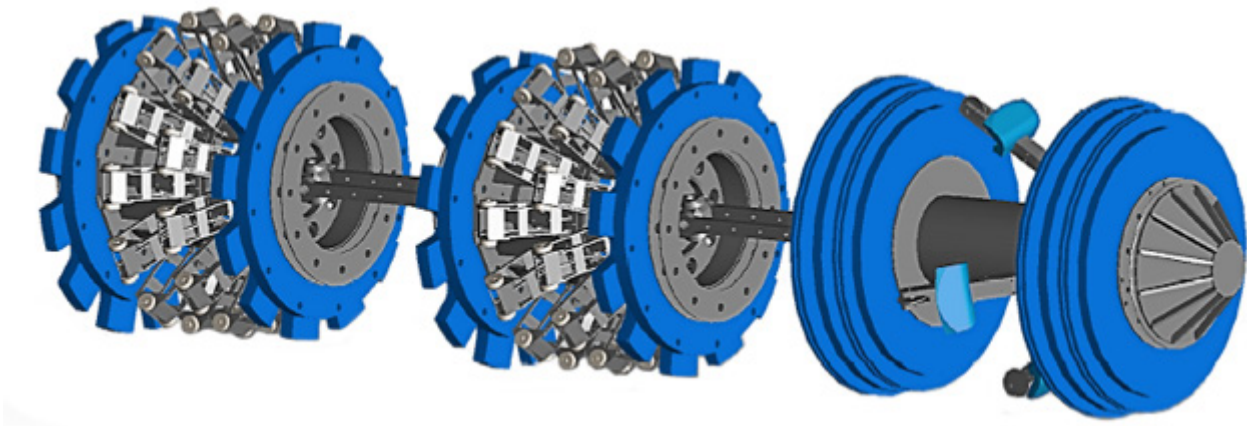


SRD

SHORT RANGE DISTANCE INSPECTION



The Short Range Distance (SRD) Sensor allows a high resolution scan of the internal surface of a pipeline and accurately measures the contour of girth, axial and spiral welds as well as internal metal loss defects. It detects and identifies flaws on the internal surface of welds and determines the dimensions of the gap at such locations.

The SRD tool delivers clear results especially for long narrow metal loss defects where axial MFL technology

has limitations. The SRD Sensor is an optimization of the well-known Direct Magnetic Response (DMR) technology. Close adjacent individual DMR sensors have a disturbing influence on each other, which complicates construction of a high resolution sensor array. This interaction is eliminated with the SRD technology, which means the sensors can be placed as close as possible.

SYSTEM DESCRIPTION

Each SRD sensor measures the distance from its own location to the closest ferritic steel surface. It has a focused viewing angle and thus refers to a certain area of the steel surface (“sensor reference area”). In this regard, the SRD sensor has a certain similarity with a UT test head. However, different from UT, the SRD measurement does not penetrate into the steel; it has, therefore, only a single “reflector”, which is the steel surface.

The SRD measurement delivers accurate distance readings as long as the sensor is in a rectangular position towards an even steel surface. Local metal loss is measured very accurately when the metal loss area is larger than the sensor reference area. There is an averaging effect on readings in areas where the sensor reference area contains multiple distances from the sensor face, for example if a pit has a smaller diameter than the sensor reference area and in transitions between WTs.

