ACER
Agency for the Cooperation of Energy Regulators

28th Grid Connection European Stakeholder Committee (GC ESC)

30 November 2022, 09:30-13:00

Webinar - Microsoft Teams

Minutes of the meeting

Participants		
Alcazar	Freddy	EUGINE
Antonopoulos	Georgios	ACER
Aren	Assiet	EUGINE
Augusto	Catarina	SolarPower Europe
Barroso Gomes	Maria	ACER
Benedict	Florentien	CEDEC
Bridi	Alberto	CEDEC
Buquet	Maxime	EU Turbines
Cerretti	Alberto	CENELEC
Chambers	Keith	Europgen
Dekinderen	Eric	VGBE
Dembi	Vidushi	WindEurope
Eckstein	Steffen	EUTurbines
Gabrijel	**Uros**	**ACER / Chair of GC ESC**
Glapiak	Aleksander	ACER
Gonzalez	Adrian	ENTSO-E
Govindaswami	Sudharsana	Europgen
Guenzi	Luca	EUTurbines
Hearne	Tony	EURELECTRIC
Johansen	Knud	ENTSO-E
Kaestle	Gunnar	COGEN

Kay	Mike	GEODE
Malbrancke	Marc	CEDEC
Ndreko	Mario	ENTSO-E
O'Connell	Elaine	European Comission
Ochoa	Miguel	SolarPower Europe
Oberhauser	Klaus	VGB Powertech
Pasquadibisceglie	Marco	Arera
Raju	Srinivasa	EUGINE
Schaupp	Thomas	CENELEC
Schowe-von der Brelie	Bernhard	EFAC / VAZ (FGH)
Stoessl	Martin	Orgalim
Subramanian	Hariram	SolarPower Europe/ EG ACPPM Chair
Van Bossuyt	Michaël	IFIEC Europe
Vinas	Thierry	EURELECTRIC
Wilch	Michael	EDSO for smart grids
Wang	Mian	EG ACPPM ViceChair
Zastavnetchi	Dmitri	ENTSO-E

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1. Opening

1. Review of Agenda

The Chair welcomes the participants to the 28th GC ESC meeting and reviews the participants list to ensure that only members of the Committee or/and alternates that have informed the Chair are present or connected.

The agenda is presented and approved (available here).

The Chair asks for any additional topics to be covered under AOB. Luca Guenzi (EUTurbines) asks to present a short presentation on RoCoF topic that was submitted one day before the meeting. Gonzalez Adrian (ENTSO-E) confirms the receiving of the presentation. Srinivasa Raju (EUGINE) requests to show the roadmap for the NC RfG. The Chair replies that it will be shown under the point two of the agenda.

2. Approval of the minutes

The minutes are presented and approved (available here).

3. Follow-up actions from previous meeting/ new additions to Issue Logger (available here):

Adrian Gonzalez (ENTSO-E) presents the follow-up actions and their status from the previous meeting. He informs that there was a workshop on 25 October, where the stakeholder shared their proposals on amendments. He further informs about an action point of EG CROS that was to invite the association of electrolysers manufactures to be become a member of the EG CROSS, however, no nomination received from them yet. The final point was to circulate the meeting dates for 2023 that can be found in the agenda of the current meeting.

Thierry Vinas (EURELECTRIC) asks where can be found the documents from the second part of workshop on 23 November. Adrian Gonzalez (ENTSO-E) replies that the documents from first part of the workshop was uploaded in the morning because it was specific request form GC ESC to organise this workshop. While the second part of workshop was organised by the R&D colleagues from ENTSO-E and the documents will be available on the ENTSO-E website by end of this week.

ACTION: to include in the minutes the link to the material from the workshop on 23 November.

2. ACER

First impressions from PC on Grid Connection NC amendments and way forward.

Aleksander Glapiak (ACER) presents the slides (available here).

