

29th Grid Connection European Stakeholder Committee (GC ESC)

16 March 2023 from 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
Biellmann	Herve	EUTurbines
Cerretti	Alberto	CENELEC
Chambers	Keith	Europgen
Dekinderen	Eric	VGBE
Dembi	Vidushi	WindEurope
Gabrijel	Uros	ACER / Chair of GC ESC
Glapiak	Aleksander	ACER
Gonzalez	Adrian	ENTSO-E
Guenzi	Luca	EUTurbines
Gallego	Santiago	EDSO for smart grids
Hearne	Tony	EURELECTRIC
Kaestle	Gunnar	COGEN
Kay	Mike	GEODE
Malbrancke	Marc	CEDEC
Melnychenko	Mariia	ACER

Ndreko	Mario	ENTSO-E
O'Connell	Elaine	European Commission
Oberhauser	Klaus	VGB Powertech
Pasquadibisceglie	Marco	Arera
Raju	Srinivasa	EUGINE
Schaupp	Thomas	CENELEC
Schowe-von der Brellie	Bernhard	EFAC / VAZ (FGH)
Stoessl	Martin	Organism
Treichel	Julian	CharIN
Lewis	Thomas	EASE
Van Bossuyt	Michaël	IFIEC Europe
Vinas	Thierry	EURELECTRIC
Van Leeuwen	Tobias	EU DSO Entity
Wang	Mian	EG ACPPM ViceChair
Zastavnetchi	Dmitri	ENTSO-E

1. Opening

1. Review of Agenda

The Chair welcomes the participants to the 29th 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 notices that the presentations for Agenda points 4, 5a, 5c, and 6 were not uploaded and he asks to circulate the material either during or after the meeting. Adrian Gonzalez (ENTSO-E) informs that he received them some hours ago, so they will be available on the ETNSO-E website in following hours.

The Chair asks for any additional topics to be covered under AOB. No topics are suggested.

2. Approval of the minutes

The minutes are presented and approved (available [here](#)).

The Chair asks for any comments on the draft minutes of the last GC ESC meeting. Thomas Schaupp (CENELEC) asks to circulate the minutes earlier to have time to review them. The Chair agrees with the comment of Thomas Schaupp (CENELEC) and he asks ENTSO-E to circulate the minutes in next occasions, ideally one month after the meeting they refer to.

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 the meeting dates for 2023 were circulated and published on GC ESC website. He further mentions that the links to the materials from public workshops on RoCoF and Grid Forming that took place on 23 November 2022 can be found in the minutes. Adrian Gonzalez (ENTSO-E) informs that two additional sessions on RoCoF withstand capability of big SPGMs were organised between ENTSO-E and EUTurbines, Euelectric, and VGBE as was requested by them in the last GC ESC meeting. Eric Dekinderen (VGBE) mentions that he could not find the link to the second part of workshop organised by the R&D colleagues from ENTSO-E on 23 November. Adrian replies that being not a part of the GC ESC, its content is accessible from other part of ENTSO-E's website and provides the link in the Teams chat.

2. ACER

Grid Connection NC amendments status and way forward.

Georgios Antonopoulos (ACER) presents the slides (available [here](#)).

Luca Guenzi (EUTurbines) asks if the dedicated public workshops organised by ACER-NRAs (slide 4) will be informative or interactive. Georgios Antonopoulos (ACER) replies that in the workshops ACER will present its point of view on these amendments and discussion is welcome.

Luca asks how the members of the project group (slide 3) have been selected and whether the project group members' involvement is on request and whether it depends on the topic. The Chair replies that is an internal ACER project group (slide 3) covering different topics which are split among different regulators and ACER in order to have a coordination layer amongst the regulators which will lead to the final ACER's draft proposal for public consultation.

The Chair summarises the future workshops mentioned in slide 4, on dedicated topics identified by ACER as highly relevant. The Chair explains that, on "Electromobility, heat-pump and power-to-gas" workshop, ACER will have a draft legal text proposal which can be updated after the workshop. Regarding the "Advanced capabilities and RoCoF withstand capability" workshop ACER may not have a draft legal text proposal; however, ACER will present its point of view and provide an opportunity for other EU associations to present their opinions. The last workshop on "Requirements for storage" ACER will have a draft legal text proposal that will be discussed.