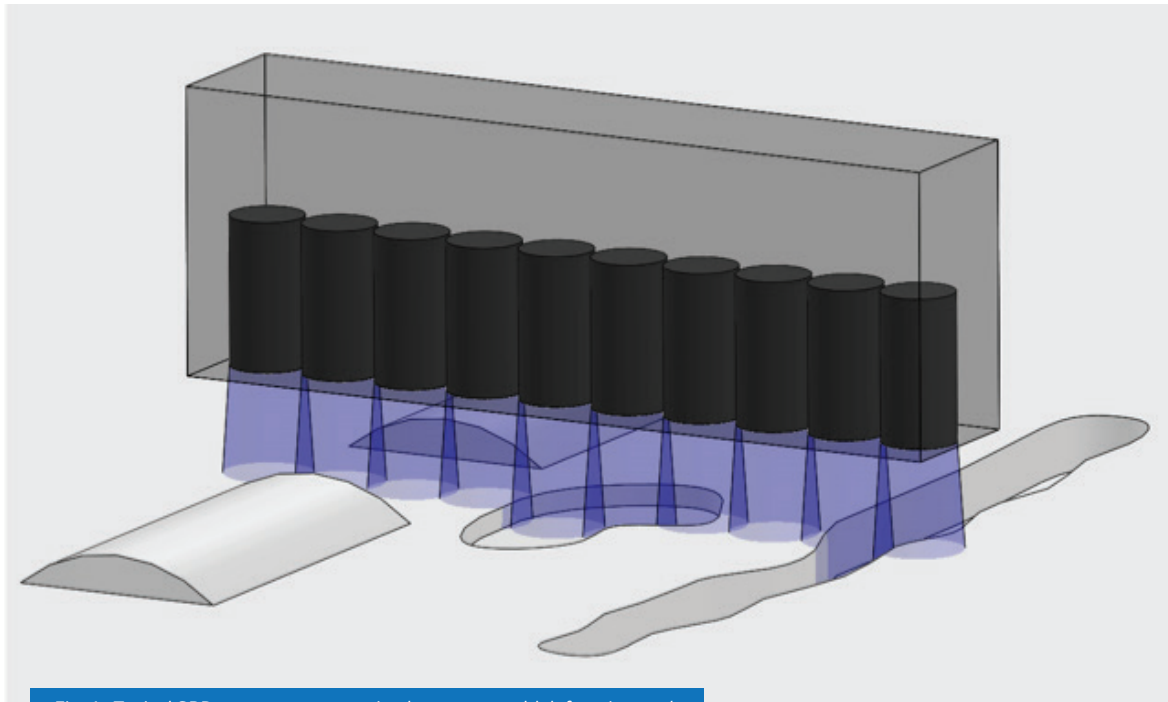


Fig. 1: Typical SRD sensor array scanning long seam weld defect, internal general or pitting corrosion and narrow axial metal loss features

SENSOR SYSTEMS

The tool has independent sensor carriers, which are guided over the pipe wall with defined distance. Each sensor carrier has a number of sensors measuring the distance to the pipe and is guided by two wheels. In order to get complete 360 degree inspection results the different sensor carriers overlap. If a wheel of one sensor carrier runs over a feature or anomaly, the affected area is inspected by another sensor carrier having the wheel next to the feature. The number of sensor carriers and the number of internal sensors of each carrier varies depending on the inspection tool size.

ELECTRONIC SYSTEM

A purpose-built master microprocessor system controls the entire electronic; it is also used to generate early information about the correct functioning of the individual electronic systems after the inspection run and retrieval of the tool. All data received from the individual measuring units are continuously recorded, digitised, and stored in solid state memory.

BATTERY PACK

The life time of the system is scalable and can be extended using battery packs with higher capacity. The size of the housing for the battery pack increases accordingly.

PRACTICAL APPLICATIONS

Detection of critical longitudinal seam welds

The SRD tool scans the weld contour and weld zone in high resolution and clearly distinguishes between presence and absence of the weld.

Measurement of internal layer

In combination with GEO or wall guided DMR sensors, the SRD tool scans the condition of an internal non-metallic layer. Irregularities in an internal coating, such as a repair layer or a concrete liner, can be identified. Presence of a layer of paraffin can also be identified. Metal loss that coincides with the internal layer irregularity, as well as metal loss under an integral internal layer is also detected and measured.

Inspect for internal metal loss

The SRD tool inspects for internal metal loss. In combination with the MFL technology it can be used for the identification of internal /external defects, and to measure metal loss features under the internal coating on the inner surface of the carrier pipe.

Speed

SRD sensors' measurements are relatively unaffected by high tool speeds, accelerations and decelerations. They are ideal in challenging pipeline operating conditions such as low pressure/low flow gas lines and slack line conditions in liquid lines.

