

Minutes of Meeting
ENTSO-E Drafting Team on RfG
DSO Technical Expert Group

Date: 17 April 2012
Time: 10h30 – 17h00
Place: ENTSO-E premises, Brussels

Participants

Name	Affiliation	present	excused
DT RfG			
Hans Abele	Transnet	X	
Luis Coronado	REE	X	
Anders Danell	SVK	X	
Torsten Haase	50Hz		X
Edwin Haesen	ENTSO-E	X	
Jako Kilter	Elering	X	
Sergio Martinez Villanueva	REE	X	
Mark Norton	EirGrid		X
Ramūnas Ponešis	Litgrid		X
Ralph Pfeiffer	Amprion	X	
Thibault Prevost	RTE	X	
Jerzy Rychlak	PSE	X	
Rosen Ulinski	ESO		X
Helge Urdal	National Grid	X	
Mario Valente	Terna	X	
Wilhelm Winter	Tennet		X
DSO TEG			
Pierre Andersson	E.ON Elnät Sverige AB (Eurelectric DSO)		X
Pilar Barrera	Bewag Netz (Eurelectric DSO)	X	
Alberto Cerretti	Enel Distribuzione (Eurelectric DSO / EDSO-SG)	X	
Florian Chapalain	EDSO-SG	X	
Falk Engelmann	VKU (CEDEC)		X
Bruno Gouverneur	Synergriid (Eurelectric DSO)	PM	AM
Tony Hearne	ESB (Eurelectric DSO)	X	
Mike Kay	ENWL (Geode)		X
Riccardo Lama	Enel Distribuzione (Eurelectric DSO)	X	
Mika Loukkahti	Helen Sähköverkko Oy (Eurelectric DSO)		X
Johan Lundqvist	Svenskenergi (Geode)		X
Marc Malbrancke	Inter-Regies (CEDEC)	AM	PM
Pavla Mandatova	Eurelectric DSO	X	
Javier Meco	Endesa (EDSO-SG)	X	
Jacques Merley	ERDF (Eurelectric DSO)	X	
Viktoria Neimane	Vattenfall R&D (Eurelectric DSO)		X
Joachim Nilges	RWE (Eurelectric DSO)	X	
Piotr Ordyna	Tauron (EDSO-SG)		X
Allan Norsk Jensen	DEA (Eurelectric DSO)	X	
Jesus Peco	Iberdrola (EDSO-SG)	X	
Herman Poelman	Alliander (CEDEC / EDSO-SG)	X	
Graeme Vincent	Scottish Power (Eurelectric DSO)	X	
Jarmo Saarinen	Fortum Oyj (Eurelectric DSO)		X
Walter Schaffer	Salzburgnetz (CEDEC)		X
Bilal Simsek	TEDAS (Eurelectric DSO)		X
Siegfried Wanzek	E.ON-Energie (Eurelectric DSO)	X	

1. Agenda

10h30 – 12h30 : overview of responses on DSO survey

13h30 – 16h00 : evolution RfG

16h00 – 17h00 : ON / certification

A working draft version of the RfG code was sent to all DSO TEG participants on Friday 13 April 2012. This document is considered work in progress still and is intended as guidance for discussion on how to progress with the code.

No additional proposals are made for the agenda. The agenda is approved.

2. Overview of responses on DSO survey

A survey was sent to all DSO TEG members on how 19 requirements of the NC RfG draft relate to the present applicable distribution grid codes in the working domain of the members. The relation as assessed by the DSO TEG members is expressed as either:

- Presently not covered in the distribution grid code;
- Covered by the distribution grid code;
- Resulting in a minor deviation with the distribution grid code;
- Resulting in a significant deviation with the distribution grid code.

The 19 requirements included in the survey are:

- Frequency ranges
- Rate of change of frequency withstand capability
- Limited frequency sensitive mode (over-frequency)
- Active power controllability and control range
- Limited frequency sensitive mode (under-frequency)
- Frequency sensitive mode
- Simulation models
- Torsional stress
- Black start capability
- Voltage ranges
- Maximum power reduction at under-frequency
- Reactive power capability at maximum active power (synch)
- Reactive power capability below maximum active power (synch)
- Reactive power capability at maximum active power (PPM)
- Reactive power capability below maximum active power (PPM)
- Fault-ride-through capability (synch - type B and C)
- Fault-ride-through capability (synch - type D)
- Fault-ride-through capability (PPM - type B and C)
- Fault-ride-through capability (PPM - type D)

Only six responses¹ were received prior to the meeting relating to distribution grid codes from

- Austria

¹ A response covering most applicable distribution grid codes in France and the Irish synchronous area were sent after the meeting.

- Belgium
- Germany
- Great Britain (covering regional difference between England/Wales and Scotland)
- Italy

The responses are discussed in the meeting for clarification. All agree that the outcome is shared among the DSO TEG members.