Luca Guenzi (EUTurbines) asks regarding the time expected for ACER to provide the material for the workshops. The Chair replies that ACER is aiming to provide its materials two weeks in advance of these workshops. In addition, the

Chair emphasizes that ACER is committed to continue participating in the discussions organised by ENTSO-E on “Advanced capabilities and RoCoF withstand capability” topics and depending on the state-of-play, ACER will present its views. The Chair notes that ACER is selecting only the topics mentioned in the slides for additional discussions with stakeholders before the public consultation in late Q2. Regarding the full-fledged public consultation ACER will provide a sufficient time for stakeholders to respond - approximately 10 weeks. After the formal consultation process concludes, ACER could still request stakeholders to further clarify any topics as needed.

Eric Dekinderen (VGBE) asks if it is possible to have an additional workshop if several stakeholders would like to address some topics, for example, the final reports of Expert Groups from Agenda. The Chair replies that ACER does not exclude to have an additional workshop, however, it depends on the stakeholders’ reactions on ACER’s proposals.

Herve Biellmann (EUTurbines) asks regarding the meaning of advanced capabilities and RoCoF withstand capability, if it is related to technology (e.g., renewable, batteries, HVDC) or to grid (e.g., advanced control strategies). The Chair explains that by advanced capabilities it is considered grid forming capabilities. He adds that ACER will present its early point of view on this topic that can be a possible compromise solution without legal text. Herve asks if the synchronous compensator solution will be covered on this workshop. The Chair recalls one of the past GC ESC meetings where he stated that it is expected from TSOs to define the system needs and to propose the most cost-efficient solution for the system design, meaning that capabilities can come from various sources. The chair notes that it will be necessary to develop a flexible solution to tackle the uncertainties of the future behaviour of the system, and the grid connection network codes should allow this.

Thomas Schaupp (CENELEC) asks if it is expected that Expert Group ACPPM will contribute to these workshops. The Chair agrees with him and proposes to reserve a timeslot for presentation of the final report from the Expert Group.

Mario Ndreko (ENTSO-E) explains that by grid forming capability ENTSO-E understands a new set of capabilities provided by power converter-based resources, it is not related to synchronous condenser or synchronous machine, i.e., PPM and not SPGM. The Chair confirms and agrees with Mario Ndreko (ENTSO-E) statement.

Florentien Benedict (CEDEC) informs that the final draft report of the Expert Group will be ready by the end of March or beginning of April so could indeed provide inputs for the workshop. She suggests to GC ESC to review the position paper of EU DSO Entity. The Chair notes that ACER takes into account the position paper and ACER will consider all available information in order to present their point of view in the designated workshop. He emphasizes the importance of having an opportunity for the Expert Group to present the final work ahead of next GC ESC meeting.

Luca Guenzi (EUTurbines) asks for explanations on advanced capability topic, specifically on providing grid services. The Chair explains that grid services, in case they are optional (i.e., ancillary services), is out of scope of grid connection network codes. The discussion is on defining the required capabilities, harmonizing them to the extent possible to drive the manufacturers’ cost down and allowing the most cost-efficient approach to be implemented in the system design.

3. EUTurbines

RoCoF amendment - SPGMs constraints

Luca Guenzi (EUTurbines) presents the slides (available [here](#)).

Mario Ndreko (ENTSO-E) acknowledges effort made and supports the exchange between ENTSO-E and EUTurbines during past three weeks. He addresses two points, (1) ENTSO-E acknowledges that based on the study of EU Turbines, the high RoCoF specified in the proposal of ENTSO-E might in conjugation with the duration of the disturbance may be an issue for machines with very high inertia constant H. This is not a challenge for PPMs. He mentions that in the discussion between ENTSO-E and WindEurope it was validated that PPMs and electric vehicles have no RoCoF issues and we should now discuss only large inertia SPGMs. All converters interface devices have no challenge with the requirement with ENTSO-E proposal for RoCoF immunity. (2) ENTSO-E acknowledges the physical limitation issue with high inertia constant SPGMs. Mario Ndreko (ENTSO-E) proposes to work together in a proactive manner and first define the boundary conditions, where FRT is demonstrated but RoCoF immunity cannot be shown as a result of high

inertia constant, and based on this to define an amendment proposal that makes specific RoCoF requirements for high inertia constant SPGMs. He concludes that ENTSO-E is open for discussion and proposing an exception for large inertia H machines.

