

### CYCLONEtrac™ PST - Particle Size Tracking System

The CYCLONEtrac Particle Size Tracking (PST) system is the only system that provides real-time, direct measurement of particle size on individual hydrocyclones for grind circuit optimization. The value of the technology lies in its ability to track the particle size of the entire overflow stream from a hydrocyclone battery based on the contribution from each individual hydrocyclone. This enables real-time, closed loop grind circuit control strategies that can target improved mineral recovery and increased grind efficiency, while maintaining or increasing plant throughput.

#### System Features

- Tracks Particle Size in Cyclone Overflow Stream
- One to Five Particle Size Outputs Available (as percent passing or retained on a standard screen, e.g. 150µm)
- Minimal Hydrocyclone Downtime for Installation and Maintenance
- One-Time Calibration
- CYCLONEtrac PST SMARTsensor with condition-based Monitoring

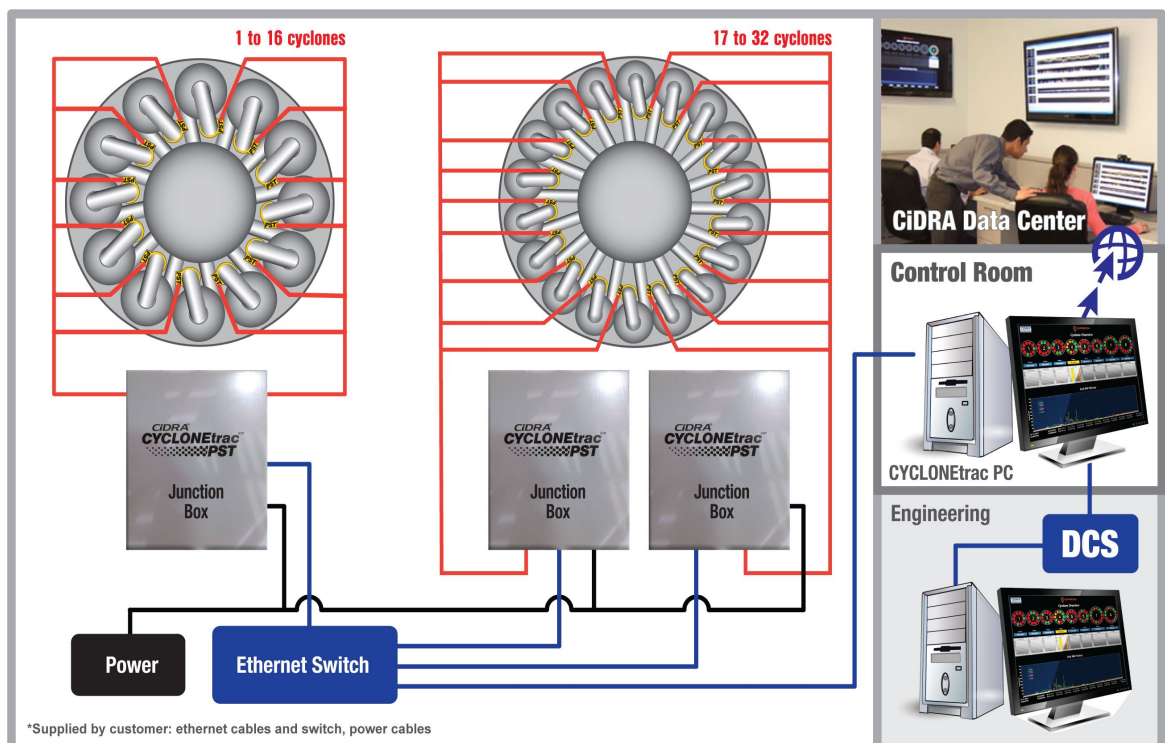
#### Plant Benefits

- Enables Real-Time Closed Loop Grind Circuit Control
- Individual Cyclone Monitoring
- Enables Improved Recovery Without Loss of Throughput



The CYCLONEtrac PST system consists of individual sensor assemblies mounted to hydrocyclone overflow pipes, junction boxes, and a control room computer (or virtual server). The sensor assembly is made up of a ruggedized sensor element that is in contact with the overflow stream and an integrated electronics package that is protected by a sealed metal enclosure. The sensor assembly is wired to the junction box located near the hydrocyclone battery. The junction box receives 100-240 VAC power and supplies both 24V DC power and Modbus communications to the sensor assemblies.

