



Choose certainty.
Add value.

Safety assessment of nuclear installations

Evaluate nuclear safety and minimise risk.



Your challenges

As global energy demand increases, safety remains a prerequisite for all types of power generation. Particularly for nuclear energy, safety is of utmost importance. For operators of nuclear power plants (NPP), thorough safety assessments and analyses are required during the entire NPP lifecycle – from design and construction via operation to decommissioning – to demonstrate that hazards are controlled and managed in a safe manner. Regulatory authorities need to ensure that these safety assessments are performed in accordance with national and international standards.

How does safety assessment of nuclear installations benefit regulatory authorities, operators and vendors?

Due to the complex safety requirements for NPPs and other nuclear facilities, regulatory authorities benefit from impartial and comprehensive assessment and evaluation. TÜV SÜD is an independent technical expert that is familiar with different reactor designs and has

experience with the relevant regulations and standards. For operators and vendors, we provide consulting, technical support and international expertise for safety assessments to ensure compliance with regulations and standards. In addition, these assessments will facilitate timely modifications and improvements throughout the plant lifecycle that are vital for ensuring safety, reliability and availability of NPPs.

How can we help you?

TÜV SÜD provides regulatory authorities, vendors and operators with in-depth safety assessments during the entire project lifecycle. These assessments include deterministic analyses of safety systems, structures and components, or risk assessment methods and tools using probabilistic safety assessments as well as safety management and safety culture assessments. We evaluate safety reports, hazard analyses and risk analyses during the design, construction, operational and decommissioning phases. Our objective, impartial technical consulting adds safety and certainty to your projects.



Our safety assessment services

■ **Deterministic safety analysis**

TÜV SÜD provides comprehensive assessment services of the plant's safety concept during the design and operational phase. These assessments cover defence-in-depth concepts including diversity and redundancy of systems and components as well as internal and external hazards. We use thermohydraulic codes to analyse design basis accidents with and without loss of coolant (LOCA) and we assess reactor core design and fuel elements regarding criticality safety. Further assessment areas include safety classification of systems, structures and components, power supply concepts including emergency power supply, aging management as well as severe accident management guidelines (SAMG). By systematically addressing the interactions and interdependencies in the overall plant behaviour, our safety assessments go beyond addressing characteristics of individual components (e.g. strength calculations). We recently added assessment on stress tests of NPPs as a service.

■ **Reliability analysis and risk management**

TÜV SÜD experts assess the balance of plant design and safety concepts with Probabilistic Risk Assessments. We analyse weak points, evaluate countermeasures, perform reliability investigations and availability analysis, simulate plant and system behaviour, analyse the impact of plant changes to the safety level and help to optimise strategies for testing, repair and maintenance. Additional services include hazard analysis, risk analysis and management, risk-informed plant assessment and optimisation, cost/benefit analysis, and systematic Human Factor analysis as well as retrospective incident investigation.

■ **Safety management**

We assess the setup and application of safety management, and provide support in evaluating safety

culture. Furthermore, TÜV SÜD provides consulting and review of operational procedures, including severe accident management guidelines.

Your business benefits

- **Gain an expert partner** – with international expertise, backed by extensive working experience and knowledge of regulations and standards.
- **Apply complete solutions** – with a single source for technical services in line with regulatory requirements.
- **Minimise risk** – by consulting TÜV SÜD to achieve compliance with national and international regulations and standards to identify risks and provide solutions for mitigation and prevention.
- **Benefit from global support** – with almost 1,000 TÜV SÜD nuclear experts in numerous international markets, supporting you with the best possible knowledge.

Why choose TÜV SÜD?

TÜV SÜD is an independent third-party organisation that provides impartial consulting on NPPs. We offer end-to-end nuclear energy consultancy that begins with licensing and continues through to nuclear waste disposal and decommissioning. Our world-class expertise includes extensive knowledge of national and international standards and regulations. With our international reach, we draw upon global best practices whilst taking into consideration the special needs of your local area.

Choose certainty. Add value.

TÜV SÜD is a premium quality, safety and sustainability solutions provider that specialises in assessment, testing, inspection, auditing, certification, training and knowledge services. Represented in over 800 locations worldwide, we hold accreditations in Europe, the Americas, the Middle East, Asia and Africa. By delivering objective solutions to our customers, we add tangible value to businesses, consumers and the environment.

Related services

TÜV SÜD provides the following related services:

- Licensing for nuclear power plants
- Design and construction of nuclear power plants
- Nuclear power plant operation
- Radiation protection
- Nuclear waste management
- Nuclear decommissioning