Van Bossuyt Michaël (IFIEC) Europe refers to the slide 5 where ACER-NRAs will propose topics for discussion in the framework of ESCs, while next ESC is three months from now. He asks if ACER-NRAs start proposing before the next ESC meeting or they will wait until ESC meeting. Since it doesn't leave much time to have all workshop discussion, he asks how the ACER-NRAs plan to organise whole the process. The Chair replies that first ACER needs to dive into proposals, and after identifying the areas in which ACER either want to facilitate a broader discussion or it might choose to have this discussed under the general framework of ESC with prepared topics or organise a broader workshop similar to the one for the policy paper and the one in October. He adds that before ACER concludes on the draft proposals for the RfG and DCC amendments ACER leaves a door open for additional workshops organised under the ESC or general framework, it depends on the topics, for example, electromobility, where ESC still don't have any representative. Van Bossuyt Michaël (IFIEC) gives a general comment about slide 6 where the period is indicated 4 to 6 weeks for public consultation on ACER proposal over the summer. He states that it will be difficult to get all the feedback as previous years because it might implicate fundamental changes to some of the elements, consequently, stakeholders need time to discuss them also with companies and members in order to ensure that we have all the input to make the consultation. The Chair responds that should ACER consult two proposals for amendments during holiday period sufficient time for consultation with stakeholders will be ensured.

Thierry Vinas (EURELECTRIC) asks about the trend of the answers of this year in comparison to the first version of RfG and about the geographical repartition of the answers. Aleksander Glapiak (ACER) replies that ACER doesn't have analysis of two consultations. The Chair mentions that when ENTSO-E was consulting on RfG proposal in 2012 they received roughly a similar number of contributions from stakeholders, however, he doesn't know about geographical repartition because ACER was not involved in it. He adds, even if a stakeholder proposed a good idea to be included in the network codes it needs to be legally drafted, and this will take time on the ACER side. In addition, the Chair emphasises that the timeline in slide 6 is indicative since the quality of the ACER proposal is essential. The Chair concludes that more information will be provided by next meeting in March.

Freddy Alcazar (EUGINE) clarifies the periods of Q1 and Q2 in amendment process form the slide 6. The Chair confirms this. Aleksander Glapiak (ACER) adds that even though in Q2 is public consultation on Acer proposal, it does not exclude possible engagement with stakeholder in Q1. Freddy Alcazar (EUGINE) asks if some document will be ready for analysis at that time. The Chair confirms that if ACER chooses to consult with stakeholders via workshop in Q1 the material will be prepared in due time.

Luca Guenzi (EUTurbines) comments two points, (1) he mentions the importance of the topics for dedicated workshops such as Grid Forming capabilities, RoCoF, and frequency related issues, (2) Luca provides feedback on the way how the information is filled in the public consultation, he says sometime there are issues in introducing the wording, for example, in some articles it is possible to find data only of sub articles while in the others no. Luca adds that subparagraphs has the same issue. The Chair notes that the problem is very complex structure of RfG and that it is why ACER published a word document for each of the consulted network codes. He adds that ACER cannot exclude that some stakeholders provide their comments in a different way, even by email.

Srinivasa Raju (EUGINE) comments the public consultation in Q2, he asks if stakeholders will have opportunity to comment on the amendments before ACER puts the amendments for public consultation? The Chair notes that he cannot give an answer now, but it will be discussed in the next meeting with regulations. Luca Guenzi (EUTurbines) proposes to have similar structure in the expert groups rather in the workshop. A workshop ends up with presentation and discussion, but there is no consensus, however, an expert group has a deliverable. He provides an example, where deliverables come from consensus from participants of these activities. The Chair expresses his awareness regarding the possibility of structuring the public consultation in a fair and open fashion way under the expert group because the expert groups are closed groups. However, a final check on the legal wording will take place during the finalization in Q3 and there could be a possibility to have another round of discussions. However, this can not be established today. The open topics will be discussed during the targeted workshops in Q1 or earlier Q2 with all stakeholders.

