

ENHANCED MAST SIPPING EQUIPMENT

Enhanced online technique for identifying leaking Fuel Assemblies during core unloading and/or shuffling

The worldwide used sipping technology has been enhanced by Framatome to meet the requirements of power plants in a sustainable manner

Challenge

Gaseous fission product released from leaking fuel into the reactor coolant system is the first indicator that the fuel operation in the core is defective. The challenge is to detect efficiently the faulty Fuel Assembly in the core to shorten the impact to the outage schedule.

Solution

The eMSE is a modern and easy-to-use piece of equipment which can be used in all PWR, BWR and VVER reactors. Here, we offer our enhanced Mast Sipping Equipment (eMSE).

- During the unloading or shuffling of the fuel assembly by the refueling machine, the eMSE separates the water sample and analyzes the gaseous fission product.
- The user-friendly interface of the in-house developed software supports the operator during the Sipping process.
- The operator gets real time Sipping results (sound or leaker) without additional holding time during the fuel handling.
- Framatome offers to sell or rent this equipment.
- Depending on your needs, Framatome will support you with highly qualified Sipping experts.

Customer benefits

- No additional holding time during fuel handling
- Real time evaluation and documentation of the results
- Increased detection factor
- Operator radiation exposure is reduced utilizing remote control operation
- Maintenance-friendly design of the eMSE
- Framatome support over the life cycle

**Your performance
is our everyday commitment**



eMSE: general overview

Technical information

The modular eMSE is now smaller, lighter, and more efficient:

- the new and qualified degassing technology increases efficiency by a factor of 3
- Redundant detectors designed for gas measurement ensure test reliability
- In-house development by Framatome ensures sustainable, lifetime support
- Remote control fiber optic connection

Key figures

54 NPP's, including the latest EPR versions, already operate the Framatome Sipping technology worldwide

99,9% of leaks were detected during usual Sipping campaigns

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