

**Minutes of Meeting
ENTSO-E Drafting Team on RfG
EUTurbines
Eurelectric WG Thermal / VGB PowerTech**

Date: 20 December 2011

Time: 11h00 – 17h00

Place: Stuttgart

Participants

Name	Affiliation
<i>DT RfG</i>	
Hans Abele	ENBW
Luis Coronado	REE
Anders Danell	SVK
Torsten Haase	50Hz
Edwin Haesen	ENTSO-E
Jako Kilter	Elering
Sergio Martinez Villanueva	REE
Ramūnas Ponešis	Litgrid
Ralph Pfeiffer	Amprion
Thibault Prevost	RTE
Helge Urdal	National Grid
Mario Valente	Terna
Wilhelm Winter	Tennet
<i>EUTurbines</i>	
Matthias Zelinger	EUTurbines Frankfurt
Maxime Buquet	GE Energy Belfort
Luca Guenzi	Turbomach Riazzino
Peter Norris	ALSTOM Baden
Horst Peters	MAN Diesel & Turbo, Hamburg
Ulrich Tomschi	Siemens Energy Sector Erlangen
Raffaele Traverso	ANSALDO Energia Genoa
<i>Eurelectric WG Thermal / VGB PowerTech</i>	
Jörg Kerlen	
Philippe Lebreton	
Franz Bauer	
Jörg Kaiser	
Ton Geraerds	
Jörg Emmerich	
Eberhard Fohry	
Giuseppe Lorubio	
Marius Stiller	

1. Welcome, attendance, adoption of the draft agenda

The proposed agenda is approved:

11:00-11:15hrs:Welcome, Attendance, Approval of Agenda

11:15-11:30hrs:Network code development – Status and schedule

11:30-12:15hrs:Review of the network code update based on ACER's final framework guidelines

12:15-13:15hrs:*Lunch break*

13:15-14:00hrs:Cost-Benefit Analysis – methods and criteria

14:00-15:30hrs:Discussion of EUTurbines comments

15:30-16:30hrs:Discussion of Eurelectric WG Thermal & VGB PowerTech comments

16:30-17:00hrs:AOB

Both Eurelectric WG Thermal / VGB PowerTech and EUTurbines welcome this discussion.

Presentations and (agreed) minutes of this meeting will be published on the ENTSO-E website after the start of the public consultation.

2. Network code development – Status and schedule

For the discussion on the first agenda topics (status/schedule, code updates and CBA) a presentation is prepared by ENTSO-E (*111220 - DT RfG - Eurelectric WG Thermal - VGB – EUTurbines.pdf*).

The interaction between NCs is discussed, e.g. on grid connection and system operation. Possible overlap exists in ACER's framework guidelines. ENTSO-E coordinates internally scope and development of linked network codes. Eurelectric WG Thermal / VGB PowerTech criticized the lack of transparency of this internal coordination, as it didn't give any visibility to stakeholders of the options being assessed and the decisions being taken with regards to the system operation NCs.

3. Review of the network code update based on ACER's final framework guidelines

Eurelectric WG Thermal / VGB PowerTech considers ENTSO-E's definition of cross-border impact to be too broad and will propose a new one in the public consultation.

Eurelectric WG Thermal / VGB PowerTech asks why, if 1000 1MW units have the same impact as a single 1000MW unit, non-discrimination does not result in all units having to meet the same requirements. The DT states that a graded approach is justified as ACER also stressed equitable treatment of users, not equal treatment. Furthermore the example is for frequency issues only, for which all units indeed have to meet the same requirements. Eurelectric WG Thermal/VGB considers this to be not only a frequency issue, but a general concern on the unit's behavior in case of e.g. faults, active and reactive power provision, or voltage deviations. They also asked for a clear definition of "equitable treatment"

EUTurbines asks for clarification whether wider frequency ranges are possible at national level. For this specific requirement a clause is introduced in the draft code to allow for this. EUTurbines considers the frequency range requirements as stipulated in the draft code no longer a major concern.

Eurelectric WG Thermal claims that the frequency ranges in this draft code differ from existing technical standards and norms, and expects a quantitative justification (Why not 47Hz? Why not 28 minutes? ...) for setting such ranges.

Eurelectric WG Thermal / VGB PowerTech expects a clause on objection to a NRA decision in the derogation procedure (not as far as going to court to settle disputes). This could be a principle requirement that national authorities should take steps to allow for objection to NRA decisions.

Eurelectric WG Thermal / VGB PowerTech favors the possibility of applications for derogations for classes of power generating facilities to simplify the process. At present the draft code allows for individual applications for derogations by PGF owners only. Eurelectric WG Thermal / VGB PowerTech I expects full transparency on the issue of derogations – for all PGF – and how the derogatory regime will work.