3. ENTSO-E

Debrief from RoCoF and grid Forming workshop on 23 November

Ndreko Mario (ENTSO-E) and Adrian Gonzalez (ENTSO-E) present the slides (available here).

Alberto Cerretti (CENELEC) states about concerns of impacts on TSOs networks, he says that there is no technical solution to manage the grid forming at the moment on distribution level unless there is a dedicated feeder. He adds the necessity of being neutral, either as TSO or as stakeholder CENELEC, to represent all the stakeholders. Ndreko Mario (ENTSO-E) explains that there is a huge amount of generation coming from transmission to the distribution level. In addition, he considers at the moment RfG will enter into force and new units will have these capabilities, to ensure that the important capability from the system security is ensured and are provided by a new form of generation. He states the provided Type B requirements are only the voltage formation, voltage source behaviour, without inertia. Alberto Cerretti (CENELEC) says that type B threshold varies country by county, since it is a system need, it is necessary to deal with impact on DSO networks on European level, the solution cannot be left to each specific DSO because there are big and small DSOs, and the technical solutions are completely different. He concludes that he is not against the proposal, but concerned that the solution should be on European level for DSO networks.

Luca Guenzi (EUTurbines) addresses two comments, (1) he says the timeline issues that need to be discussed to integrated properly the grid forming into the system, (2) he agrees the regarding values of RoCoF that need to be aligned to reality, however, the local values of RoCoF are calculated as average that is not true because the inertia of big units change the RoCoF requirements by itself, it could not be expected the same RoCoF on low inertia and big places. He proposes to have a target for creating the proper inertia for local as well as for global inertia and they should be considered together. Adrian Gonzalez (ENTSO-E) states that ENTSO-E is acknowledge the timeline and the condition for full availability in the market, therefore the transition period of additional three years was introduced. Regarding the RoCoF, ENTSO-E acknowledge in the workshop the difficulties for some SPGMs, and it looks of how it can be improved in this regard,

Luca Guenzi (EUTurbines) says that it is not realistic for the local characteristic, it is not clear the necessity of the requirement (slide 27), it is not an issue of robustness. Ndreko Mario (ENTSO-E) replies that requirements are based on solid studies that were presented. Luca Guenzi (EUTurbines) states that he participated on the presentation regarding RoCoF, where was stated that this is already happening in Europe. Ndreko Mario (ENTSO-E) reacts that in the presentation of RoCoF it was stated for future scenario and not for present.

Kaestle Gunnar (COGEN) refers to second RoCoF workshop and emphasises on the immunity level where was focus on what could happen if nothing is done but the counter measure was less discussed, such as increasing the robust level or high RoCoF events, including to have inertia response from invertors which is the goal of this approach. He thinks it is not a real technical problem, any inverter in manufacturer can do this. He refers to drafting of demand connection code that had a simple idea of having temperature control device doing system frequency control which was kicked out because some of the participants were not happy the way it was introduced, he believes it was because of the business model. He states that requirement was a mandatory but here is a timeline that needs to be respected, no matter of personal product line is, he suggests from perspective of synchronous generators driving CHP machines. Kaestle Gunnar (COGEN) asks about idea of having different speed, but everybody is willing to go in the same direction but with different speeds with quality standards which defines the needs, meaning that there is no interaction of different kind of flavours of grid forming which can cause oscillations. Ndreko Mario (ENTSO-E) supports the Gunnar statement about the part of the solution to be also the demand side, the new types of loads, such as Power-to-Gas, that in extreme events, such as splits, LFSM could save a lot of LFDD actions. He suggests considering the generation is going to the distribution system and if the LFDD units are tripped it may trip also additional generation. Therefore, connection codes should include a mechanism that has a capability in which the demand also is playing a role on this extreme events. He adds that by reducing some of the demand a lot of LFDD tripping can be saved. Ndreko Mario (ENTSO-E) confirms that for the mitigation measures the network code should have the capabilities, not lose the PPMs, SPMGs would cope in extreme events, after the grid forming is proposed. He comments that to have the inertia response and the energy needed to save and to provide the buffer energy is another discussion, it is operational topic.

