Flood-Proof Motors
Prevent the loss of vital pumps

Ensure sufficient cooling in case of flooding even under severe accident conditions

The challenge
The objective of any plant operator is to prevent the loss of important drives, as they may occur after a large cooling pipe break or in case of externally caused flooding.

The solution
Use AREVA’s scalable drive system solutions to prepare your system for a flooding of at least 6 meters. The system consists of a waterproof motor, cabling and junction boxes. Get an all-in-one solution from one supplier:
The initial task analysis, system design, testing, delivery, installation and commissioning will be performed professionally by our experienced engineers.

As your partner for new installations as well as modernizations AREVA can also provide you with the related pumps, piping, leak detection and automatic train shutdown, non-return valves, etc. This also includes water-jacket-cooled submersible motors, including water-tight cable connections and water-tight terminal boxes.

Essential technical features:
- Tested and approved design for safety-related low and medium voltage motors of 110 - 400 kW
- Motors will be tested for operability under LOCA conditions: humidity > 95%, pressure 1.1 bar absolute, duration 2 hrs
- Use of LOCA-qualified materials
- Approved system (pump + motor + cable) for operating even under severe flooding conditions. Protection class IP 68-h6 (6 m)
- Water-jacket-cooled motors eliminate heat dissipation from the motor into the room
- Testing was done under water at 80 °C for 3 days, then 11 days at 30 °C
- Analytic functional proof available for continued operation under induced vibration conditions
Flood-Proof Motors

References:
NPP ISAR 1 (Germany):
Delivery of 6 motors:
  Two high voltage motors of the residual heat removal system + one spare part motor (6 kV, 400 kW)
  Two low voltage motors of the secured closed cooling system + one spare part motor (380 V, 110 kW)

Practice experience:
Our teams have a vast range of international experience in the qualification of electrical systems in NPPs in accordance with different nuclear standards including KTA, RCC-E and IEEE.

Your Benefits at a Glance

• Important pumps in emergency systems remain in operation even under water and after LOCA
• Reduced risk of loosing cooling pumps due to flooding
• A specialized team with the latest experiences and skills ready to implement new installations and upgrades of installed pumps
• Apart from the appropriate hardware components, AREVA offers you a complete solution covering all engineering disciplines and considering your plant’s special requirements

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Motor testing temperature curve

Winding temperature
Bearing AS
Bearing BS
Water temperature
Room temperature

Safe and reliable power plant operation requires the use of adapted components