

## Foreign Object Tracking System for Steam Generators

Framatome's advanced Foreign Object Tracking System (FOTS) helps more closely locate, track and disposition foreign objects during steam generator secondary side inspection (SSI). New innovations and enhancements enable more effective integration with our visual inspection enhanced work system (VIEWS) and support for faster eddy current testing (ECT).

### Challenge

Foreign material on the secondary side of steam generators can oscillate to cause tube damage that can lead to leakage. Steam generator tube leakage may force the plant to shutdown to address the issue. Utilities need to integrate data from both primary and secondary inspections to facilitate loose part identification and removal. Removing foreign material during routine maintenance may prevent forced shutdowns, loss of power and revenue.

### Solution

Framatome's FOTS provides confidence for complete loose part removal by integrating ECT inspection results with secondary side visual inspection (VI) data to form a centralized repository for reporting and resolving possible loose part indications (PLPs), facilitating easier access and utilization. FOTS automatically defines PLPs, pinpointing both the tube number and specific location, and automatically identifies the tubes bounding the PLPs. Graphic, video, and other document files are available for convenient viewing and reference, while the ECT inspection plan and associated results for affected and bounding tubes are displayed, allowing for accurate assessment of required actions. A single and controlled access source for foreign object data supports and enhances a reliable process for tracking and resolution of PLPs. Further enhanced through auto-location SSI robotics, FOTS provides descriptive quantification (component material, size and mass) of a foreign object, and significantly reduces the probability of errors when mapping foreign object locations.

### Customer benefits

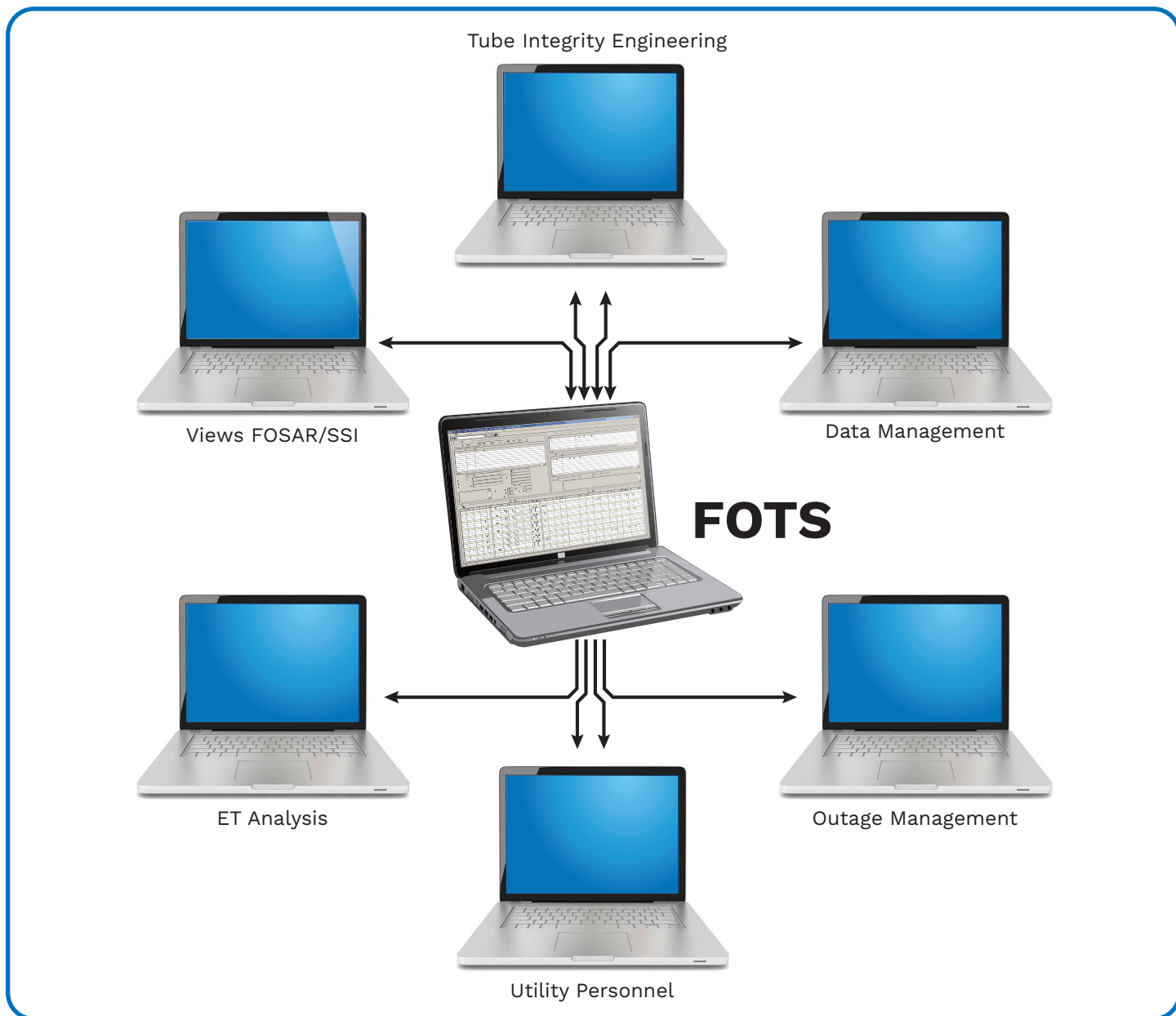
- Previous PLPs stored in the FOTS system, facilitating pre-outage planning for SSI activities
- Replication technology mimics distributed processes for quicker delivery of results
- Streaming opportunities available through ECT data management suite
- Addresses network and power interruptions and backs up data
- Integrated link with AIDA software within FOTS, reducing analysis time

The screenshot shows the Framatome Foreign Object Tracking System (FOTS) software interface. The interface is divided into several sections:

- Foreign Object Item:** A form for entering details about a foreign object, including Location, Shape, Size, and Material.
- ECT PLAN:** A table showing the planned eddy current testing (ECT) for various tubes. The table includes columns for Tube No., Location, Shape, Size, and Material.
- ECT RESULTS:** A table showing the results of the ECT testing, including columns for Tube No., Location, Shape, Size, and Material.
- Comments:** A section for entering additional information or notes about the foreign object.

The table data is as follows:

| Tube No. | Location | Shape | Size | Material |
|----------|----------|-------|------|----------|
| 7        | 1        | A     | N    | PLS      |
| 9        | 2        | A     | N    | INC      |
| 5        | 1        | B     | N    | INC      |
| 6        | 2        | B     | N    | INC      |
| 7        | 3        | B     | N    | INC      |
| 9        | 3        | B     | N    | INC      |
| 10       | 2        | B     | N    | INC      |



FOTS integrates multiple databases for a clear picture of PLPs

**New more robust communication among the integrated systems for more automated resolution of PLPs and between primary and secondary activities.**

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