Luca Guenzi (EUTurbines) reacts on Mario Ndreko (ENTSO-E) comment by mentioning that inertia issue is not only on the generation units but on the overall system. He mentions that in the ENTSO-E's proposal on RoCoF is indicated only how to cope with inertia, however, the requirements for generating units are mentioned only once. Luca expects to have requirements that makes the system stable. He considers that this point is a shared burden and should be discussed. Luca considers that defined RoCoF in frequency limits needs revision because it is not only for big units but for all rotating units that provide them issues.

Herve Biellmann (EUTurbines) recalls the discussion about the importance of short circuit value on the point of connection and the difficulties with low voltage ride through profiles. He notes that if there is a need to specify withstand capability for a given frequency profile, it is necessary to have some hypothesis on short circuit power. He mentions that based on the last discussion there is wide range of short circuit powers given by TSOs throughout Europe, but it is not clear whether it is possible to obtain from TSOs the target values for minimal circuit power to consider for simulations. He recalls the last dedicated meeting when the example of 10 GVA grid was shared, which is six times the rated active power of the unit for the big nuclear units, which is in German rules to perform an additional low voltage ride through simulations. Considering this 10 GVA unit, it could remain connected with big units for RoCoF of 1Hz/s for 1 second, and as soon as it goes with longer duration or high RoCoF value, the loss of synchronism can occur. Herve appreciates the proposal of continuing the discussion and emphasises that hypothesis of inertia is very important point because in the future the erosion of short circuit power could occur.

Eric Dekinderen (VGBE) clarifies about ENTSO-E's willingness to make an exception for larger generation units that means a higher RoCoF value as a general rule. He asks for opinion of grid users on consumption side, such as DSOs and large industrial customers regarding the RoCoF proposal.

Thierry Vinas (EURELECTRIC) asks Mario Ndreko (ENTSO-E) regarding the limit of RoCoF in the case of many different power plants with big units, if it depends on size in megawatts or the inertia. Mario Ndreko (ENTSO-E) replies that ENTSO-E had proposed as a general requirement for PGMs. He notes that ENTSO-E understood from EUTurbines that there is physical limitation for big machines due to fact that the large mass rotor cannot follow the rapid change in frequency. The capability for PPM is not a big issue for the converter-based units, however, it can be an issue for SPGMs with very large H constant. Mario emphasises that ENTSO-E is open for discussion to find out the condition of inertia constant threshold. Luca Guenzi (EUTurbines) mentions the report of Dynamic Stability Assessment (DSA) where is clearly stated that inertia is under control and the values are 1 Hz/s and the maximum deviation of frequency is 51.5 Hz. Considering the DSA and the non-splitting event the RoCoF issue is evident. He also mentions the Inertia project prepared by ENTSO-E that indicates how to mitigate the deviation of RoCoF limit and that it is crossing the stability limit for overall system. The other countermeasures from the Inertia project should be considered too.

Thomas Schaupp (CENELEC) asks for clarification in numerical range of the difference between a big unit and a small unit, and between the high inertia and small inertia. Luca Guenzi (EUTurbines) replies that their focus was on 500 MW and above, such as big CCGT, nuclear power plant, or similar. Herve Biellmann (EUTurbines) explains that by big units imply high constant inertia units with the range between 5 and 7 seconds. He adds that more information can be found in the report written for EirGrid several of years ago, where different turbogenerator technologies were reviewed as well as the inertia constant values (DNV KEMA RoCoF Report for Ireland (2013) [here](#)).

