framatome

# Flooding Protection

## Safety Upgrade to Prevent Flooding Damage

### Evaluation, analyses and countermeasures to mitigate potential flooding risks and prevent future damages

## Challenge

Both nuclear reactor and spent fuel require constant cooling. To fulfil those inherent needs, nuclear power plants (NPPs) must be built in proximity to a virtually undepletable source of water. While the proximity solves the cooling issue, it introduces a set of new challenges. Be it a lake, river or the ocean, all are prone to occasionally flood surrounding areas of land as a result of geological or climate events.

Power plants located in inundation areas can suffer significant damage to electrical systems and components in the event of flooding. Damage to pumps can even result in loss of ultimate sink and the plants cooling capability.

## Solution

Framatome performs systematic evaluations of external and internal flood hazards based on site characteristics and type of NPP. Through studies and analyses of these potential flood hazards, appropriate countermeasures can be defined. In order to stay compliant with changing rules and regulations, existing systems can be upgraded and requalified.

With adequate countermeasures in place, the risk of systems and components getting damaged in the event of a flood is greatly reduced.

## Customer benefits

- Prevents loss of ultimate heat sink and cooling capability for reactor and spent fuel pool in case of external and internal flooding
- For all types of reactors: pressurized water reactors including VVER reactors, boiling water reactors and CANDU plants

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

Silicone sleeve for pipe wall penetrations

Cable wall penetrations

## Technical information

Typical proceedings and measures are:

- Engineering studies
- Safety analyses
- Securing flood-protected residual heat removal from reactor core and spent fuel pool
- Definition of system-specific countermeasures based on leak detection systems to limit internal flooding risk
- Procurement of flooding-proof components
- Immersion tests and qualification

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