

A large, bold, red version of the AREVA logo is centered on the page. It features a stylized 'A' with a diagonal slash, positioned above the word 'AREVA' in a bold, sans-serif font.

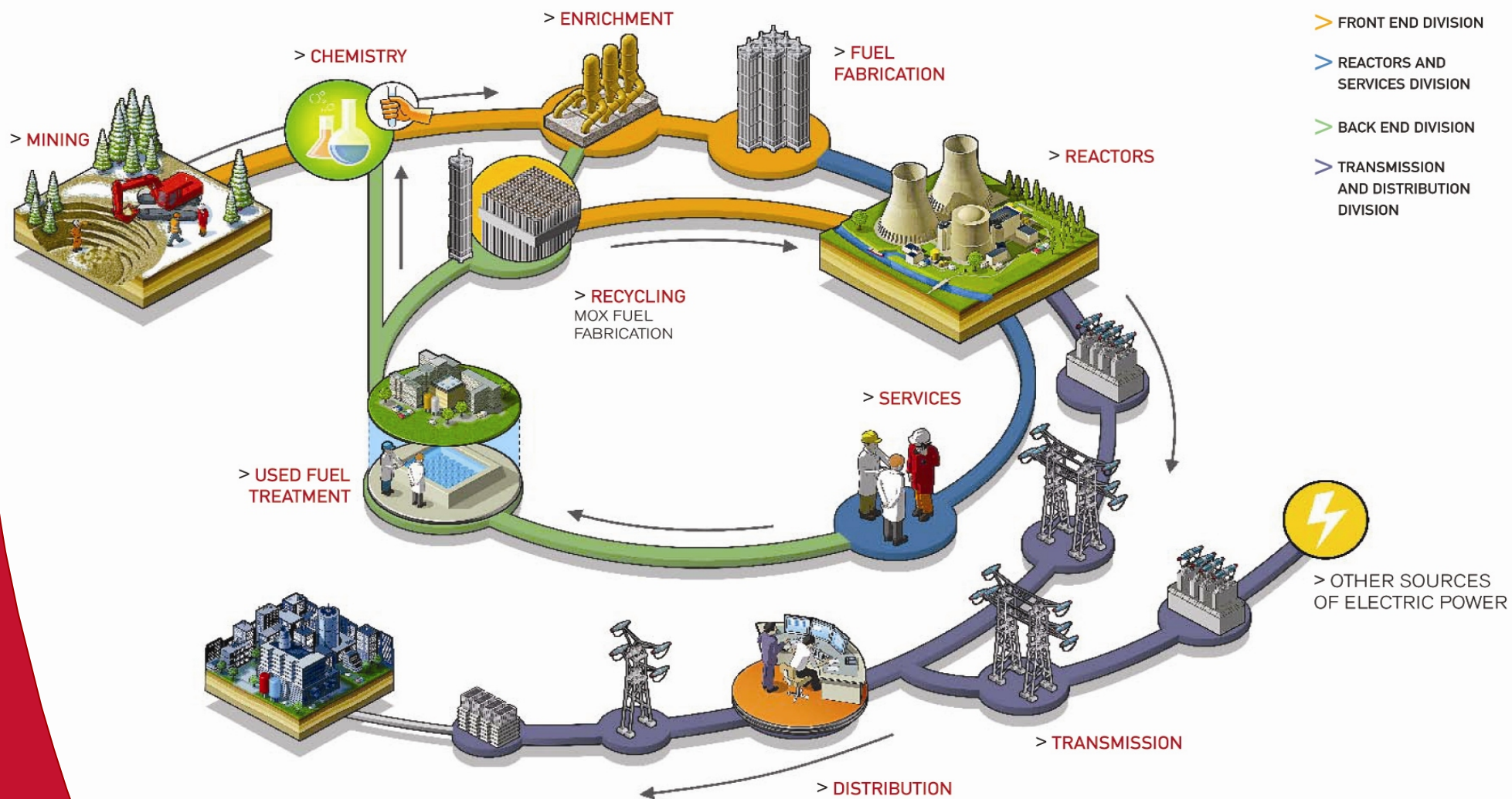
Overview of Framatome ANP Activities at I&C and Electrical Systems

