The European Utility Requirements

Position from EUR Working Group for “ENTSO-E Network Code for Requirements for Grid Connection applicable to all Generators”

ENTSO-E User Group Meeting, Brussels, Belgium, March 22nd, 2012

EUR: a mature co-operative organization of European utilities

- Since 1992, committed to keep the option new nuclear open
- Aiming to produce common specifications for new reactors (1000 < P < 1800 MWe)
- Involving most of the major European nuclear electricity producers (19) and in competition with each others
- Operating 85% of the European nuclear fleet (>130 reactors)

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Compliance testing & monitoring

- The concerns seen from conventional units are also seen from EUR, however, EUR's main focus is on Nuclear Safety

- EUR commented every topic presented today with the Nuclear Safety perspective

- The general idea is:

  1. Nuclear plants are best used for base load operation even though they, within certain limits, can be used to support System's security, but

  2. Nuclear safety considerations and nuclear regulations are mandatory to follow and must always override the ENTSO-E NC in case of conflict, and

  3. Nuclear plants current design do not meet the extreme requirements being put altogether in the ENTSO-E NC at the same time

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Compliance testing & monitoring

- **Compliance process & testing is not the most significant topic EUR would have liked to comment on, however the above conclusion applies:**

1. **Nuclear plants need exhaustive input data upfront including Grid models and assumptions to design and tune their equipment accordingly, both for modification and new build**
2. **Compliance testing on site is doable to certain extents to be defined in collaboration with the plant operator and the nuclear regulator**
3. **The plant operator must be the test leader in any case to ensure Nuclear Safety is guaranteed**
4. **At conflicts you always have to follow the nuclear regulator**

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Frequency & Voltage ranges

- Frequency & voltage operating ranges are key input data for the nuclear plant licensing process and safety case

- Licensing is a 10-years team-work process (manufacturer + NRA + operator) freezing some plant characteristics early on:

1. Yes, Nuclear Plants can (within certain limits) operate under deteriorated system's conditions, but
2. Current and existing new designs cannot withstand extreme frequency & voltage deviations altogether as required in the ENTSO-E NC
3. Taking these increased requirements into account altogether with others will take a long time and generate significant costs hence the need of it has to be thoroughly justified
4. To be forced to use new components (e.g. power electronics) in safety systems is a vast and unproven step, national nuclear regulators will not approve this

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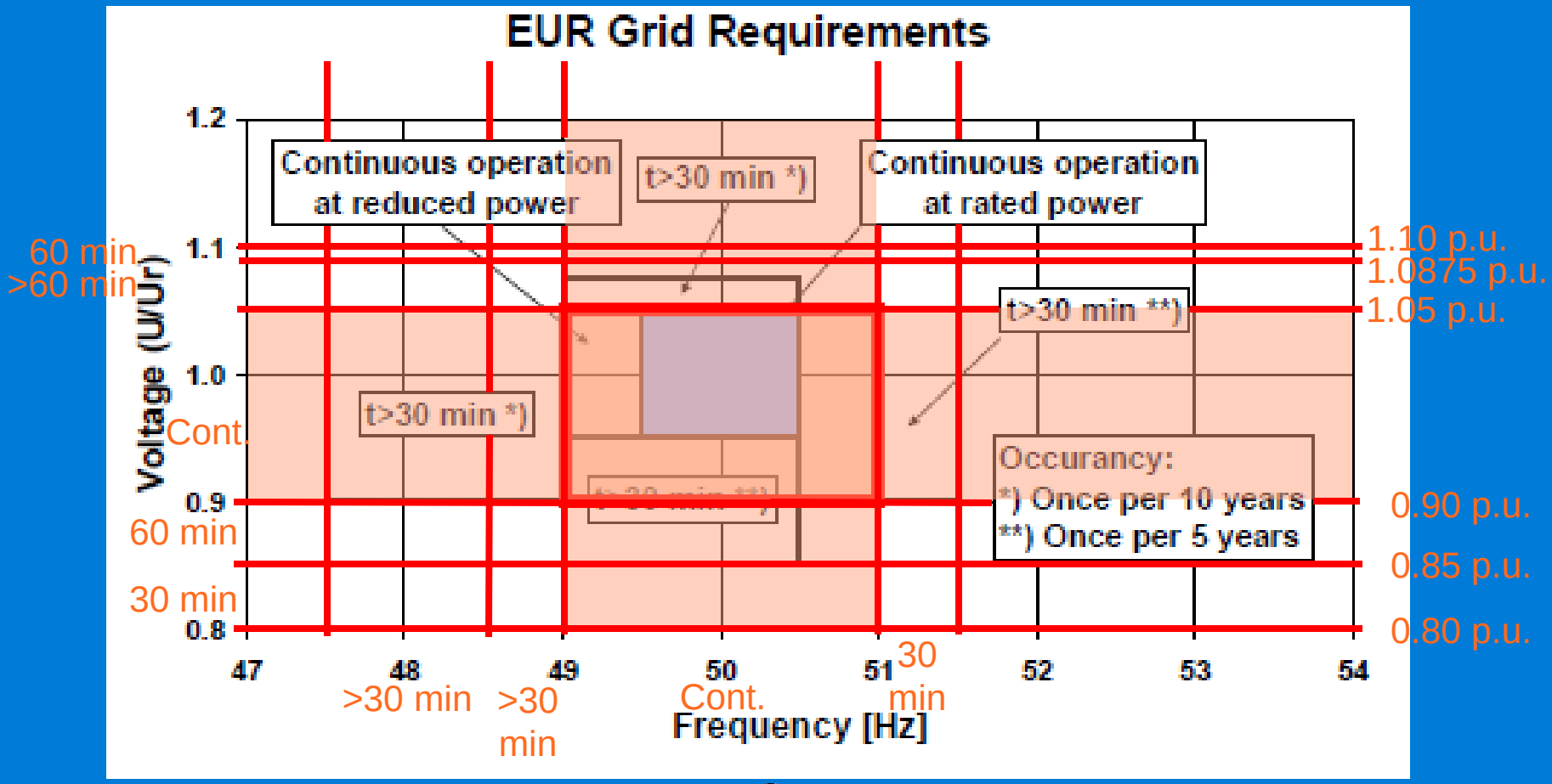
Frequency & Voltage ranges

Frequency and voltage requirement in EUR Grid Requirement
Continuous operation in light blue (EUR)
Continuous operation in red (ENTSO-E) for Continental Europe, no coupling between frequency and voltage



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Thank you for your attention!

European Utility Requirements for future LWR plants

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