Eric Dekinderen (VGBE) expresses awareness about the validity of the report “Frequency stability in long-term scenarios and relevant requirements”. He notes that the report was written in 2021 and a possible update is needed considering that the natural gas situation has changed on the market. Mario Ndreko (ENTSO-E) reacts on Eric’s comment by stating that other countries are seeing a natural gas situation as acceleration of renewables. He adds that the ENTSO-E didn’t consider the natural gas situation in the 2021 report, however, a more elaborated study is ongoing that will be finished this year. Adrian Gonzalez (ENTSO-E) reacts on Eric’s comment by mentioning that in the second stage of the project, which aims to provide further insights and recommendations, will take into account the impact of electromobility, among other up to date forecasts. He explains that potential changes regarding return to nuclear are not real projections but ideas under discussion, so the study cannot consider them. On the other hand, the European Commission’s measures to increase investments in renewables rather than in synchronous generation is a fact.

Aren Assiet (EUGINE) thanks Luca and Mario for the efforts analysing the high RoCoF issue and mentions that, maybe, it can also be a problem for smaller size combustion-engine generator sets. He explains that the reason would be in the controlling algorithm of this machines, which tries to stabilize the frequency and has been evolving in the last decades (based in the ISO 85 28, a worldwide standard for combustion engines) EUGINE has been developing generator sets working to reduce the G class in the standard, meaning that frequency deviation should be reduced as much as possible after load rejection events. Withstanding a higher RoCoF implies larger ranges of operation, which would interact with the engine control itself. Aren proposes not to exclude smaller combustion engines and to investigate the model to understand the impact of high RoCoF phenomena. Mario Ndreko (ENTSO-E) says that ENTSO-E follows the large inertia constant issue, however, for the small inertia ENTSO-E has not identified such issue. He notes that discussion should be focused on SPGMs with large inertia.

Luca Guenzi (EUTurbines) mentions that recovery is a very difficult phenomenon because it can be only expected but it is difficult to have a real test on generating unit. In addition, he proposes to add EUGINE to the RoCoF discussion. Adrian Gonzalez (ENTSO-E) replies that ENTSO-E welcomes anyone interested and mentions that the invitation for future meetings will be shared also with EUGINE. He notes that ENTSO-E is not creating the requirement from scratch, because it is there as the national implementation of current version of RfG and with a supporting IGD, ENTSO-E is trying to harmonize these requirements and adapt them to future needs. The Chair notes that EUGINE will be invited to the separate RoCoF discussion organised by ENTSO-E. Thomas Schaupp (CENELEC) remarks that in EN 50549 for type A and type B synchronous generators, there is a requirement for a RoCoF robustness and working group 3 agreed to change this. He suggests reviewing this standard since it is entering currently into national public consultation.

Tony Hearne (EURELECTRIC) supports the comments of Aren Assiet (EUGINE) to include the smaller generators in the RoCoF discussion.

Gunnar Kaestle (COGEN) refers to the first workshop on RoCoF from last year where on the problem was described and the only solution was presented which is to raise the immunity levels. He considers that topics such as synthetic inertia and how to raise the level of the inertia from classical rotating machines in newer inertia from power electronics were underdiscussed. He expresses awareness on how the future will be developed in macro economical optimal sense. He suggests that, regarding the RoCoF and the immunity level, the loads should be taken into account. He asks if there is a difference from system operators’ point of view, if a large number of tiny sources for synthetic inertia exist or if larger units at the high voltage and extra high voltage network are equipped with this feature in future. He also asks if it is important the voltage level where this service comes from. Mario Ndreko (ENTSO-E) replies that ENTSO-E fully support the position that the new loads have a big role in the solution. In ENTSO-E’s proposal it was addressed how to solve for frequency stability problem and to obtain flexibility from the loads like EVs, temperature-controlled devices and power-to-gas demand units. Therefore ENTSO-E has this new requirement also proposed for DCC (LFSM-UC) as the capability to keep converter-based loads connected during big events, including the RoCoF immunity. He agrees with Gunnar that the loads should be considered as well. In addition, Mario replies on the converter-based generation question by explaining that ENTSO-E’s proposal on grid forming for PPMs does not have as mandatory requirement the inertia part, meaning that if we want to have inertia contribution this could be as a mitigation measure, which could be part of the operation or market. Thomas Schaupp (CENELEC) mentions that in CENELEC they discussed the capabilities of DSO grids to host grid forming and from a DSO perspective it is a significant difference where the grid forming is placed, and it poses a significant effort and problems to include them in the low

and medium voltage grid. He emphasises the unsolved problem of unintentional islands and protection structure that is not developed for such cases.