Dirk C. Hopp

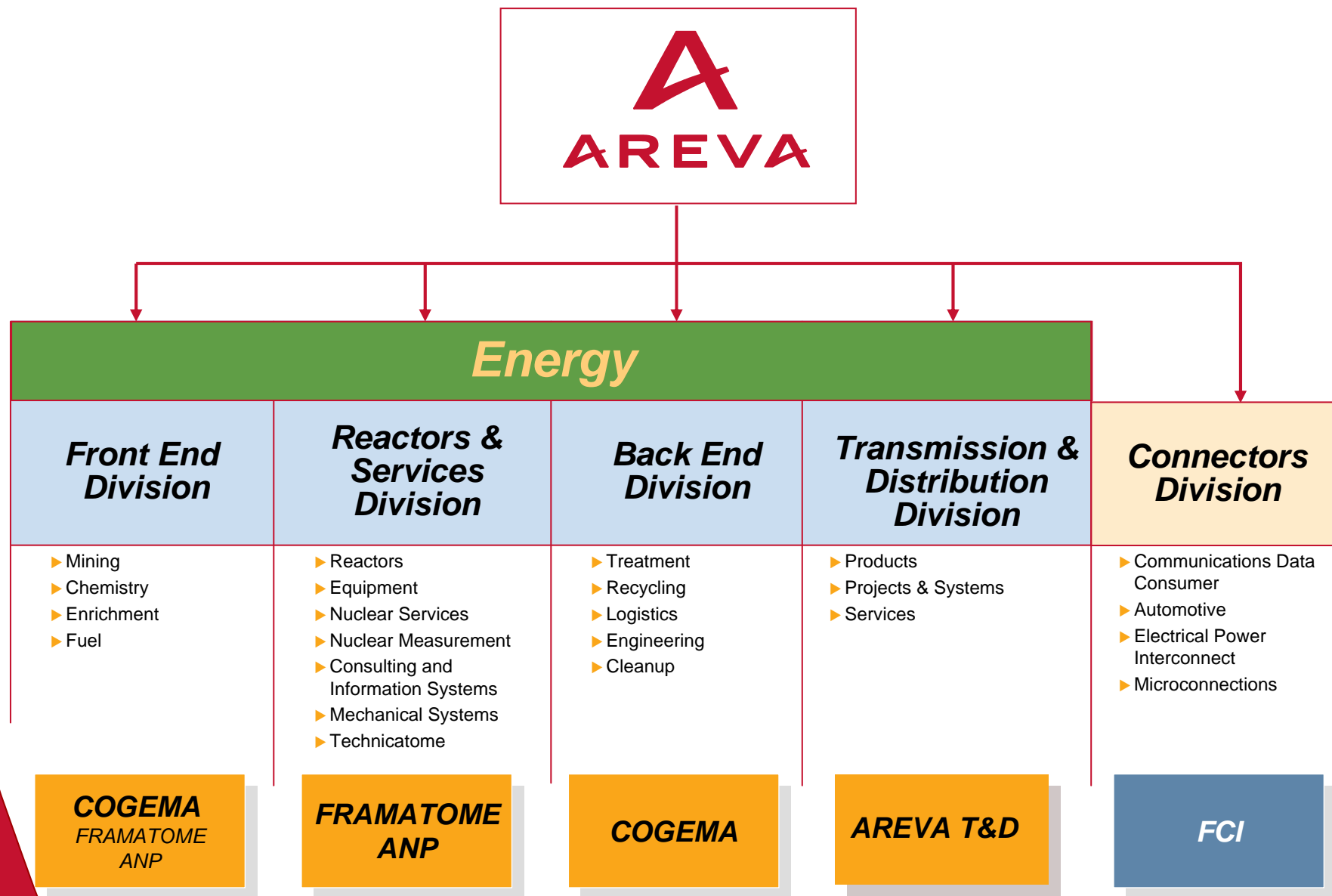
Electrical Engineer Masters Degree

Framatome ANP – NGLE Ref. 2

Overview AREVA-Group and Department NGLE



Organization of AREVA



NGLE – Electrical Systems

NGL Kraft
Safety I&C, Electrical Systems

NGLE Dr. P. Weber
Electrical Systems

NGLEE Hauser
Electrical Systems, Erlangen

NGLE Ref. 1 Stinshoff
Special Tasks (NPP Kozloduy 5/6)

NGLEO Kunkel
Electrical Systems, Offenbach

NGLE Ref. 2 Warnken
Qualification of I&C and Electrical
Components, Lifetime Management

NGLEA Metze
Cable routing / Software-Tools

OL3 Sobott
Electrical Systems

Activities *NGLE Ref. 2*

Activities NGLE Ref. 2 Overview



- > Ageing Management**
- > Life Time Management and Life Time Extension**
- > Basic Principles and Performance of LOCA Qualification**
