

Paris Session 2022



Submarine cables, Life data Challenges and Modeling

SC B1 Insulated Cables – PS3 – Q4

Abbas LOTFI, Norway



Lifetime data, challenges and requirements

- *In order to get an acceptable estimation of reliability function:*
 - *Same types of cables*
 - *Independent and identical operational and environmental conditions*
- Many influencing factors must be considered:
 - Cables population size for different types, technologies and voltage levels
 - Age of cables at failure
 - *Failure causes*
 - *Route restriction*
 - *Repair preparedness plan*

Lifetime data, challenges and requirements

- General challenge: Lack of data with required details
 - Due to more strict testing conditions of submarine cables, failures are rarely occurred
 - As a matter of fact, the repair of submarine cables is case-specific to high extent that it is normally difficult to draw a figure for the repair rate
 - Confidentiality and sensitivity of the data for operators and owners
- Model based methods, both data-driven and physical, are required for estimation of failure rates and repair times in the wake of emerging IT technologies such as IOT, Sensors, etc.

Lifetime data, challenges and requirements

- Failures in submarine cables can be categorized in **high impact, low probability**
- This can be considered in the concept of system **resilience**, which takes account all hazards and events, preparation and measures prior to, and corrective and restoration operations during and after an unwanted event.

