25th Grid Connection European Stakeholder Committee (GC ESC)

02 March 2022 from 09:00-13:00

Microsoft Teams

Minutes of the meeting

Participants		
Alcazar	Freddy	EUGINE
Aren	Assiet	EUGINE
Benedict	Florentien	CEDEC
Bridi	Alberto	CEDEC
Buquet	Maxime	EUTurbines
Cerretti	Alberto	CENELEC
Chambers	Keith	Europgen
Dekinderen	Eric	VGB
Eckstein	Steffen	EUTurbines (observer)
Gabrijel	**Uros**	**ACER / Chair of GC ESC**
Gallego	Santiago	EDSO for smart grids
Glapiak	Aleksander	ACER
Gomes	Maria	ACER
Gonzalez	Adrian	ENTSO-E
Govindaswami	Sudharsana	Europgen
Guenzi	Luca	EUTurbine - Solar Turbine
Hearne	Tony	EURELECTRIC
Johansen	Knud	ENTSO-E
Kaestle	Gunnar	COGEN
Kay	Mike	GEODE
Klonari	Vasiliki	WindEurope
Lewis	Thomas	EASE

Malbrancke	Marc	CEDEC
Ndreko	Mario	ENTSO-E
Oberhauser	Klaus	VGB
O'Connell	Elaine	European Comission (DG ENER)
Osenberg	Jan	Solarpower Europe
Pasquadibisceglie	Marco	Arera
Pinto-Bello	Andres	SmartEN
Raju	Srinivasa	EUGINE
Schowe-von der Brelie	Bernhard	EFAC / VAZ (FGH)
Steossl	Martin	Orgalim
Theologitis	Ioannis	ENTSO-E
Van Bossuyt	Michaël	IFIEC Europe
Vinas	Thierry	EURELECTRIC
Wilch	Michael	EDSO for smart grids

1. Opening

1. Review of Agenda

The Chair welcomes the participants to the 25th 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 connected.

The agenda is presented and approved (available here).

The Chair asks for any additional topics to be covered under AOB. Eric Dekinderen (VGB) raised the point of adding a point regarding the final report of Criteria of substantial modernisation EG.

2. Approval of the minutes

The minutes are approved with no further comments (available here).

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

Ioannis Theologitis (ENTSO-E) presents the follow-up actions and their status from the previous meeting.

Gunnar Kaestle (COGEN) asks if there are nominees for the position of Chairman of Advanced Capabilities EG. Ioannis replies that there were exchanges with a few members, but no nomination has been submitted. Gunnar raises his interest for the role.

Vasiliki Klonari (WindEurope) asks if position could be appointed to an internal ENTSO-E employee. Ioannis replies that there is no additional resource planned from EE secretariat.

2. CNC implementation – ENTSO-E updates

Ioannis Theologitis (ENTSO-E) informs orally that there is no further update since last GC ESC meeting in December 2021. The planning of pending IGDs from Cluster of Compliance Verification is ongoing. First IGD is available. IGD for Use of Validation Models is initiated, the draft is expected to be available in Q3, latest Q4 2022. The third IGD on Compliance Monitoring after Operational Notification will be initiated after second IGD, its submission is also planned for Q4 2022. Further updates will be provided during next GC ESC meeting in June 2022.

Mike Kay (GEODE) sees a conflict between published IGD on Certification and the depiction of synchronous generated modules in the RfG document. Mike further suggests replacing the diagram since it may cause confliction across Stakeholders what a synchronous PGM is. Ioannis stresses the focus of depiction was on relation between PGM, units and components and that no update has been provided on that. Knud Johansen (ENTSO-E) will adress the issue on the EG.

Eric Dekinderen (VGB) asks to submit the titles of the IGDs. Ioannis informs that they can be found in the last GC ESC meeting's minutes under Topic 2.

Freddy Alcazar (EUGINE) comments that there should be an alignment between members of the corresponding EG which is drafting the IGD on Use of Simulation Models and members from NARCS EG. Ioannis confirms that the alignment will be conducted. Knud Johansen (ENTSO-E) also confirms this.

3. Process on the grid connection NCs amendment

Uros Gabrijel (ACER) presents the slides (available here).

Marc Malbrancke (CEDEC) asks who is going to present results from NCs amendments to ACER. Uros explains that during the phase of preparing the related policy paper all issues have been tackled by all members from the EG. However, the policy paper will contain only high-level information on proposed amendments. Uros encourages to review the report in June 2022. Uros continues and informs that discussions on how to present the amendments are ongoing. He stresses that the amendments are not set in stone, meaning that all Stakeholders will be able to make comments upon the experts' proposals. In case of divergent views, an internal overview will be made, followed by a second publication with a second round of submitting comments. Marc asks if no amendment on an article is proposed to the EG from Stakeholders, whether it will not be taken into account for the report. Uros assures that all areas will be reviewed. Uros continues that public consultation will be reviewed in detail via a survey. Marc summarises that if a review is wished the Stakeholder shall submit an amendment including a justification, which he emphasizes is a challenge since not all relevant documents are available. Uros replies that only complete proposals will be reviewed.