Austria

- Response covers 60 to 70% of DSOs in Austria.
- Main focus is on FRT requirements for type D. Austria does not have an FRT requirement in its distribution grid code.
- DSOs use contracts based on capacity threshold only. With the implementation of the NC RfG a different situation will exist when connecting a 20MW wind park depending on the connection voltage as it can be type B or D (if at or above 110kV).
- Question is raised if there can be more flexibility in FRT requirements at national level. The DT notes there is considerable flexibility at national level to define an FRT curve (by selecting 8 parameters) based on the local grid situation.

Belgium:

- Response covers all Belgian DSOs.
- Survey only filled in for connections below 30kV, so only type A and B requirements are addressed.

Germany

- Evaluation of the draft RfG code requirements to existing rules is different as the classification by capacity used in the RfG code is not directly comparable with classification by voltage level used in Germany in the Transmission Code and Grid Connection rules.
- Taking this in consideration some requirements in the draft NC RfG are less stringent compared to present, recently established requirements. These are as such considered significant deviations from present practices. The DSO TEG assesses that a risk exists this could re-open difficult discussions at national level. The DSO TEG proposes to provide sufficient cover in the code that a less stringent requirement in the RfG code stemming from the absence of the voltage classification is no argument to reconsider requirements at national level.

Great Britain

- One distribution grid code covers all of GB with slight regional differences.
- These present regional differences result in a different impact of the type D FRT requirements if the RfG draft was to be applied.

Italy

- It is noted that the Italian NRA recently approved changes in the distribution code by implementing several requirements of the draft RfG.
- A different impact is envisaged for FRT when implementing it on LV or MV connected units. MV FRT requirements take the operation of MV circuit breakers in distribution automation into account.
- Retrofitting is foreseen for all MV plants for the beginning of 2013 for other requirement than FRT. It would be difficult to ask for an additional retrofit based on RfG requirements.
- Type C and D is connected to transmission. Even if a generator connected to the distribution side of a substation, it has to comply with the transmission code.

The DSO TEG notes that also in Germany a new wave of retrofit (after the 50.2Hz retrofit) is not reasonable. The DT stresses the common understanding in this topic. The NC RfG is considered to be forward looking.

Discussion on relation between the survey and justification for significant deviations of the NC RfG with present standards and requirements:

- The question on what is the reference for 'significant deviations' is still unanswered.
- The DSO TEG assumes a cost assessment will be asked for anyway when setting the national implementation.
- Were CBAs performed to come to the present distribution grid code requirements? No, not a formal CBA, but the DSO TEG considers the established development process for a grid connection rule/ standard in co-operation between TSOs/ DSOs, grid users and manufacturers to be an inherent non-explicit CBA.
- The DSO TEG expects that if a CBA is made, this covers different technical alternatives, e.g. based on the voltage level of connection.

Clarification is asked on whether the definition of Maximum Capacity refers to installed or contractual capacity? The DSO TEG agrees with the present definition of contractual capacity. This definition does still allow for national variances.

The DSO TEG asks for a clear definition of and relation with standards, e.g. for testing testing to avoid an unclear relation between the functional requirements in the RfG being more general per definition and standards including provisions for testing. The DT considers it not up to the code to relate to variances in existing standards. In addition the draft code focuses on the connection point whereas many existing standards consider the unit terminals.

The DSO TEG notes that people will interpret the type B to C threshold at their convenience to end up in a desired category. Also, at present many contracts and connection rules relate to requirements of a facility, not a single unit or module at the Connection Point.

3. Evolution RfG

Main topics proposed for discussion:

- Derogations
- Definition Generating Unit vs Power Generating Facility
- Operational Notification

The DSO TEG notes that they did not have sufficient time to review the latest working draft and are still working on a common opinion.

Definition of Power Generating Module and Connection Point

Some issues for clarification are raised by the DSO TEG:

- Several modules with the same connection point
- Multiple connection points of a facility at different voltage levels
- Connection to a Closed Distribution Network (CDN), or in general the notion of private lines between Power Generating Modules and the public grid.

Clarification:

- Multiple Power Generating Modules inside a Power Generating Facility may have multiple Connection Points with different voltages. This type of situation exists already
- For wind parks the definition of PPM allows the aggregation of wind turbine generators to be considered one module.
- A single or a number of DFIG unit(s) is considered a PPM as it is non-synchronously connected.
- Asynchronous generators are covered by the definition of a PPM as its definition does not require a power electronic interface.

- In case of multiple synchronous PGMs, all have to comply individually with RfG requirements. In case these have a single controller, it has to be analyzed whether the installations are indivisible.

The DSO TEG agrees with this concept, but considers practical situations at distribution level where other interpretations may be possible.