Keith Chambers (Europgen) considers that high RoCoF may also be an issue for smaller machines. He requests to include Europgen to the RoCoF discussion. In addition, he notes that the RoCoF is a challenge from manufactures perspective to find a realistic way to test it and to prove capability.

Herve Biellmann (EUTurbines) asks if it is expected that grid forming converters (renewables or batteries) remain connected during the RoCoF event or it is expected that they provide synthetic inertia. Mario Ndreko (ENTSO-E) replies that as a mandatory requirement for PPMs with grid forming the ENTO-E's proposal did not have contribution to inertia, it is the voltage source behaviour within voltage, power and current limits which enhances the stability when the system becomes weak (low short circuit ration). He explains that in the future if someone wants to provide inertia support or provision of buffer energy in kW for limiting inertia as a service, the basic requirement of GFC supports this as well as the possibility to invest additionally in the required storage for inertia part on top of the grid forming. Herve asks why the proposal does not require synthetic inertia from PPM technology and who is capable to provide it if there are no SPGMs. He reformulates his question by asking why it cannot be asked for additional support to maintain the grid. Mario Ndreko (ENTSO-E) explains that the ENTSO-E does not want the proposal to impose storage or buffer energy. Thomas Schaupp (CENELEC) suggests addressing this topic on point 5 of Agenda to Expert Group ACPPM. Luca Guenzi (EUTurbines) reacts by explaining that EUTurbines is against of translation of a problem into requirements to generation unit, he emphasises that manufacturers are always facing ambitious innovative requirements, however, the stability of the system should be ambitious as well. The Chair mentions that after grid connection network codes there will be a point in time where the System Operation Guideline and Network Code Emergency and Restoration will be amended.

ACTION: To invite all GC ESC members to future RoCoF discussions following requests from EUGINE and Europgen.
ACTION: ENTSO-E to send boundary conditions for RoCoF simulations to EUTurbines so the latter can finalise the simulations leading to a RoCoF exemption for certain SPGMs.

10 minutes break.

4. ENTSO-E: Coordination and alignment efforts on amendment proposals

Adrian Gonzalez (ENTSO-E) presents the slides (available [here](#)).

Mike Kay (GEODE) refers to the slide 3 bullet 2, sub-bullet 2, stating that there are gigawatts of grid following converters connected to DSO systems with a very low amount of islanding issues detected. In addition, he mentions that the fact of having more local balancing between active demand and generation is misleading. The topology of the island that would be formed is random, consequently the local balance is random. It is less probable that these changes increasing the risk of islanding. He concludes that an additional investigation and discussion is required on this point. Adrian Gonzalez (ENTSO-E) replies that ENTSO-E considers that unintended islanding phenomena will unavoidably increase, not because of Grid Forming Capability in particular but because of the increase of distributed energy resources, so the needed adaptation of the distribution grids will not be eluded by removing the amendment. Mike agrees that the islanding handling will be a challenge in future. The Chair asks if in distant future all grid forming capabilities will mainly be delivered by distributed energy sources inside distribution networks. Tony Hearne (EURELECTRIC) replies that in Ireland the ratio is approximately 50/50 between distribution and transmission in terms of megawatts. The Chair asks TSOs if, considering that grid forming will be coming from different sources, TSOs will perform a macroeconomic assessment of this. He also asks if the transition of DSOs to more complexity, such as maintenance, protection and control, would be cheaper to establish in more centralised way considering other solutions. Mario Ndreko (ENTSO-E) replies that the proposed capability for grid forming does not require additional storage hardware for PPMs, as was mentioned, it tackles only converter interface of renewables, thus it is the only cost element that manufacturers have to provide. He explains that the proposal includes the minimum technical capability, and it does not consider the mandatory inertia part contribution because it means additional cost, such as storage. Mario emphasises that aim of ENTSO-E's is not to increase the CAPEX of future project of PPMs, but to have a necessary capability for future within the energy power ratings of PPM. He concludes that ENTSO-E did not develop a full CBA