Luca Guenzi (EUTurbines) states that these requirements (slide 6) go end in end with the requirements in the other code. He says that EUTurbine has been already vocal during workshop where it was said that global inertia is not an issue for the overall system and EUTurbine disagreed on this because they see a RoCoF deviation but then EUTurbine accepted the indication provided on that time based on the fact that they don't expect farther requirement on RoCoF which is happening now. Luca agrees on Gunnar's presentation and with his statement that discussion on multiple regulation is needed. He adds that it is not only the fact that EUTurbine impose an additional requirement, but also, they have 1 Hz/s safety limit of electrical system, and all have to work on that. Luca emphasises that at the moment the only obligation is to crosscheck that inertia is sufficient and provides examples of Ireland and Nordic countries that are proposing something that considering both inertia overall of the system and the RoCoF on island itself. Luca concludes that it should not be only additional requirements for generating unit but also something to avoid the decrement of local inertia that create very high local RoCoF.

Van Bossuyt Michaël (IFIEC) comments on LFDD specifically about the requirements of 45% and the basis on which it was calculated. He adds that the disconnection of industry implies high costs and reconnection can take weeks or months because of damages of installation, in addition, lose a lot of local generation on industrial side, lose reactive power and other balancing services. Michaël concludes that by disconnection demand the system might lose the capabilities the system needs to keep the grid stable. He also mentions that this comment was made on DCC on site level.

Van Bossuyt Michaël (IFIEC) proposes to organise a workshop for all interested parties such as consumers, he mentions expert groups outcomes that can be discussed. The Chair asks Michaël at which context he would like to be reveal the subject of discussion. Van Bossuyt Michaël (IFIEC) replies that in order to organize an expert group it is necessary to have the experts on RoCoF, they will decide what is acceptable and not acceptable, however, the outcome of expert group before it goes to network code could be disseminated to people who are not involved in discussion. Michaël asks how to understand what the impact is of what was decided in the expert group before it goes into the network code. The Chair clarifies that this is a reason why the expert group cannot be fully used for informing the ACER in amending the network codes, and thus a broader consultation is needed. Van Bossuyt Michaël (IFIEC) suggest adding the values and explanation in the future workshops to make it easier for the participants to understand the reason behind. The Chair informs that at the moment there are three expert groups which will deliver the update of the results and afterwards to decide either to keep these expert groups or to create new expert groups. The Chair emphasizes because of lack of resources it is not possible to have many expert groups active in parallel. So far, three expert groups proved to allow for efficient work. However, the work of expert groups under the ESC should not be confused with the ACER role in amending of the network codes.

Subramanian Hariram (SolarPower Europe/EG ACPPM Chair) emphasizes that network is the requirement of certain thresholds of RoCoF, however, from manufacturer point of view there is a difficulty to illustrate the capability of RoCoF, such as testing. Hariram concludes in order to create a requirement it is necessary to know how to measure and illustrate it.

Schaupp Thomas (CENELEC) reacts on Michaël statements regarding the expert groups, he says that the expert groups organized under the ESC inform all the stakeholders on their results, i.e., point 4 of agenda of today. Van Bossuyt Michaël (IFIEC) explains that he is only one who represents the industrial consumers, however, the others interested parties that would like to be informed are not participating. He highlights that is the ESC task to make sure the information is spread, and he adds that the publishing report is not sufficient for these topics.

10 minutes break.

