

ROCORR MFL-A Ultra

Making the invisible visible



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The Challenge



Understanding the exact structure of an asset

Pipelines, especially those that have been in service for long period of time, are constantly exposed to conditions that threaten their integrity. Different defect types represent various levels of risks to efficiency and productivity on the one hand, and to the safety of the public and the environment on the other. However, small defects do not necessarily mean small risk.

Until now, it has been virtually impossible to reliably detect and size minuscule defects, such as pinholes of one millimeter and less in diameter. It has been equally challenging to determine the exact shape and structure of defect groups like complex corrosion, let alone pinholes in heavily corroded pipelines. Current MFL inspection services simply cannot deliver a signal that is dense enough to create realistic images of a pipe wall's surface. At the same time, data evaluation is always subject to the human factor, which can impact the repeatability of results.

Consequently, pipeline operators are often confronted with relatively conservative integrity assessments. These lead to expensive and often even unnecessary field verifications in order to obtain a realistic image of their asset's structure.



Leaving nothing to chance

ROSEN's new premium service, RoCorr MFL-A Ultra, now makes it possible to not only detect even the smallest pipeline defects, but also to define the exact structure of defect groups and complex corrosion. Just like an MRI (Magnetic Resonance Imaging) scanner provides lifelike images of the inside of the human body, RoCorr MFL-A Ultra produces lifelike images of a pipe wall's structure.

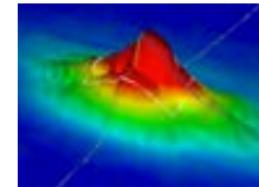
To this end, RoCorr MFL-A Ultra uses the highly innovative Pipeline Imaging™ method, which uses ultra-high-resolution sensors to gather several terabytes of data. These large amounts of data are then processed by the automated data processing application, AutoData™. Thus, RoCorr MFL-A Ultra not only permits a realistic evaluation of a pipeline's current integrity status, but it also ensures the repeatability of inspection results, leading to far more accurate integrity assessments.

RoCorr MFL-A Ultra can be applied under the same operational conditions as other ROSEN MFL services. Furthermore, the unique dual-sensor design ensures a seamless transition between your current high-resolution MFL data and the new ultra-high-resolution data.

The Solution

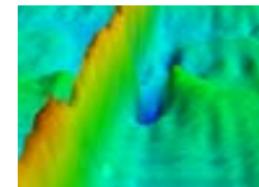
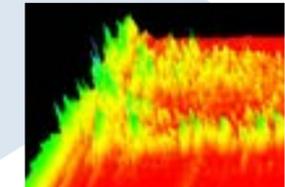
Pipeline Imaging™ – measuring up to reality

ROSEN's ultra-high-definition 3D MFL sensors represent a step change in MFL technology. Thanks to the triaxial sensor design, RoCorr MFL-A Ultra is capable of detecting even tiny changes in a pipe wall's structure, displaying what until now has often remained unseen.



The unique spatial resolution of MFL-A Ultra allows for the development of realistic **3D river bottom profiles** enabling more accurate defect failure pressures and depths.

With RoCorr MFL-A Ultra the detailed structure of **defect morphology** – such as complex corrosion, top-of-line corrosion (TOLC), pinholes in general corrosion, pinhole colonies and microbially-induced corrosion (MIC) – can be identified.



Optimised sensor suspension allows for a smooth girth weld passage and identification of **preferential girth weld corrosion**, overcoming the industry known sizing limitation of standard MFL-A technology at girth welds.

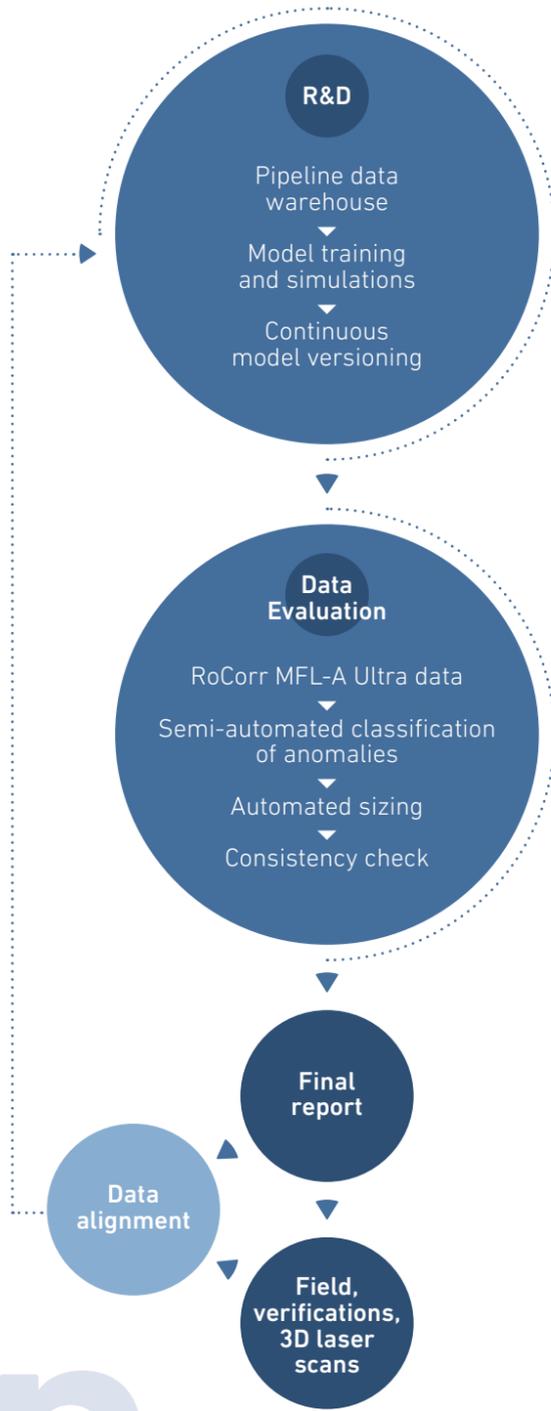
Unlike other MFL services, RoCorr MFL-A Ultra reports all defects of the internal and non-internal pipe wall that it has identified. The unique spatial resolution of MFL-A Ultra also allows for realistic river bottom profiles. Hence, you can be sure that every little anomaly is detected and that its impact on the pipeline's integrity is adequately assessed.