- > Basic Principles and Performance of Seismic Qualification**
- > On-going Qualification of LOCA Qualified Equipment**
- > Basic Principles of Software Qualification for field devices**
- > Continuous Support of German NPP Customers in the Field of Spare Parts Obsolescence**

Activities NGL Ref. 2 Ageing



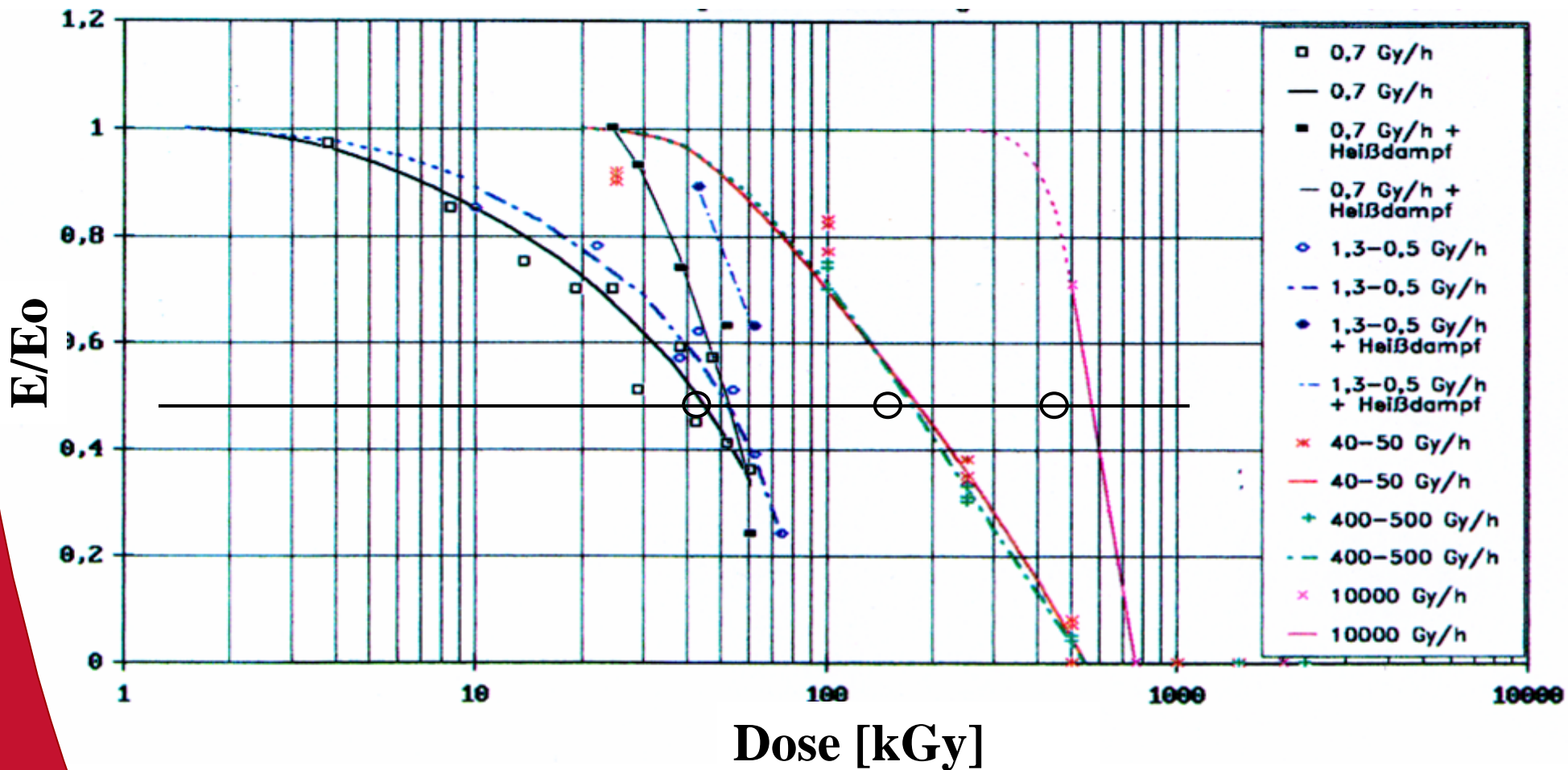
- > Analyzing the qualification documents (if there are any), looking for “qualified life time” values (temperature and radiation) and
 - Activation energies (according to Arrhenius Law)
 - Dose rate effects
- > Measurement of operational thermal and radiation loads for relevant locations (in parallel to cables)
- > Deriving remaining qualified life time corresponding to the local operating condition

