

## Analysis, Calculation, Dimensioning

### Engineering of Electrical Systems

Comprehensive expertise in analyzing, calculating and dimensioning of Electrical Systems and auxiliary components

#### Challenge

The operation of a NPP with respect to their economic reliability and safety aspects often require careful dimensioning of systems and components. To ensure this, the support of a competent partner is highly recommended

#### Solution

Framatome offer their technical expertise, gained during their international long-term experience with all types of NPPs, as well as conventional plants.

Applying this knowledge, we are able to provide all consulting services throughout the lifecycle of the NPP, beginning with the conceptual design phase up to the operation phase. We also provide the necessary documentation in accordance with both customers' and Framatome's internal quality assurance requirements.

#### Customer benefits

- Ensures the safety of nuclear plants and the compliance with regulations
- Improves lifecycle support modernizations and LTO
- Increases robustness in case of irregularity or severe accident
- Increases plant security
- Reduces downtime with rapid implementation

The collage displays five technical documents:

- Data Collection and System Analysis:** A document with a table titled 'Berechnung der NS-Schaltzeiten' (Calculation of NS Switching Times) showing columns for 'Ereignis' (Event), 'Auslöser' (Trigger), 'Zeit' (Time), and 'Anzahl' (Number).
- Short Circuit Analysis:** A document titled 'Short-Circuit Calculation' showing a circuit diagram with various components and their ratings.
- Selectivity Analysis:** A document titled 'Selectivity Analysis' featuring a graph of current (I) versus time (t) for a 400 V system, showing the coordination between different protection devices.
- Load Follow Analysis:** A document titled 'Load Follow Analysis' showing a complex circuit diagram with numerous components and their ratings.
- Cable Dimensioning:** A document titled 'Cable Dimensioning' showing a table with columns for 'Cable', 'Length', 'Cross-section', and 'Material'.

## Technical information

### Consulting

Providing technical/economical concepts, tailored to specific requirements, considering the applicable regulations and guidelines at the time

### Conceptual design

Dimensioning of systems according to predefined requirements

### System design

Analysis and dimensioning of electrical systems based on long-term experience and knowledge

### Dimensioning

Accurate design of equipment and components for high availability under economic and safety aspects

### Analysis

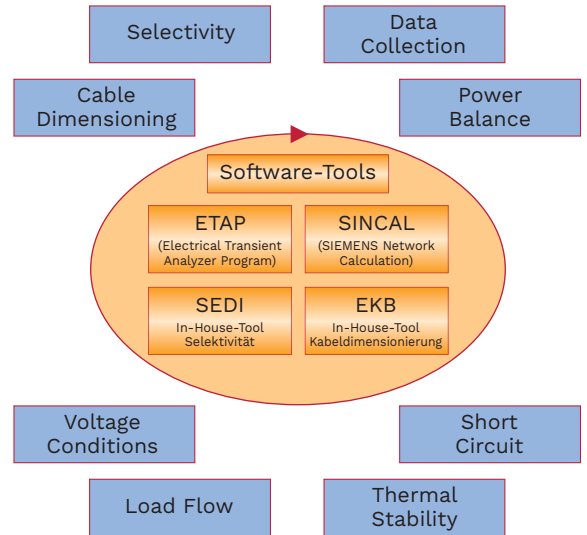
Selectivity study and determination of protection relay settings Priority analysis of the sequentially load connections

### Calculation

Short circuits, simultaneous voltage drop and load flow and motor start analysis under normal and emergency conditions

### Tools

Usage of nuclear qualified calculation tools and in-house developed tools



One Stop Services

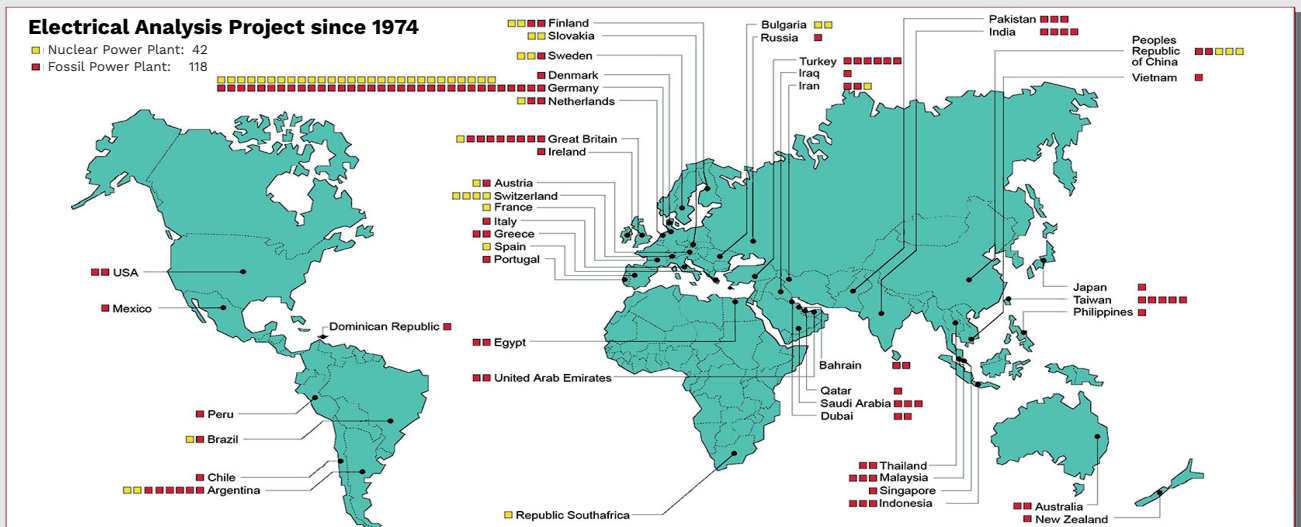
## Key figures

**40** years experiences in Analysis, Calculations and Dimensioning of Electrical Components, Protection and Cables.

**160** power plants in our reference lists

**100.000** and more Components and Cables are analyzed and dimensioned

## References



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