The junction box also communicates with the CYCLONEtrac computer in the Control Room using industrial Ethernet. Ideally the computer should be connected to the internet to provide remote monitoring and support from the engineers at CiDRA's Global Data Center. At the data center, CiDRA can monitor and optimize the PST system and provide up-to-date information regarding the performance of the PST system hardware.



## CYCLONEtrac™ PST Specifications

Parameter	Specification	Comments
Particle Detection Capability.	≥ 75um	Real-time tracking of target grind size. Contact CiDRA for smaller sizes. Up to 5 sizes can be measured.
Update Rate	4 seconds	
Installation Location	Hydrocyclone overflow pipe	Works with standard rubber-lined steel pipe, HDPE or ceramic lined pipe.
Mounting Style	Clamp-on, wetted sensor through 2" (51mm) hole in overflow pipe	Clamp around pipe. Ten minute installation, minimizing cyclone downtime.
Hydrocyclone Overflow Pipe Size Range	Sizes available for 6"-18" pipes (152.4mm – 457mm)	Contact CiDRA for pipe sizes above 18" (>457 mm)
Sensor Assembly	Ruggedized SMARTsensor element, attached to metal enclosure that houses electronics	Powered via CiDRA supplied cable from junction box
Junction Box	Accepts up to 16 sensor assembly connections. Connects to ethernet or fiber optic network and control room computer. Stainless steel construction	One power entry box supplies power to the junction box. The junction box provides communication to sensors and to the control room.
Operating Temperature Range: Junction Box and Power Entry Box Sensor Assembly	-4°F to +140°F (-20°C to +60°C) +14°F to +130°F (-10°C to +55°C)	Inquire with CiDRA for temperatures outside these specified ranges
Storage Temperature Range: Junction Box and Power Entry Box Sensor Assembly	-40°F to +185°F (-40°C to +85°C) -40°F to +185°F (-40°C to +85°C)	Inquire with CiDRA for temperatures outside these specified ranges
Instrumentation Cable Connecting Junction Box and Sensor Assembly	Multi-conductor, PVC jacketed for EIA RS-485 Applications	CiDRA-supplied, for communication and power for sensor assembly. Cable length up to 150ft
Communication From Junction Box to CYCLONEtrac PC in Control Room	Ethernet Cat 5e output	Up to 100m without repeater Custom interface available
Digital Output from CYCLONEtrac PC to DCS	OPC via Ethernet	Up to 5 output sizes
Communication with CiDRA Data Center	Over Internet via Virtual Network Communication (VNC) connection	Between CYCLONEtrac PC and CiDRA office, for data transfer, remote monitoring and configuration
Data Logging Capability	Yes	Data and system parameters logged to CYCLONEtrac disk drive every 4 seconds; transferred to CiDRA Data Center periodically.
IP Rating	Certified to IP66; Designed to IP67 NEMA 4, IP66	Sensor assembly and enclosure Junction box, power entry box and glands
Power Requirements	AC version only, 100 to 240 VAC, 50/60 Hz, 200 watts., dual power entry box 400 watts	External power supplied to junction box and sensor assemblies
Area Classification	Standard Ordinary Location Up to altitude of 5000m	Applies to system

### Contact CiDRA

To speak with an applications engineer about CiDRA's CYCLONEtrac systems or other CiDRA industrial process measurement solutions, call +1.203.265.0035 or visit our web site at [www.cidra.com](http://www.cidra.com).

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