The Chair asks Van Bossuyt Michaël (IFIEC) for clarification regarding his request of involving stakeholders in RoCoF discussion, given that ENTSO-E organised the public workshop last week on the RoCoF, he asks Michaël what exactly would in additional be needed. Van Bossuyt Michaël (IFIEC) replies that now the workshops are very high level, it is difficult to have an understating what implications are and what impact will be on installations. The Chair asks if this is more a question of overall system design and how to manage the frequency during the incidents. Van Bossuyt Michaël (IFIEC) confirms it and gives an example of recent LFDD discussion. The Chair asks if this is a national issue or targeting more Members States, since there are different national delineations of managing the transmission and distribution networks; he gives an example of some DSOs that have 220 kV networks and the others where transmission goes down to 25 kV voltage level. Thus bringing this discussion to the European level may not have a sense for everyone. Van Bossuyt Michaël (IFIEC) replies that it is hard to answer since it is partially on Member States and partially EU level. The Chair takes Michaël's statements into consideration for internal discussion first, because first of all ACER will publish all the proposals from stakeholders, however, he says that it could be the case of one of the public workshops where it could addressed. Van Bossuyt Michaël (IFIEC) concludes by suggesting having some concrete examples in the proposals, to see how the stakeholders should translate proposal in the real world.

Srinivasa Raju (EUGINE) asks if the aforementioned workshop on RoCoF is the webinar that was hold on 23 November. Gonzalez Adrian (ENTSO-E) confirms it. Srinivasa Raju (EUGINE) asks the Chair to explore the possibility of workshop where examples could be discussed. Gonzalez Adrian (ENTSO-E) reacts by saying that hybrid workshop was held in ENTSO-E premises and participated around four hundred people from all continents and from all level of industry.

4. *ESC Expert Groups*

Expert Group: Identification of connection issues for offshore systems (EG CROS)

Ndreko Mario (ENTSO-E) presents the slides (available here).

Thierry Vinas (EURELECTRIC) asks if it is expected to have two network codes one on HVDC and the other on DC. Ndreko Mario (ENTSO-E) replies at the moment there is no operation experience of multivendor project, it will be needed only if two or more stakeholder connected on AC side, first could be regulated by TSO. Mario concludes by saying at this moment there is a need of amendments for AC side of connection, especially for offshore.

Schaupp Thomas (CENELEC) refers to slide 3, the definition of DC connected generators and interface point is identical. Ndreko Mario (ENTSO-E) clarifies that in existing definition the word "DC-connected" was misleading and it is proposed to change to "interface point". Schaupp Thomas (CENELEC) asks to have closer link CROS and ACPPM expert groups, since they both address the grid forming topic. Ndreko Mario (ENTSO-E) agrees on it and emphasis the timeline of the reports of the expert groups.

Kaestle Gunnar (COGEN) asks the for clarification of the terminology on slide 3, the difference of the "Interface point" and "DC-connected", he states the web source of definition of the point of connection "the connection point refers to the connection where the interface point refers to the reference points where measurements are taken.". He proposes unless the metering point exists the definition is plausible, otherwise to revise the definition. Ndreko Mario (ENTSO-E) reacts by saying that the work in progress and the definition is it is not decided yet. Kaestle Gunnar (COGEN) adds that he sent the email to electrolysis community to invite them into this topic, but he did not receive the answer yet. Ndreko Mario (ENTSO-E) informs that in February will be two days of workshop.

The Chair concludes that ESC is looking forward for the final report of expert group CROS. He adds that the amendments to the existing code of HVDC will depend on European Commission timeline. The Chair asks O'Connell Elaine (European Commission) for confirmation whether the EC can proceed with NC HVDC amendments after receiving recommendations on amendments on RfG and DCC? O'Connell Elaine (European Commission) replies that she needs time to answer the question. She explains the workflow process that starts from Electricity Cross-border Committee where the member states and NRAs are involved. The last proposed timelines are still available for HVDC and Direct Current NCs and as regards the future amendments the EC is opened to it. The Chair thanks Elaine and inform about the possibility to deliver more concrete input to the ESC meeting in March.

The Chair mentions that new Direct Current code follows a different process and it is not ACER holding the pen, but ENTSO-E. Ndreko Mario (ENTSO-E) states that Direct Current code should include the capability at DC-PoC that is completely new principle and there are no operation experience with multi-vendors projects. He concludes that the time is needed to end the ongoing multi-vendor projects to have a real experience.

