framatome

Severe Accident Management

Dedicated Operating Strategies for Severe Accident Scenarios

Clearly structured and easy-to-use guidelines for mitigation of severe accident consequences and minimization of radioactive release

Challenge

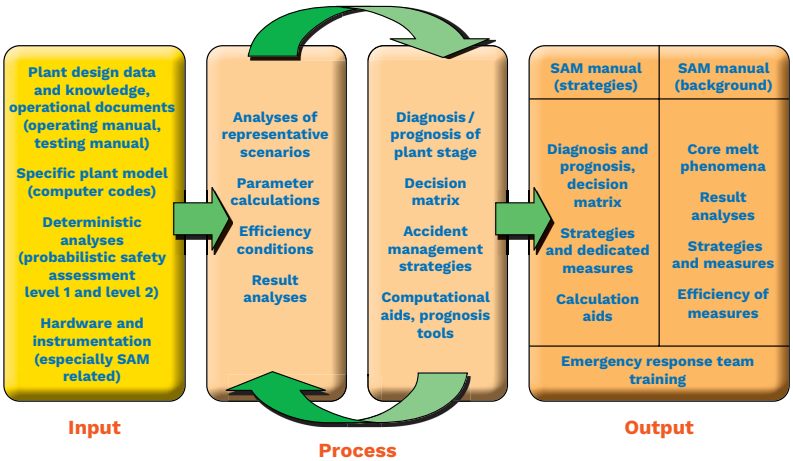
In response to nuclear accidents with unacceptable release of radioactive fission products, regulatory institutions worldwide strengthen their requirements not only regarding prevention but also mitigation of such events. For an effective accident mitigation, diverse aspects are paramount, e.g. plant status before the accident, different accident phenomena, effects on multi-unit plant sites, external support or use of mobile equipment, impact of human factor and many others.

Operators and crisis teams in nuclear power plants (NPPs) must have clear, easy-to-use guidelines. Their purpose is to help mitigating the consequences of a severe accident and to minimize the release of radioactive substances.

Solution

We provide an integrated and unified concept to strengthen the severe accident resistance and mitigation capacity of nuclear facilities (including NPPs, research reactors, as well as front-end and back-end facilities).

Focusing on existing NPPs, we offer an integrated severe accident management (SAM) package for the implementation or upgrade of SAM guidelines and procedures.



Principal workflow for the preparation of SAM guidelines and procedures

Customer benefits

- Mitigation of severe accident consequences and minimization of radioactive release
- Clearly structured, easy-to-use guidelines, adjustable to the existing power plant design
- Easier decision making for emergency response teams as accident management measures are prioritized correlating to plant status
- Computational aids complement available information from instrumentation and monitoring systems and facilitate emergency response team activities

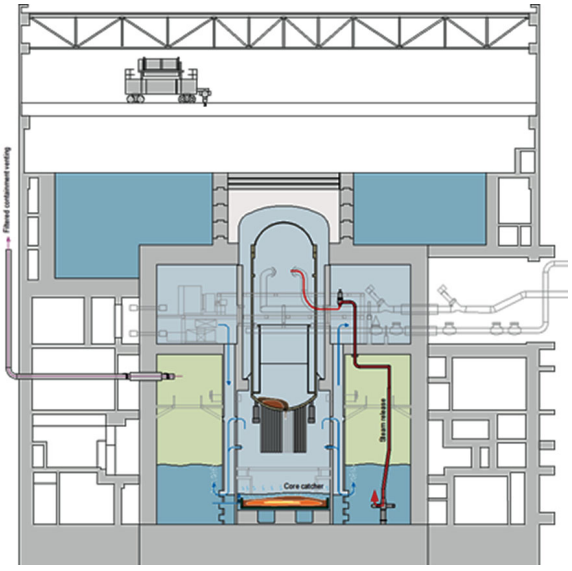


Illustration of severe accident conditions based on MELCOR plant simulation

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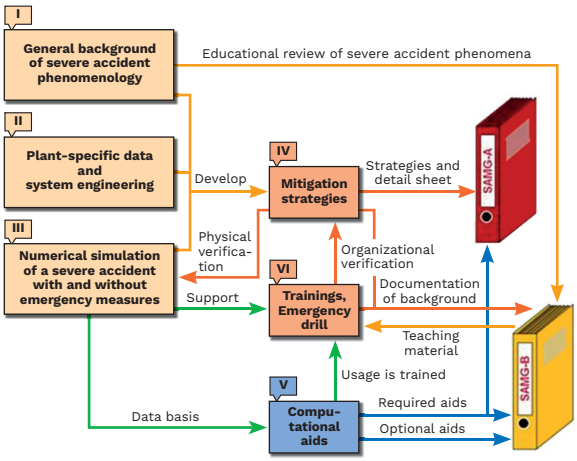
is **our** everyday **commitment**

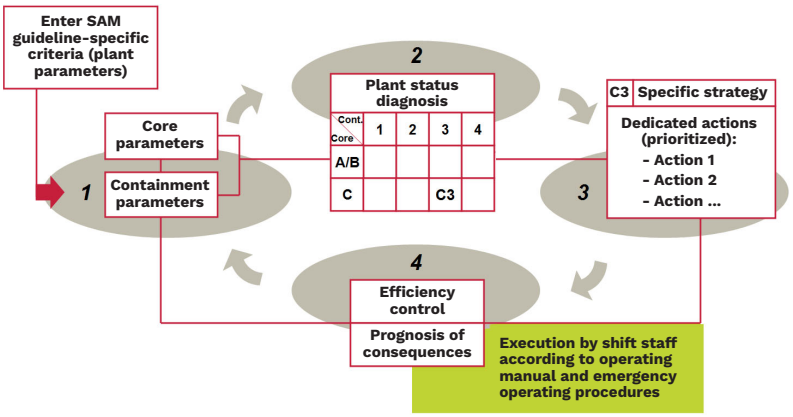
Technical information

The integrated SAM package includes:

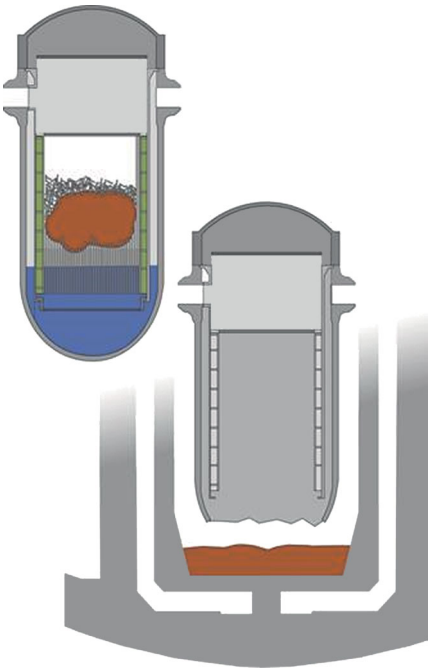
- Optimization of operational concept considering dedicated severe accident systems already installed in a plant
- Plant-specific analyses of severe accident scenarios using MELCOR and MAAP codes
- Elaboration of appropriate accident management strategies (plant-specific or generic)
- Establishment of computational aids to facilitate emergency response team activities
- Implementation of typical Post Fukushima-related topics, such as consideration of spent fuel pool events
- Classroom training and emergency drills on SAM guidelines
- Compliance with IAEA guides and recommendations and European standards



SAM guideline: project overview – basic scope modules



SAM concept: iterative procedure



Core damage states (top: phase A/B – oxidized to badly damaged, bottom: phase C – reactor pressure vessel failure)

References

All German pressurized water reactors and boiling water reactors and further NPPs in Europe and South America.

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