On the topic of retro-active application of network code requirements to existing users, the DT clarifies that TSOs intend to pursue this only in clear cases. The draft code requires a preliminary qualitative CBA, followed by a quantitative CBA, a public consultation on the outcome and a NRA decision on application of requirements to existing users. Eurelectric WG Thermal / VGB PowerTech and EUTurbines support this approach.

The DT stresses that in case a quantitative CBA analysis is performed by a TSO, power generating facility owners are required to provide relevant cost data.

For units not yet under construction when the code enters into force a specific clause is introduced in the draft code on how to treat these (existing or new) based on existing binding, final contracts for relevant parts of the plant. Eurelectric WG Thermal / VGB PowerTech asks that the clause should reflect more clearly that parts are envisaged, not the plant as a whole.

4. Cost-Benefit Analysis – methods and criteria

The DT presents the proposed approach in the code on CBA principles for retro-active application of network code requirements.

In stage 1 the TSO makes an assessment to filter all cases. No data is yet required from power generating facility owners. This CBA stage has not yet been included in the public 27 October working draft, but will be introduced in the following version (for public consultation end of January 2012).

Eurelectric WG Thermal / VGB PowerTech stressed that for requirements resulting from the grid situation at the grid connection point the alternative of grid retrofit/development should be taken into account in the CBA analysis. It should be also clarified which costs and benefits are being considered.

Eurelectric WG Thermal / VGB PowerTech argues that retro-active application of requirements shall be subject to warranties and specifications and health, safety and environmental requirements for operation by the manufacturers given to the PGF owners. The DT considers agreements between manufacturers and generating facility owners to be out of the scope of this network code.

Eurelectric WG Thermal / VGB PowerTech asks how alternative solutions for retro-active fitting are taken into account, e.g. capacitor banks instead of adapting the reactive power capabilities of existing units. The DT notes that the scope of the network codes is limited to requirements for generators. Stakeholders can still require alternative solutions to be considered as every case for retro-active fitting is subject to a public consultation before final NRA decision.

Eurelectric WG Thermal / VGB PowerTech considers Article 4 on cost recovery by TSOs to be discriminating as PGF owners' costs cannot be recovered. The DT notes that the grid operators' business is regulated and system tariffs are the only option to recover costs. The PGF owners' costs can be covered by the energy and ancillary services markets.

EUTurbines asks which CBA principles apply for derogations. The procedure will be similar as for retro-active application of requirements to existing users.

5. Discussion of EUTurbines comments (111220 – EUTurbines.pdf)

In August 2011 EUTurbines sent a list of comments to ENTSO-E on the pilot code (published March 2011). Part of the main comments, still valid with respect to the working draft code of 27 October 2011, are presented by EUTurbines for discussion.

Proposal to define a reference situation for the Maximum Capacity (e.g. based on ambient temperature) as it is a value referred to often throughout the code including, among other, generating unit categorization and reactive power limits Also handling of industrial power plants with priority of steam production and in general to the industrial process is not clear.

- ➔ This reference should be defined in the connection agreement as already allowed for in the definition of Maximum Capacity. Note that the code is already criticized for prescribing too many details.

Minimum Operating Level – Minimum Regulating Level definitions need clarification

- ➔ Will be reflected in the next version of the code.

The prescribed frequency ranges pose no significant issues as they are in line with IEC 60034-3. The only exception is the UK situation, but this is no new issue. The only difference with the IEC standard is the permitted output reduction at lower frequencies.

- ➔ The present draft code also allows for restrictions near Maximum Capacity at lower frequencies (Art. 9.2.c). For high frequencies LFSM is noted.

Allowed output loss at low frequencies (Art. 12.2.b) is difficult for gas turbines in design and operation. The risk of tripping of generators due to this strong requirement should be assessed against an increased reduction of active power at low frequencies. The German Grid Code requirement should be taken as a reference. Eurelectric WG Thermal / VGB PowerTech expresses a concern from power generating facility owners on this.

- ➔ The DT will check whether to reconsider the concerns..

Active Power Frequency Response (Art. 9.2.c): EUTurbines considers a 10% response in 4 seconds to be more stringent than present European codes (e.g. 10sec in UK) and not feasible for gas turbines. EUTurbines notes that customers already ask manufacturers for 'ENTSO-E compliant' units and focus as such on the worst case situations in requirement ranges.

- ➔ The draft code gives a range for power and a range on activation time. A combination of both most extreme values is not reasonable and should not be of concern. The rationale for introducing this requirement is increasing wind penetration. Wind farms are considered capable to deliver requirements within these ranges. The DT will consider reformulation of these requirements to avoid concern.

