DSO Expert Group Views on Draft Requirements for Generators

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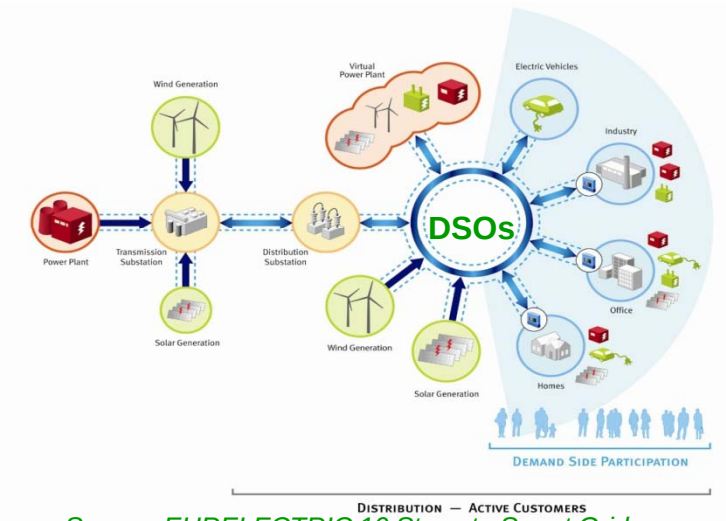
Target of 20% of RES in energy mix by 2020
new facilities mainly connected to distribution network

- **Units capacity usually small, but with strong common mode**
  - **Important system security issues for TSOs (frequency management)**
  - **Quality of supply concerns for DSOs (e.g. voltage management)**

- **DSOs issues**
  - **Strong impact on planning, conception & protection schemes**
  - **Voltage and congestion management issues**
  - **Need for more tools to manage their grids including ie ancillary services from distributed generators**

- **Structure, protection and automation systems as well as operation of distribution networks are completely different from transmission networks**
  - **At MV and LV level in particular**

DSO Role in Future Electricity System



Source: EURELECTRIC 10 Steps to Smart Grids

"Building & Connecting"

"Connecting & Managing"

What is a “Cross-Border Network Issue”?

DSO Expert Group:
‘Characteristic of a network component, or connected apparatus, that allows a common mode action or reaction to a network disturbance to propagate across borders to a significant fraction of the total system’

Cross-border impact of various system parameters varies in relation to generation types!
->The network code requirements for generators connected to distribution networks should be limited to frequency

Parameters listed in the FG	Type A LV/MV (1kW – 1MW)	Type B MV (1MW - 10MW)	Type C HV >10MW	Type D EHV unlimited
Frequency management	Yes Limited response & automatic disconnection	Yes Limited response & automatic disconnection	Yes Extended response & automatic disconnection	Yes Extended response with load frequency control
Voltage & reactive power management	No Cross-border Impact	No Cross-border Impact	No Cross-border Impact	Yes
Load-frequency control	No Cross-border Impact	No Cross-border impact	No Cross-border impact	Yes
Short-circuit current	No Cross-border impact	No Cross-border impact	No Cross-border impact	No Cross-border impact
Requirements for protection devices & settings	No Cross-border impact	No Cross-border impact	No Cross-border impact	No Cross-border impact
Fault-ride-through capability	No Cross-border Impact	No Cross-border Impact	No Cross-border Impact	Yes

Example (simplified classification of generators used)

Compliance Testing of Generators Connected to Distribution Networks

- **Current Practice in most countries:**
  - Primary responsibility for compliance with requirements is on the generator side
  - DSOs can participate in compliance testing but do not bear any legal responsibility

- **Conducting these assessments, particularly for type A, would create substantial costs for DSOs**

- **DSO Expert Group:**
  - Compliance should be ensured by manufacturer or vendor guarantees provided by type testing based on standards
  - Type tests to be performed in accredited laboratories of EA (according to EN 17025 standard) or under survey and responsibility of EA accredited bodies operating product certification systems (according to EN 45011), with reference to existing product standards or to connection standards tests

European co-operation for Accreditation

Thank you for your attention