In combination with other ROSEN ILI services like RoCorr IEC or RoGeo XT, RoCorr MFL-A Ultra is also capable of detecting geometry defects like bending strain and internal axial channeling.

AutoData™ – quality you can count on

AutoData™ sets entirely new standards in the field of data evaluation. It deploys machine-learning, adaptive algorithms that are calibrated using high-resolution 3D laser scans of real pipe defects. This means that the evaluation algorithms continuously evolve during their application and therefore constantly improve the quality of their results, leading to a significant increase in defect sizing accuracy.

Large amounts of data are processed automatically within seconds, leading to a significant increase in integrity assessment accuracy.



The Solution

Accurate data **plus** expert consulting **equals** realistic results

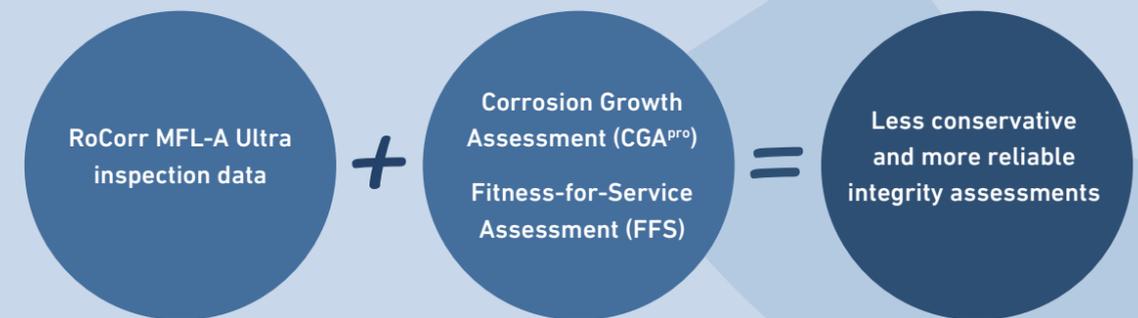
The combination of the highly accurate RoCorr MFL-A Ultra data and ROSEN's outstanding expertise in Engineering Assessments Services allows for a significantly less conservative overall integrity assessment.

Corrosion Growth Assessment

With our advanced Corrosion Growth Assessment, CGA^{pro}, we can see how corrosion has behaved in the past and predict what it will do in the future. Using ROSEN MFL-Ultra data as an input enhances the assessment and the dual sensor design ensures comparability to standard MFL data. Corrosion Growth Rates (CGRs) which are demonstrably safe but allow for cost effective repair and inspection planning are generated enabling the estimation of an asset's remaining safe operational life.

Fitness-for-Service Assessment

The integrity of all defects reported by the MFL Ultra tool can be assessed using our Fitness-for-Service (FFS) assessment. Detailed river bottom profiles allow for a less conservative assessment, which, when used with optimized Corrosion Growth Rates from our CGA^{pro} service, results in a reduction in unnecessary in-field digs and maintenance costs.





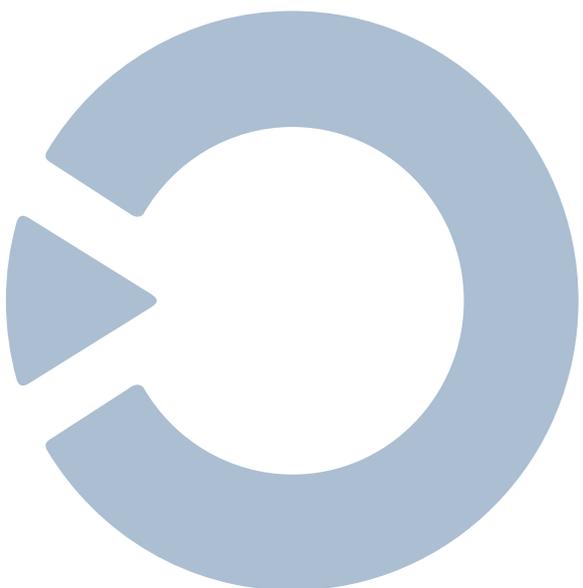
Minimal field verification. Optimal asset performance.

With ROSEN's premium service, RoCorr MFL-A Ultra, every small pipeline anomaly can be detected. Lifelike images of the interior and exterior pipe wall, combined with automated data evaluation, provide a comprehensive and accurate understanding of the pipeline's structure. Corrosion growth assessments based on ultra-high-resolution inspection data result in highly exact corrosion rates. This in turn allows for improved integrity assessments that actually reflect reality, ultimately avoiding unnecessary dig-ups and enabling you to tap the full potential of your assets.

Therefore, RoCorr MFL-A Ultra not only **minimizes field verification expenses**, but also **optimizes your assets' performance**.



Repair Program Costs
Standard Resolution Data versus
Ultra-High Resolution Data



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