Expert Group: Harmonization of Product Family Grouping and Acceptance of Equipment Certificates in European Level (EG HCF)

Freddy Alcazar (EUGINE) presents the slides (available here).

Alberto Cerretti (CENELEC) refers to slide 2, point 4, he comments that on medium and low voltage in Italy DSO is not involved because Italy relies on standards, standards are defined by national committee appointed directly by regulator and certificates are produced by accredited test labs or certifiers, consequently, only the final declaration is from manufacturer, but all the tests are performed by accredited bodies. He proposes a similar solution could be for type A and B on European level and to define involving parties. In addition, Alberto refers to slide 4, he sates that they have a chapter with varies and families, regarding hardware changes and software changes. He concludes that they already have a text considering Spain, Italy, Germany, Great Britain, and Switzerland position on family invariants. Freddy Alcazar (EUGINE) replies to Alberto's comments by saying that point 4 is a general point because it was difficult to find a right person, the information used was found on ENTSO-E website, however, some of the contacts neither didn't reply or even were no longer valid. He suggests bringing up to date the important information on ENTSO-E website. The Chair asks Freddy Alcazar (EUGINE) to inform the ENTSO-E which information should be updated,

The Chair asks for comments regarding the timeline (slide 5) of the EG HCF deliverable and emphasis that there is a two-month delay. Tony Hearne (EURELECTRIC) comments on issue of obsolete contacts on ENTSO-E website and suggests contacting EU-DSO entity for the updates. The Chair asks the members for objections of moving the deadline for deliverable, since nobody objected the new deadline was approved. He adds that the deadline extension will affect the ACER timeline as well. Freddy Alcazar (EUGINE) informs that EG HSC is considering putting a section, once it will be agreed, the text that can be used directly by ACER for certain articles.

Expert Group: Advanced Capabilities for Grids with High Shares of Power Park Modules (EG ACPPM)

Hariram Subramanian (SolarPower Europe) and Schaupp Thomas (CENELEC) presents the slides (available here).

The Chair comments two points, (1) ACER is not involved in research projects; however, ACER welcomes any initiative from the industry side, (2) ACER needs an input for special meetings mentioned in the slide. ACER hasn't analysed in detail yet any input from the stakeholders received during the public consultations, however, ENTSO-E provided last week an example of such input. He concludes the sooner the EG ACPPM provides the input the sooner a special meeting (workshop) could be convened.

Ndreko Mario (ENTSO-E) comments two points, (1) EG ACPPM for grid forming includes synchronous generators and PPMs, he states that grid forming should focus directly on PPM because the grid forming is part of PPM requirements. (2) Chapter 7 regarding services, Mario says that ancillary services are out of the scope of GC ESC because it focusses on capability, technical requirements for the connections. The Chair reacts to Mario's statements by saying that EG ACPPM dealing with PPMs capabilities, and it is not clear how to utilize these capabilities in system operation. However, he thinks that it is important for the stakeholder and regulators to understand how the system is designed. He mentions that a general system design could utilize both more centralized sources for grid forming (e.g., synchronous condensers installed by SOs), or distributed sources could be used. He explains that regulators need to understand what is more efficient, consequently, these details need to be discussed in a broader context. Schaupp Thomas (CENELEC) replies on SPGMs question, he agrees that grid forming capability is addressed only to PPMs, however, the SPGMs is included because of several stability aspects, for instance, stable operation of LFSM that was discussed in Germany and due to the use of simulating input testing for LFSM these units are not parameterised in a stable way.

Wilch Michael (EDSO for smart grids) states that from point of view there is lack of operation experience of synthetic inertia and grid forming capabilities, he fears oscillations between those appliances in the distribution system. In addition, Michael reminds that using those appliances and new capabilities are very small and will be connected to the distribution system in a very high volume around 10.000-100.000 units and it needs to ensure that no capability which needs to be parameterized on individual basis.