Black start capabilities (Art. 9.4.a): EUTurbines and Eurelectric WG Thermal / VGB PowerTech expect blockloading conditions to be introduced or at least a clause that further conditions should be agreed bilaterally.

Deloading to any point in the P-Q diagram (Art. 9.4.a)

- ➔ The requirement on deloading to 55% of Maximum Capacity will be improved.

Island detection (Art. 9.4.b): the requirement is considered to be not clear (who can confirm the island situation?)

- ➔ TSO and generating facility owner are to set up the method to detect this.
- ➔ Switchgear position signals can be used in addition, but not as sole criterium. The draft code will be updated to clarify this.

Manual intervention after tripping to house load (Art. 9.4.c)

- ➔ This sentence will be deleted in the new version of the code.

Speed control mode (Art. 12.4.a): The difference in implementation between power and speed control is not defined? Why is speed control of relevance in a grid connection code?

- The DT considers reformulation. Stable operation is the relevant concern in these requirements.

Remarks on feasibility of ROCOF requirements (Art. 7.1.b)

- The next version of the code will take these remarks in consideration.

Fault-Ride-Through requirements are not clear and at least appear not realistic, e.g. 250msec short circuit situation followed by a slowly recovering voltage (the lower boundary of the shaded areas in the codes).

- The draft code has been updated to clarify the requirement. Also a specific FAQ will be dedicated to the topic of FRT.
- The DT notes that specific pre- and post-fault conditions are to be specified for the FRT capability. This will not be prescribed in the code, but is to be set by the relevant TSO.
- The shaded area gives the limits within which a TSO sets a specific voltage profile a unit needs to be able to withstand without disconnection. (i.e. interpretation B in the EUTurbines slides)
- The 250msec capability is presently prescribed in the Nordic grid code (together specific pre- and post-fault conditions).
- The parameter setting of a TSO within this FRT range still needs to follow the relevant national process (e.g. NRA approval, public consultation, ...).

EUTurbines pointed out, that the shown example of the FRT – capability gives a wrong interpretation of the voltage-against-time-profiles. EUTurbines notes that the topic of FRT is one of their major concerns and would like to discuss it further in detail in the future.

Simulation models and testing: EUTurbines considers the present code formulation too open on this topic and favors harmonization of models on a European level

- Detailed prescriptions on simulation model requirements are not considered to be cross-border issues.
- The DT notes that in any case responsibility on the model lies with the generating facility owner.

On compliance tests of PSS requirements, EUTurbines suggests to limit the frequency interval within 0.2 – 2 Hz and to be specified with the Relevant System Operator

- The DT considers reformulation of this requirement.

6. Discussion of Eurelectric WG Thermal & VGB PowerTech comments (*EUREL-frequency ranges.pdf* and *EUREL-NC RFG_Cost-Benefit Analysis and derogation.pdf*)

Eurelectric WG Thermal / VGB PowerTech plan to publish a document in January 2012 stating which requirements in the present draft code are technically feasible. The DT welcomes stakeholder input on this, but wishes to avoid confusion and states clearly that comments submitted at that stage cannot be taken into account for the draft code that is to enter public consultation shortly after. The comments can be submitted of course in the public consultation. Then Eurelectric WG Thermal / VGB PowerTech announced that they would send a letter on the issue before Christmas.

With reference to thermal power plants, VGB PowerTech claims that no equipment exists or can be ordered by the producers fulfilling the main requirements laid down in the draft RfG code.

Eurelectric WG Thermal / VGB PowerTech wishes to focus in this meeting on frequency range requirements and the link with IEC 60034.

- The DT considers the present frequency requirements to be IEC compliant.
- The DT notes to focus on new generating units, not existing units, when assessing the impact/feasibility of these requirements. Retro-active fitting will be subject to the abovementioned procedures.

VGB PowerTech gives a short presentation, focusing on reactive power and FRT capabilities.

- The DT will improve the wording and addresses a specific FAQ to both reactive power capabilities and FRT requirements (cfr. earlier discussion).
- It is stressed that when selecting specific values/curves in framework requirements, still a national (existing) approval process is to be followed.
- The wide ranges for voltage, frequency and fault-ride through as described in the proposed draft code cannot be reflected by actual measurements in the grids. VGB PowerTech is concerned that the wide ranges can result in poor grid quality in future, because they argue the code to allow for them being applied for normal grid operation.

The DT thanks EUTurbines and Eurelectric WG Thermal / VGB PowerTech for the informal comments sent. They will be taken into account to the extent possible. A formal (published) response to the list of comments before public consultation will not be given.

End of meeting