but focused on the system needs and the state of art of the technology. The Chair clarifies that his question is more on system design, he proposes that TSOs define future scenarios, taking input from national generation mix choices, and according to system needs there are two outputs: (1) CBA that helps to achieve the system design parameters most cost efficiently;(2) the part that should be delivered through grid users capabilities. Tony Hearne (EURELECTRIC) asks if DSOs should prepare the cost analysis to solve the issues that have been identified in the DSO's paper in order to compare with whole system alternatives, The Chair explains considering that CBA has two parts, first TSOs define the future system needs for the system and second TSOs require proper inputs from DSOs. The Chair asks if TSOs will engage in a CBA. Mario Ndreko (ENTSO-E) expresses predisposition to work towards elaborating such a CBA but shows concerns about scope, uncertainties, and complexity. The Chair expresses his willingness in support and collaboration on elaborating of the CBA and he notes that a cross-committee (SO ESC and GC ESC) work could be considered. Mario mentions that to define the CBA the amounts of new PPMs connected to medium and high voltage should be assessed. He adds that should be considered all synchronous and non-synchronous solutions involving OPEX. He asks if elaboration of the CBA is official request to ENTSO-E. The Chair replies that it is an ACER's recommendation and adds that regulators would in principle expect this CBA from TSOs. The Chair adds that it would be beneficial to involve everyone to participate and that workshops could be organised to this end. Mario Ndreko (ENTSO-E) asks regarding the timeline of the CBA. The Chair replies that ENTSO-E can define the timeline for its own consideration and the outcome would not be expected before the end of this year. He notes that it would benefit everyone across the industry. Adrian Gonzalez (ENTSO-E) thanks the comment from ACER noting that, during the development of the proposals ENTSO-E did not have any feedback on how likely it would be that they become adopted by ACER and the European Commission. Therefore the time resource-consuming exercise of preparing CBAs for each of the proposals could not be performed, as it was not performed before. Mario Ndreko (ENTSO-E) asks the Chair if the CBA would be considered during the current revision of the grid connection codes. The Chair explains that the issue of grid forming may not be fully solved during this revision due to DSOs' challenges with the onboarding of these capabilities because of the unintended islanding issues. However, next time ACER will amend the codes and the version 3 could be more exhaustive. The CBA will therefore support Member States to orient their national choices for the generation mix and implement outcomes in the meantime.

Alberto Cerretti (CENELEC) comments two points, (1) he notes that in the Expert Group ACPPM the topics of the impacts on DSO was addressed and a proposal was drafted which will be discussed. (2) regarding the CBA, he mentions that in Italy TSO asks for reactive power compensation from the cables, considering the needed reactive power and installing all the reactive power on medium voltage and not the cost of the component itself, the synchronous condenser is then the most convenient solution. Consequently, if a synchronous condenser is present, the master performance of grid forming is requested. Alberto Cerretti (CENELEC) agrees with the holistic approach of the ENTSO-E's proposal.

Gunnar Kaestle (COGEN) considers that features will not be delivered on distribution level. He explains that either we use these features which are installed on distribution level and has small increase of cost to enable this for further services or we rebuild the other equipment at a higher level as a solution. He concludes that a solution of islanding issue should be found at low and medium voltage because of economic benefits.

Eric Dekinderen (VGBE) notes that in the presentation is discussed only bilateral collaboration with WindEurope, he asks if photovoltaic installations for grid forming capabilities are considered as well. Adrian Gonzalez (ENTSO-E) replies that the Expert Group ACPPM is addressing already this topic with a good representation from the solar industry, but naturally ENTSO-E is open to include SolarPower Europe in any future dedicated discussion.

Florentien Benedict (CEDEC) mentions that together with grid forming and new requirements for RoCoF a complex calculation for the grid will follow and it implies a huge amount of work. She notes that this point was presented in the position paper of EU DSO Entity. The Chair replies that it is recommended for system operators to combine efforts in addressing this challenge.

5. ESC Expert Groups

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

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

Eric Dekinderen (VGBE) notes that for demand offshore it is the intention to make its own rules, for instance, a battery connected to the AC side of an HVDC link, and another battery connected directly with AC link offshore, that requirements can be different. He mentions that can be the other scenario when a battery installed onshore or offshore is connected with the HVDC link or offshore. Mario indicates that this follows the principle as AC connected PPMS are in RfG and DC connected PPMs are in HVDC, so they have different requirements.