Tony Hearne (EURELECTRIC) asks (1) for explanation of the phase jump power and amplitude jump power concepts, and (2) about dispute of the DSO on islanding consideration how they are progressed. Schaupp Thomas (CENELEC) replies by referring to the slide 4 and says that the concepts will be defined in the paper in the separate chapter. In addition, he explains the concept bay saying if there is an voltage source PGU connected to the voltage of the grid and these two are connected by an impedance and one of the voltage sources (in this case of the grid) has a jump than the voltage angle deviation over this impedance appears and this leads to instantaneous active power flow which is only defined by the behaviour of the impedance. Schaupp Thomas (CENELEC) reacts regarding DSO topic by stating that no clear definition of next steps, however, from CENELEC point of view it was decided that for time being the grid forming should not be connected to the low voltage grid and medium voltage grid unless it has is a dedicate feeders directly connected to the substation.

Kaestle Gunnar (COGEN) refers to the slide 6 by saying that damping sometimes can be misunderstood by inertia, thus he asks not to forgot about damping.

Eric Dekinderen (VGBE) refers to Mario's words asking if the system operation guideline, operational codes, and emergency and restoration are not the topic of this expert group, however, in the restauration emergency code specified that black out can take 24 hours and more, then according to the national restoration plan, it can be imposed than someone has to go online again and detail look and how it should be done at the moment trying to apply that principle, for instance, for PV panels.

Assiet Aren (EUGINE) asks if the EG ACPPM has any plan or timeline for the grid forming. Schaupp Thomas (CENELEC) reacts by explaining that grid forming requirements as inertia power and phase jump power amplitude as it is defined here will never be requirement by SPGMs because SPGMs bring this naturally, and the grid forming is only for PPMs. He adds that additional stability topics such as configuration of LFSM controllers and stuff is part of RfG 2.0.

Ndreko Mario (ENTSO-E) explains the transmission level point of view by providing an example, even though FRT capability will be there the amount of type B generation may be lost, consequently, the grid forming capability could support during the transmission level faults.

5. *CENELEC updates - Status of EN 50549-1 and -2 Status of draft prEN 50549-10:2021*

Alberto Cerretti (CENELEC) presents the slides (available here).

The Chair asks for comments, however, no comments appeared.

6. *EUTurbines`- ENTSO E Public Workshop RoCoF*

Luca Guenzi (EUTurbines) presents the slides (available here).

Ndreko Mario (ENTSO-E) mentions an additional local requirement as FRT and that SPGMs has mandatory requirement to comply with FRT. Luca Guenzi (EUTurbines) refers to the slide 4 and explains the graph of RoCoF. He concludes that need to study in detail these phenomena and agrees that FRT was considered as one of the options.

Thierry Vinas (EURELECTRIC) refers to the slide 8 and asking if Luca has specific countries in mind. Luca Guenzi (EUTurbines) replies by providing an example of UK and explains that should be look at different capabilities one by one and not to look at limitation. He adds that phenomena of the RoCoF from the picture is oscillate while in laboratory the RoCoF is an average.

Assiet Aren (EUGINE) replying to the Mario's statements by saying about experience with measure institutes or certificate body where was always discussion about short-time and long-time RoCoF. He adds that for short-time RoCoF is quite easy to get some values, however for long-time RoCoF is difficult to get values. He refers to Luca's statement that FRT can be an option, but it is still not enough to over the difficulty here.

ACTION: To organise a new workshop on RoCoF.

7. *AOB*

The Chair reviews the GC ESC meetings in 2023; the meeting on 29 September is moved to 28 September.

The Chair concludes the meeting.

ACTION: Circulate meeting dates for 2023.

8. *Follow-up actions:*

1. To include in the minutes the link to the material from the workshop on 23 November.
2. To organise a new workshop on RoCoF.
3. To circulate meeting dates for 2023.