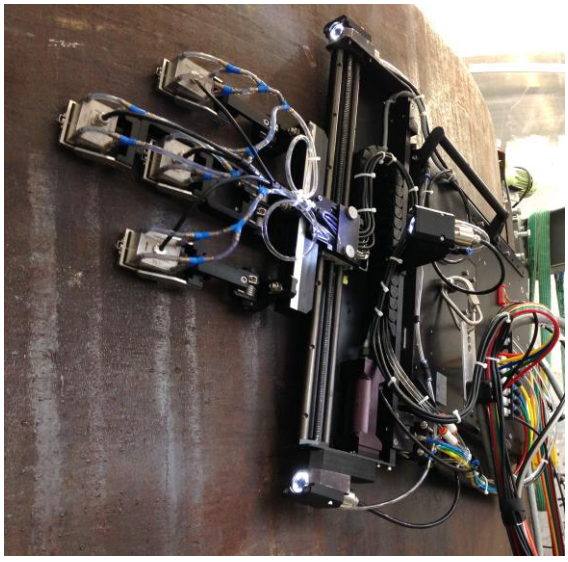
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Reactor vessel inspection from the outside with MAGNUS

Magnetic crawler system for mechanized NDE

Magnetic crawler system for the mechanized NDE of vessel welds and base material applicable on all kind of ferritic components.



MAGNUS system moving in horizontal direction on a vessel
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Challenge

Poor accessibility, limited clearance and high dose rates are challenging for the inspection of safety-relevant components inside nuclear power plants.

Inspecting vessels can also be complicated by uneven component surfaces and obstacles that obstruct the path of the inspection system.

Solution

Framatome's magnetic crawler MAGNUS is a highly flexible, fast to setup and modular inspection system for all kind of vessel inspections from the outside. With small adaptions of the system, spherical parts can also be inspected. Foremost designed for UT inspections, the device is adaptable to performing ET and VT inspections.

A wide range of linear axes and probe holders can be attached to the crawler depending on the inspection task. Due to its low height, MAGNUS can fit in gaps as small as 120 mm, or even less. Strong permanent magnets keep MAGNUS attached to the vessel, even in the case of power failure.

The combination of encoders on the MAGNUS scanner and the application of a LiDAR sensor ensures a high positioning accuracy and traceable measurements.

Thanks to MAGNUS' high lifting capacity, even large UT probes can be moved precisely. MAGNUS is even capable to carry a multi-probe UT system.

Customer benefits

- Highly flexible inspection system for all kind of reactor vessels
- No guide rails needed
- Small build height to crawl even through the narrowest openings
- Adaptable to different phased array UT probes and probe holders
- Easy to deploy and fast to setup
- Precise movement in all directions
- Lower dose for inspection personnel due to remote control

References

- **Finland:** Olkiluoto 1 & 2 (BWR), RPV inspection
- **Sweden:** Ringhals 1 (BWR), RPV inspection
- **USA:** Enrico Fermi 2, Nine Mile Point (BWR), RPV inspection

Contact : examination@framatome.com
www.framatome.com

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