framatome

Visual Inspections in Rough Environments

with Remotely Operated Vehicles

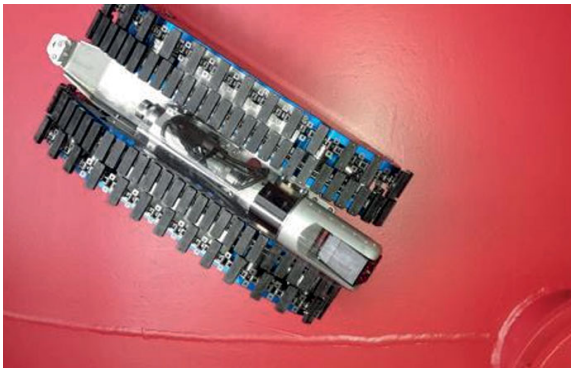
For industries like offshore, oil and gas, and refineries, remote-controlled performance of inspections becomes more and more important. With our long-standing expertise, we provide remotely operated vehicles (ROVs) tailored for various applications.

Challenge

Rough environments with limited accessibility for operators or service personnel require remote-controlled inspection solutions. The applicability of manipulators or ROVs is subject to various pre-conditions.

Dedicated equipment is needed considering specific parameters like:

- Access to the geometry of the inspection area (e.g. pipe, tank, structures of special design)
- Wall material and wall conditions (ferrite, non-ferrite, liners, coatings)
- Medium (air, water, oil, explosives).



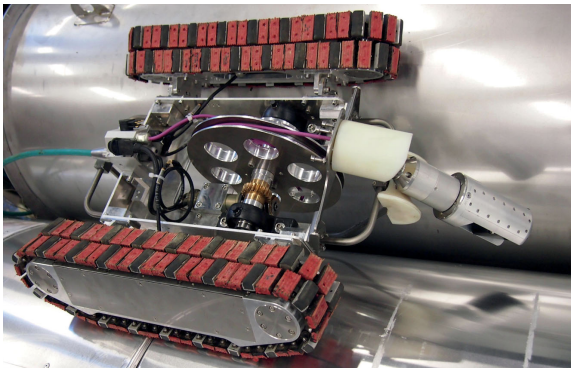
Universal crawler for inspection

Solution

We have developed different types of ROVs, crawlers and submarine systems. They are applicable onshore and under water:

- Modular Crawler System KRA390 for various purposes
- ISOMER – Inspection System Offshore Magnetic Examination ROV
- In-pipe manipulators
- SUSI – Submarine System for Inspections.

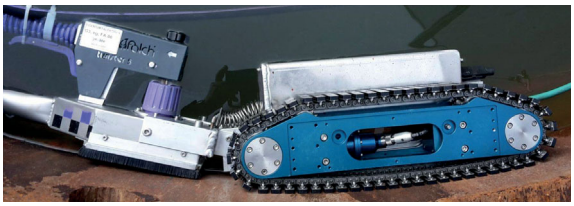
Tailored solutions can be provided for special inspection purposes.



KRA390 on top of pipelines (heat distribution network)

Customer benefits

- Rapid and highly reliable inspection performance
- Universally applicable multi-purpose equipment family with different camera systems, non-destructive examination (NDE) solutions and specific probes
- Experienced and certified operators



KRA390 with cleaning and suction device

Your performance
is **our** everyday **commitment**

Technical information

Modular Crawler System KRA390

Basic design containing two independent drives with rubber or magnetic chains

- Weight: < 20 kg; load (magnetic wheels): > 25 kg
- Variable speed: maximum 70 mm/s
- Cable length: 170 m

Wide variety of add-ons for:

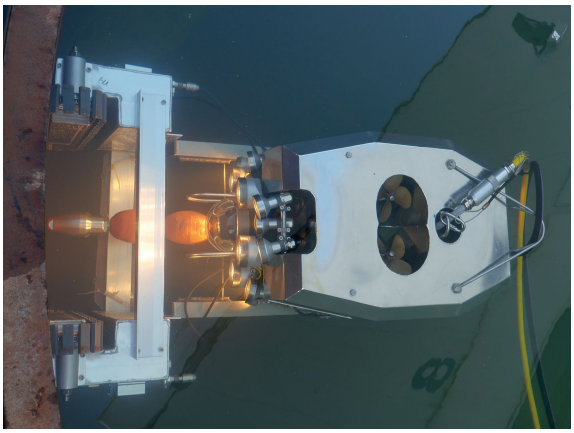
- Pre-cleaning of inspection areas with high-pressure water jets or brushing system
- Visual testing (VT) with HR and HD cameras
- Eddy-current testing of surface cracks
- Ultrasonic testing for wall thickness measurements
- Other probes for pH and conductivity or gamma dose rate measurement

ISOMER

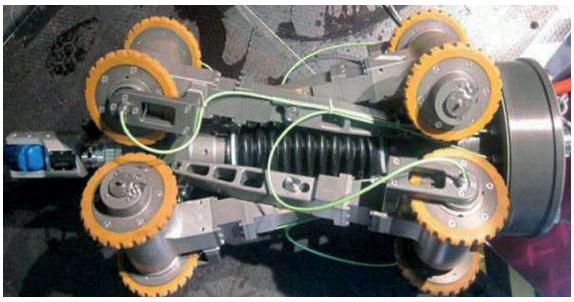
Combination of submarine carrier system and magnetic crawler for performance of weld inspections inside pile structures

In-pipe manipulators

- Application range: pipe inner diameters (IDs) from 50 mm to 1000 mm
- Horizontal and vertical movement
- Passing elbows with bending radius ≥ 1.5 x ID



ISOMER for weld inspection inside pile structures



In-pipe seawater manipulator for IDs from 550 to 780 mm

Key figures

More than **15** years of experience with ROV applications in nuclear sites worldwide

Inspection, NDEs and cleaning of about **10** km of industrial piping performed

References

Application of ROVs in about 40 nuclear power plants worldwide. Execution of standard recurrent visual inspections and NDEs as well as tailored solutions for cleaning, removal of foreign objects and repair.

ROV applications in industry:

- Urban heat distribution network inspection and leakage localization
- VT on offshore wind turbine piles in the North Sea
- Visual inspections during refinery shutdown
- Harbor sheet pile wall cleaning
- Pile segment cutting

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