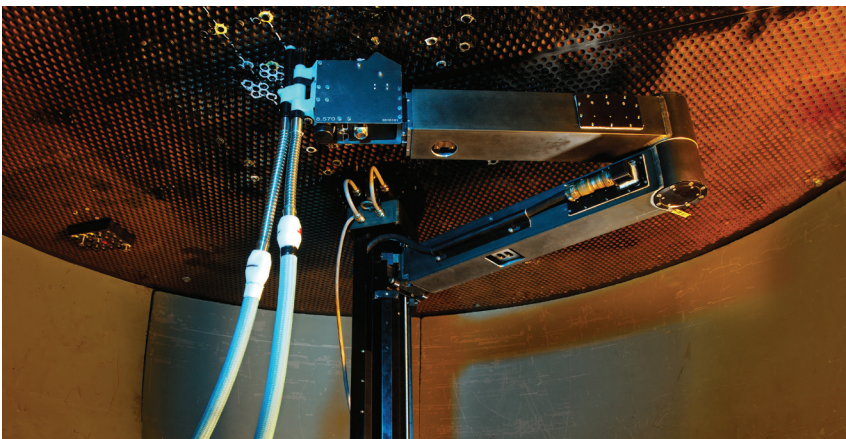


Steam Generator Inspection and Repair

RANGER Manipulator

Advanced technology in a lightweight robot



Challenge

Plants need a proven approach for Steam Generator Non-Destructive Examination (NDE) and repair.

Solution

A Global Approach to Steam Generator NDE

Nuclear plants around the world are gaining confidence in optimizing their SG outage performance, thanks to deployment of Framatome's RANGER steam generator (SG) robot. RANGER maximizes flexibility to support multiple outages and take advantage of global experience as well as NDE best practices.

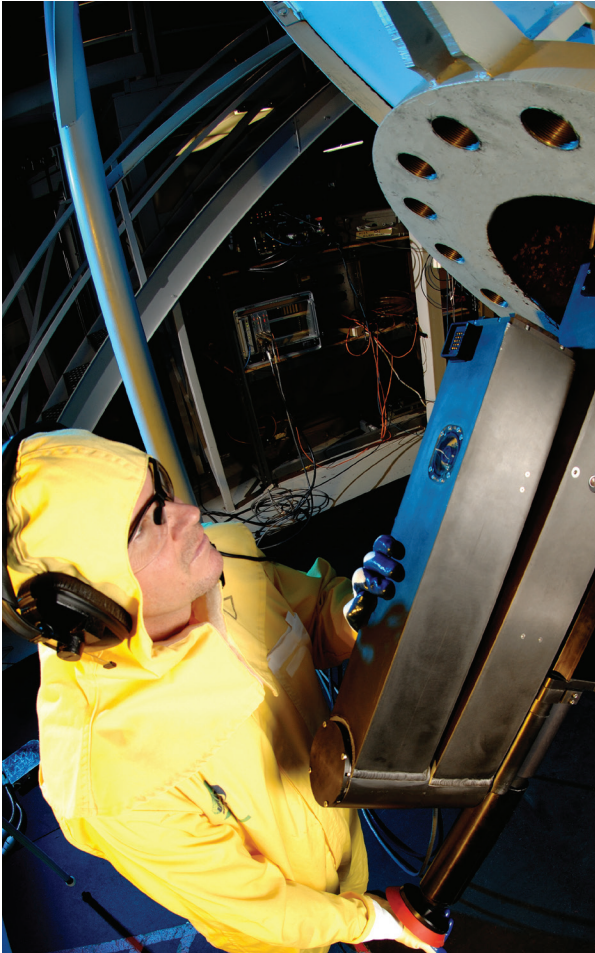
Redundant Tube Identification to Meet EPRI Guideline

The integrated machine vision system recognizes tubes as they enter the arm camera field of view. Tool-tip position is calculated and compared to the tool-tip position determined by the arm encoders. This completely redundant and independent approach to tube ID verification virtually eliminates the possibility of improper tube encoding.

Customer benefits

- One-piece design remains folded until installed, then unfolds in the SG for use
- Manway reach allows quick low-dose tool change
- Fully intuitive — graphic screen controls coupled with Eddy Current acquisition software allow the inspection to progress smoothly with minimal burden to the operator
- Ability to withstand high-pressure washing for decontamination
- Compact control-box design allows for plugging or the addition of audio/video plug-in modules within a small platform footprint
- Performs eddy current inspection automatically from a programmed tube inspection list
- Can return to previous inspection candidates in seconds — even in a distant quadrant, allowing faster closeout
- Requires no arm breaks to reach inspection locations, saving time and dose over past manipulator designs
- Seamlessly interfaces with all Eddy Current and repair processes
- Local control hand-held pendant allows for basic functional checkout and installation without the need for an operator at the remote computer station

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



Set up, Inspect, and Leave Site Quickly

- Requires only one platform worker for easy installation of the light-weight arm, consuming less than 1/3 of the personnel exposure compared to earlier manipulators
- Preserves your schedules and allows Framatome teams to support more customers during busy outage seasons
- Saves time and dose, reduces peripheral equipment, and reduces customer requirements for site support

Utilities can be confident in results from RANGER — a fully intuitive SG robot that seamlessly interfaces with all Eddy Current and repair processes.

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