

HALO™, powered by CiDRA's *SMARTring*™ technology, leverages active sonar and signal processing techniques to provide permanent, fixed multipoint measurements around the circumference of the slurry pipe thereby eliminating manual point-to-point measurements.

Increase Pipeline Predictability, Reliability and Reduce Costs with HALO SMARTring

HALO *SMARTring* technology and service overcomes the deficiencies of traditional, manual UT methods used to measure pipe wear. CiDRA leverages its differentiated sonar and signal processing expertise to provide timely, accurate, repeatable pipe wear measurements and other relevant pipeline information and characteristics. The *SMARTring* pipe wear measurement tool clamps around the outside of the pipe and remains installed throughout the life of the pipe. On most larger diameter pipes, the *SMARTring* solution features twelve measurement locations, equally spaced around the pipe. "On-demand" a CiDRA technician connects a "smart" handheld reader-processor to each *SMARTring* sensor and records all twelve measurements simultaneously. Because measurement of all twelve points can be made virtually in seconds, tens of thousands of points on hydrotransport and coarse tailings slurry pipelines can be frequently measured, thereby enhancing predictive modeling and action by your pipeline and asset reliability teams.

HALO SMARTring Solution Benefits

More frequent and accurate pipe wear information dramatically improves predictive modeling techniques and enables preventative action to be taken. CiDRA's innovative approach to pipe wear measurement and characterization provides the following benefits for pipeline reliability engineers and plant maintenance operations:

- Reduce process safety risk
- Significantly reduce unplanned shutdowns
- Mitigate loss of production and loss of containment
- Extend pipe life
- Reduce operating costs such as construction and rental of scaffolding, hydro-excavation, pipe cleaning and other services
- Eliminate labor expense associated with NDT engineering firm manual UT measurements
- Proactive scheduling and maintenance

HALO SMARTring Solution Features

- Twelve measurement locations¹ equally spaced around the pipe (can be customized based on customer requirements)
- Rotation sensor and pipe rotation tracking: Date of rotation, angle of rotation
- Dual connection ports at 180° that allow complete accessibility when pipe is rotated or becomes inaccessible due to partially submerged or covered pipes: accumulation of sand, ice, snow, etc.
- Long cable tethers which are utilized to eliminate need for scaffolding required to access pipes on racks
- Interpolation and characterization of pipe loss between sensors
- Data acquisition measurement and reporting by CiDRA technicians "on-demand" on all measurement points
- Installation, maintenance and analysis of *SMARTring* sensors by CiDRA technicians

1- see pipe diameter sizes on back page

HALO™



CiDRA Oilsands Ltd.
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Main Office: Wallingford, CT
203-265-0035
Sales: Calgary, AB 403-819-1855
Service: Fort McMurray, AB
780-792-4440 / 780-838-9836

HALO™ SMARTring Specifications

Area Classification: General Purpose

Certifications: cTUVus (SAFETY)
UL 61010-1:2004 R10.08
CAN/CSA-C22.2 NO.61010-1-04

Pipe Material: Carbon Steel, Alloy Clad Pipe, Stainless Steel and HDPE

Temperature Rating: -40°C to 70° C

Calibration: Calibration of the *SMARTring* measurements is maintained throughout the life of the sensor band by way of an integrated known reference element. Each time a measurement is taken the reference element is queried to assure the validity of the measurements.

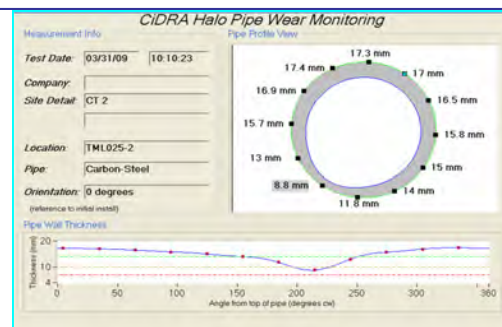
Sizes:

30-inch – 12 sensing points
28-inch – 12 sensing points
26-inch – 12 sensing points
24-inch – 12 sensing points
20-inch – 12 sensing points
16-inch – 10 sensing points

Smaller sizes available upon request

Warranty: One year

Measurement Resolution: 0.1 mm



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