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](#)).

The Chair asks for explanation regarding the identification of legal text proposal for amending the currently consulted connection network codes. Freddy explains that different proposals were done last year by different stakeholders, which means that the different organisations created proposals that were based in the work done on this report. There are no additional proposals in the presentation. The Chair confirms that the draft legal text is not in the scope of individual terms of reference for different expert group, however, it is contained in the boilerplate terms of reference, in paragraph 2, page 4. The Chair asks if it is reasonable to expect from the EG a concrete draft legal text proposal by end of May. Freddy Alcazar (EUGINE) confirms that could be feasible, but explains that the text proposal should be aligned, which is challenging.

Gunnar Kaestle (COGEN) refers to slide 3, he asks why the Expert Group excluded the link to the project of EN50549-10 which is for low and medium voltage generator. Freddy replies that the EN50549-10 is included and mentioned in the report, especially in section 7 about the harmonization overall all certificates. Bernhard Schowe-von der Brelie (EFAC) mentions that this EN standard is on PGU standardized complaint scheme, the EN50549-10 is a measurement scheme on PGU testing. He refers to Freddy's comments and stating that there is no standardised approach for PGM compliance. Bernhard states that PGM compliance is still an important issue, but it could not be addressed by Expert Group in the meantime.

Thomas Schaupp (CENELEC) asks regarding the legal text proposal that in Annex 2 is not current legal text proposal but a proposal on how to change the legal text. Freddy explains that Annex 2 describes how to go from point of connection to generator or unit terminal when analysing the requirements. He emphasises that this is important for Type A and in some cases for Type B or C. Thomas asks if the RfG will be changed in this regard. Freddy replies that it is not necessarily to change the RfG for this. The Chair notes that not everything can be transposed into the amendments, however, the useful guidelines can be used as an input to an IGD.

Mike Kay (GEODE) asks if a legal text proposal from the EG would be sufficient in order to change the RfG. The Chair explains that when proposing the amendments, it is necessary to consider the overall legal framework applicable in EU. He concludes mentioning that if a concrete proposal is not received from the Expert Group the inputs from the public consultation will anyway be taken into consideration by ACER.

Tony Hearne (EURELECTRIC) asks if the concrete example can be illustrated. Freddy replies that in section 4, the proposals depending on technology that can be found in the first paragraph describing family and defining applicability range.

ACTION: EG to try to align on a concrete draft legal text proposal to be sent to ACER by end of May.

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

Florentien Benedict (CEDEC), Mian Wang (EG ACPPM ViceChair), and Thomas Schaupp (CENELEC) presents the slides (available [here](#)).

The Chair asks regarding the content of the report and the submission date of the report. He acknowledges that some topics which can be agreed will be included in a legal text proposal while for other topics where there are diverging views these can still be mentioned in the report. The Chair suggests finalising and submitting the report as soon as possible or to circulate it among members for revision. Florentien suggests submitting the report in June.

ACTION: To circulate the EG ACPPM's report among members for revision and to have it ready for approval in June's meeting.

6. 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, but no member intervenes.

7. AOB

The Chair asks for any additional topics to be covered under AOB. Adrian Gonzalez (ENTSO-E) informs that in January was launched the public consultation on two new drafts IGDs: Compliance Verification - Monitoring after operational notification and Compliance Verification - Simulation models. He mentions that a relevant number of comments were received and thanks the members for the feedback. All the comments are being assessed by ENTSO-E in order to produce the final version of the IGDs, which will be published before June's GC ESC meeting.

The Chair concludes the meeting.

8. Follow-up actions:

1. ENTSO-E: To invite all GC ESC members to future RoCoF discussions following requests from EUGINE and Europgen.
 2. ENTSO-E and EU Turbines: ENTSO-E to send boundary conditions for RoCoF simulations to EUTurbines so the latter can finalise the simulations leading to a RoCoF exemption for certain SPGMs.
 3. EG HCF: To try to align on a concrete draft legal text proposal, to be sent to ACER by end of May.
 4. EG ACPPM: To circulate the EG ACPPM's report among members for revision and to submit have it ready for approval in June's meeting.
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