framatome

# Surface and volume inspection of hardfacing and sealing welds

## Eddy Current Inspection

**Save time and costs by identifying cracks of welds on the surface and in volume by eddy current testing (ECT).**

## Challenge

For NPP engineers it is always a challenge to estimate the surface testing time during the maintenance of there components e.g. valves, pumps, etc.
In this context the waiting time of the maintenance personal during the conventional surface testing (Penetrant Inspection) is on the critical path for the maintenance task.

## Solution

Framatome experts uses a special solution of self developed ECT probe. This probe has several advantages: Two cross-wounded coils paired in differential mode with self compensation and reduced lift-off effect. In this arrangement a simple and fast detection of flaws in radial and circumferential orientation is possible.
For the precise manipulation of the probes special tools are used. Experts from Framatomes using also special testing blocks with surface cracks and embedded defects. Essential for calibration is the ligament of the embedded defects.

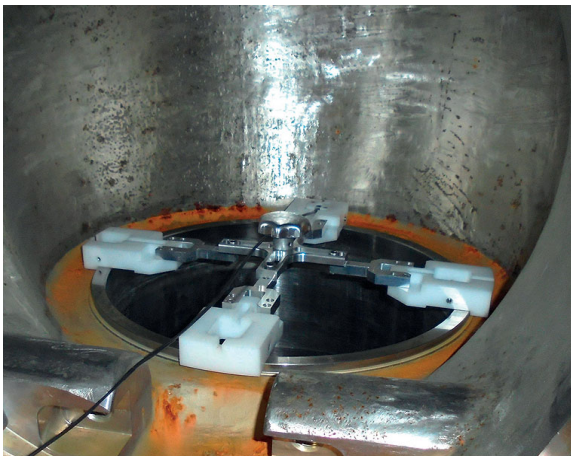
The ECT system uses four functions with specific tasks to cover the defined inspection volume, consisting two functions for the surface (high frequent induced magnetic field provides detection of small defects near the surface) and two for the volume (magnetic field of low frequency penetrates deep into the material and allow detection of embedded defects). In the calibration process each function has to be adjusted in gain and phase.

## Key figures

- No chemistry necessary and no waiting time
- Inspection of weld width from 3 – 39 mm and depth from 0 – 2,5 mm
- Examined surface roughness should better than 6,3 µm

## Customer benefits

- Detection of surface cracks and near-surface volume defects
- Saves time and costs
- Time for data collection 3 to 10 minutes it depends on the geometric and size of component
- Service from root cause analysis to repair of detected defect in the hardfacing and sealing weld
- In the In Service Inspection the data are full comparable to the last inspection
- Safety of components



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is **our** everyday **commitment**

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