The DSO TEG states that mentioning a CDN in the definition of a Connection Point creates confusion as it should refer only to a transmission or distribution network.

The DT agrees to include a definition of CDN in line with that of the 3rd Package.

The present draft gives the owner of a CDN the same responsibilities in the context of this code as a Network Operator (e.g. for compliance monitoring and enforcement). The DSO TEG does not give an agreement or disagreement on this approach since it is considered to be not clear whether all Network Operator responsibilities can be covered by 3rd parties. Some DSO TEG members argue that the 3rd package defines CDN obligatory in relation with consumption., so that private lines mentioned above would not be covered by the code and responsibility at the connection point to the public grid remains unclear.

Reactive power capabilities

The present reactive power capability requirement of a type C generator refers to the HV side of a step up transformer. The DSO TEG proposes to formulate the requirement based on the majority of existing situations rather than the exception. It is noted that where a wind farm power station connects at a distribution nominal voltage which is the same as that of wind farm internal collector network, for example 20kV, there will be no step-up transformer at the Connection Point, resulting to a possible interpretation that the present requirement would apply at the LV/20kV transformer at a turbine base.

The DT will redraft the clause, referring to the Connection Point, allowing an exception to be defined by the Relevant Network Operator in accordance with Art 4(3). If a PGF owner owns a long connection line with the connection point at the far side, this poses no problem. If not, the code will give the right to request compensation from the owner of the line.

Fault Ride Through requirements

The latest working draft uses a curve with parameters to be defined instead of a shaded area, in order to avoid misinterpretations.

Embedded generation in an industrial site

The DSO TEG considers steam storage to be a reasonable option for CHPs which would not justify an exemption from the code.

The DT clarifies that an exemption is only allowed for some requirements.

The DSO TEG has a concern on local political influence of CHP owners to which DSOs have to respond and asks for exemptions prescribed in the code to be as limited as possible.

Voltage Control System, parameters and settings for type D synchronous generators

Requirements are much less prescriptive in the code and are to be agreed bilaterally.

Maximum active power reduction for under-frequency

A figure is added for clarification. The relaxation is shifted from type C to type A.

Protection settings

The DSO TEG notes that the draft code often states the Relevant Network Operator has to come to an agreement with the PGF owner. At present, protection settings are often prescribed by the DSO as stated in the national law.

The DSO TEG asks for this practice to be continued considering the mass market for distribution connected generators.

The DT argues that this agreement is set to avoid liability claims in case a protection action has detrimental results. The DT also notes that protection at the connection point is of relevance for this code which should of

course not be in contradiction with the protection at the generator terminals. Also, protection devices and settings are explicitly mentioned in ACER's framework guidelines on electricity grid connections.

The DT will consider redrafting Art 9.6 to allow for national law to give the Relevant Network Operator the possibility to prescribe protection settings.

4. Operational notification

(see presentation)

A proposal for revising the Title in RfG on Operational Notification is presented and discussed by means of main principles and open questions to the DSO TEG. This will be used as guidance to revise the relevant Articles in the code.

All agree on the proposed principle for type A PGM certification. The proposed process follows existing practice if a standard exists to perform the tests on.

The DSO TEG proposes to avoid confusion for type C modules and replace PGM 'certificate' by PGM 'declaration' so it does not imply self-certification by CE marking.

Questions for feedback:

- *Do the proposals adequately respond to DSO concerns?*
The key issue for the DSO TEG is who is an authorized certifier.
- *Do the proposals deliver an acceptable way forward in terms of the difference of opinion between DSOs and manufacturers about need for independent certification, particularly for Type A?*
The DSO TEG agrees with the proposal but notes that functional standards at EU level are missing for LV units. The only existing directives are the LV directive and EMF directive which are non-functional and not relevant for certification of the requirements in the RfG code. For this reason it is at present legally not possible to have certification for protection. It is noted that a standard can exist at national level or System Operator level.
- *If required could a CBA be provided by the DSO EG to defend use of independent certification for LV installations?*
The DSO TEG agrees to support a CBA on this given that a standard for 3d party certification exists. The DSO TEG asks what will be the consequence in case such standard is not available when the code enters into force? As a default, self-certification will be allowed for the time being.
- *Does the proposal go too far by allowing Type B to be treated in the same way? What are the main risks?*
The DSO TEG proposes to align the operational notification of type B modules with that of type C to be in line with today's practices. The DT notes that this will include on-site testing for type B modules. The DSO TEG proposes to lower the intensity of the process for type B modules. The DSO TEG proposes to have the Relevant Network Operator / national rules set a threshold for factory versus on-site testing and certification.
- *For type C is the single stage process fit for purpose between on the one hand providing assurance of compliance and on the other hand delivering cost effectiveness?*
The DSO TEG agrees on this.

End of meeting