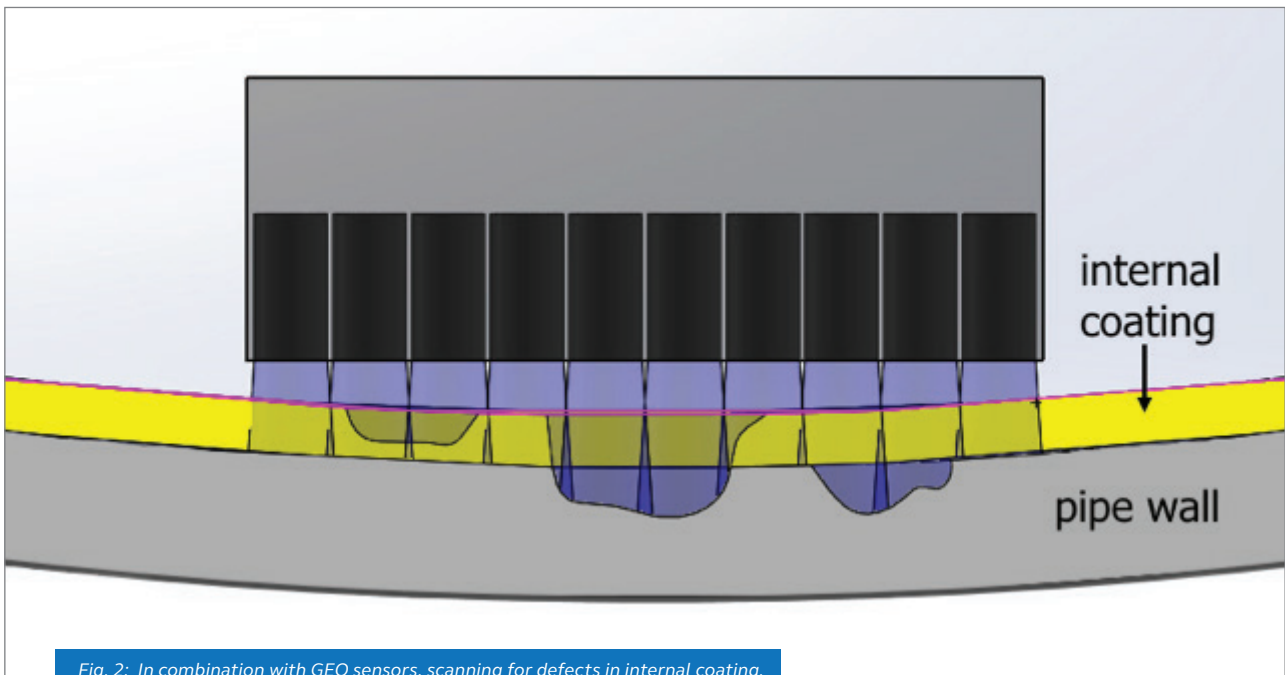


Fig. 2: In combination with GEO sensors, scanning for defects in internal coating, coincident coating defect and internal metal loss, and metal loss under coating

REPORTING

Operations Report	Tool performance, data quality & completeness	2 days after data download
Final Report	Standard complete report	8 weeks
Client view software	Available	
Special applications	On request	
Use in integrity assessments	Fitness for service, long seam weld, internal corrosion	

TECHNICAL DATA

Available tool diameters	28" – 48" (710 – 1.200 mm) (further on request)
Min. bend radius	1,5 D (tighter on request)
Dual / multi diameter	Available
Combo tools	XYZ, MFL, UT, GEO
Media	Gas, liquids
Operating pressure	High pressure versions available (water depth to 3.000 m or higher)
Bidirectional tools	On request (subject to engineering assessment)
Operating temperature range	0 – 70 °C
ATEX	Available

Related documents:

- › SRD Defect Detection and Sizing Performance
- › Tool data sheet

Each pipeline is assessed individually.

For applications outside these parameters, please contact us directly.

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