Activities NGLE Ref. 2 Lifetime Extension 1/3, Cables

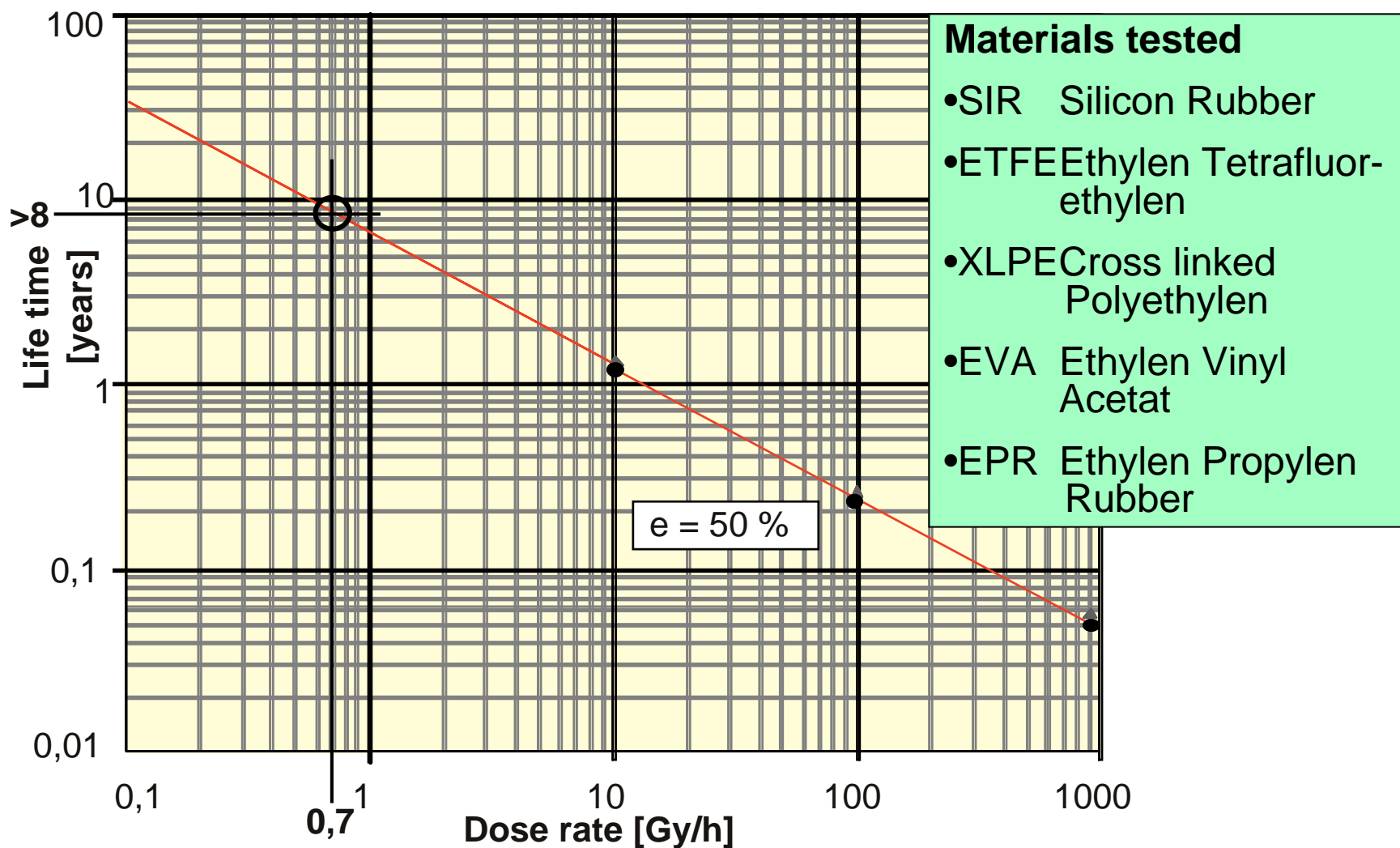


- > **Determination of sensitivity against temperature and radiation primarily based on experimental results, determining**
 - **Activation energies (according to Arrhenius Law)**
 - **Dose rate effects**
- > **Measurement of operational thermal and radiation loads for relevant locations**
- > **Deriving life time prediction values by comparing / analyzing the results achieved**

Activities NGLE Ref. 2 Lifetime Extension 2/3, Cables



Activities NGLE Ref. 2 Lifetime Extension 3/3, Cables





**Check of LOCA parameters of a used 1.1 MW motor
under laboratory conditions**

Basic Principles and Performance of LOCA & Seismic Qualification

- > **Define test requirements derived from national and international standards by reading between the lines**
- > **Specifying and performing tailored tests deriving test objectives from the basic safety function of the sample to be qualified**
- > **Member of respective national and international standardization bodies**
 - IAEA
 - IEC
 - KTA
- > **Support and performance of the conceptual design for NPP OL3 in Finland (formerly known as Finland 5)**

Activities NGLE Ref. 2

Basic Principles of Software Qualification for field devices

- > **Development of basic requirements for Software Qualification of software-based field devices**
- > **Similarly activities for the project OL3 in Finland together with the customer TVO and the finish authority STUK**
- > **Currently we qualify the digital protection device 7SJ62 from Siemens PTD PA, Berlin. Scope:**
 - **Clarification of the used functions and safety importance**
 - **Hardware analysis**
 - **Extended process and product audit to check the development process of the used software (reviewed by German Assessors)**
 - **Inspection of the source code (together with German Assessors)**
 - **Integral test of the device for the used functions (with the insight of the source code)**



Activities NGLE Ref. 2 ***Support of German Customers - Spare Parts Obsolescence***



- > On behalf of the German utilities we are responsible for maintaining product qualification of electrical components for German NPP's**
- > Therefore we consult the committee “Qualification of I&C and Electrical Components” of the German utilities (organized in the VGB)**
- > We perform process and product audits of manufacturers of safety important components to ensure the equality of current manufactured components to the formerly qualified components**
- > Furthermore we are responsible for the availability of valid qualification certificates of safety important components for German NPP's**