling variables such as feed pressure, density, and the number of operating cyclones in operation.

CycloneSense™ is based on process tomography technology. The measurement assembly consists of a polyurethane sensor gasket with 12 electrodes.

## Smart monitoring

- Direct, continuous and robust online measurement of hydrocyclone air core
- Turns hydrocyclone into a smart and connected asset
- Identifies problem situations
- Based on process tomography technology

Cyclone air core cross section




CycloneSense™ shows a real-time cross section view of the hydrocyclone. There is a clear correlation between feed pressure and air core radius - when feed pressure increases, the air core radius increases, and vice versa.

### Valuable input for optimization

By seeing inside the hydrocyclone, CycloneSense™ provides valuable input for optimization of grinding circuits and hydrocyclone performance. This data and analysis can be used to ensure the hydrocyclones operate at an optimal operating point. CycloneSense™ measurements identify problem situations such as roping and enable preventative actions.

When the CycloneSense™ is integrated with a particle size measurement from the combined overflow stream (Metso PSI® 300 or PSI® 500), it increases process uptime while achieving optimal particle size distribution. This results in optimal recovery in flotation and less downtime due to sanding, roping or blockages.

**Read more at metso.com/cyclonesense**

### Versatile system

One connection cabinet supports up to eight measurement heads, along with fiber-optic and copper media connections to the plant network. The system supports any network topology, including star and ring configurations. The system is designed for easy maintenance with all power supplies and fuses located in one place.

### Increasing sustainability

CycloneSense™ is a part of our Planet Positive portfolio. This offering focuses on the most environmentally efficient technologies (>100) in our current portfolio.

Sustainability is at the core of Metso's offering and operations. We are the net positive partner for change, with our handprint significantly bigger than our footprint. We are committed to limiting global warming to 1.5°C with Science Based Targets.

### A lifetime of service

Metso provides services for the entire lifecycle of your asset, from single pieces of equipment to entire plants, via a global network of service centers. Metso services cover everything from spare parts and maintenance to plant evaluations and upgrades, as well as project management and training.

### Choose the CycloneSense™

Seeing inside the hydrocyclone with CycloneSense™ opens new opportunities for hydrocyclone control and valuable, new input circuit optimization.

Contact Metso experts to find out how CycloneSense™ can benefit your operation.

## Key technical specifications

| Measurement head | |
|---|---|
| Materials | AISI316 and PU |
| Operating temperature | 0 - + 80 |
| **Connection cabinet 4750** | |
| IP rating | IP66 / NEMA4X |
| Power | 110/230 VAC, 50/60 Hz |
| Maximum number of measurement assemblies per cabinet | 8 |

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