Vasiliki Klonari (WindEurope) raises that some reports' drafts are not aligned with the given timeline. Uros informs that he is aware that some deliverables will not be submitted in due time in September 2022. However, the revision by ACER is planned for Q2 2023, Stakeholders will thus be given enough time to comment on the reviews. Vasiliki stresses that scope on the IGDs should not be expanded. Uros agrees with Vasiliki.

Gunnar Kaestle (COGEN) asks what happens after ACER submission to the commission. He reflects that he heard of a new procedure and would like to know if it is intended to apply it. Elaine O'Connell (ENER) explains that the Network Codes and Guidelines are being separated in two categories. Implementing Acts (1) and Delegation Acts (2). For (1) the CACM process and Market Codes follow comitology procedure. For (2), which is being applied to NCs, the process does not implement an official voting by member states in the comitology process. However, the commission is obliged to identify and consult experts and propose a text which then can be either approved or rejected. Elaine stresses that a cooperation with member states is still planned, the scope of that is being established.

Ioannis Theologitis (ENTSO-E) comes back at the point raised by Vasiliki above and states that it is necessary to identify high important topics and prioritise them.

Ioannis further asks Uros if stakeholders can submit proposals within 8 weeks of public consultation in September. Uros confirms this timeline. Ioannis proposes to discuss amendments which were submitted by the EG prior to the public consultation to facilitate the process after submission.

Eric Dekinderen (VGB) points out that there are topics which have not yet been addressed by GC ESC or the EG but are listed without justification. He asks if those proposal will be further discussed and if yes when and by whom. Uros invites Eric to provide the documents to Ioannis who shall circulate those to all GC ESC members, they will be a dedicated agenda point at next GC ESC meeting in June.

Mario Ndreko (ENTSO-E) explains that the newly established EG Offshore will propose amendments to HVDC after its public consultation. He asks if those amendments will only be applied no sooner than in 3 years. Uros claims that all processes related with amendment recommendation last 3 years. However, the start of HVDC related amendments could be postponed in order to align with EG Offshore. He invites to discuss the start in the next GC ESC meeting in June.

Mario also asks when Stakeholders submit proposals for amendments, how ACER decides which one to open. Uros replies that there is a regulator's task force, which informs the related working group of ACER, those two units collaboratively review the topics.

Thierry Vinas (EURELECTRIC) asks if the proposals which have been submitted by EG Storage are taken into account in the frame for generator's code. Uros confirms that storage considerations are already in the policy paper.

Marc Malbrancke (CEDEC) asks Elaine O'Connell if the choice of treating the amendment proposals via the Delegation process by discretion is made by the commission. Elaine explains that it is explicitly provided for the electricity regulation and that the decision to move the items to the Delegation Acts degree was made by the council and parliament.

Luca Guenzi (EUTurbines) wonders how to improve the process associated with connection rules, and how can the new process be integrated into new RfG. Uros explains that the prepared paper includes all relevant information to execute the improvements. He continues that high-level policy recommendations can be conducted in June which will be then addressed more precisely in September.

Gunnar Kaestle (COGEN) refers to slide 2 of the presentation and asks about the order of the submitted amendments. Uros explains that RfG and DCC will be submitted in the first phase, followed by HVDC.

ACTION: Implement review of shortlisted amendments without justification as agenda point on next GC ESC meeting in June.

4. Workshop on 1st February on RoCoF and long-term stability scenarios

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

Eric Dekinderen (VGB) points out that RoCoF is above 1 Hz/s, which makes it impossible to maintain stability of network in case of an accident. Mario replies that this 1Hz/s, is the RoCoF of the center of inertia used in the ENTSO-E report. This threshold is based on operational experience.

Tony Hearne (EURELECTRIC) asks if identified issues within the study apply to continental Europe only. Mario states that 4Hz/s is derived from analytical calculations and that only severe splits were used. Mario further refers to scenarios from 2030 / 2040.

Tony raises the question what a centre of inertia is. Mario explains that if part of the synchronous area is separated from the interconnected synchronous area, the initial RoCoF at time 0+ can be calculated for the to parts of the split (for each island), based on generation fleet and the imbalance in each area. The centre of inertia RoCoF reflects in reality a numerically averaged RoCoF of the island machines and not the RoCoF of a single machine. It is a metric for the whole island (including N number of SPGMs) and not for one SPGM. The RoCoF of the center of inertia cannot be measured but only be calculated for a split based on the imbalance and the generation fleet (each machine inertia H). Tony points out that from his experience the RoCoF that any protection system sees cannot be calculated in a standardised manner. However, both agree that there is no standard calculation approach for the RoCoF measured at the connection point of a PGM.

Gunnar Kaestle (COGEN) would appreciate if a second meeting would be set-up.

Gunnar continues and addresses a question to Tony on what the experience of sustaining higher RoCoFs in smaller islands is. Gunnar refers to an accident roughly 10 years ago in France, where a RoCoF of 1,25 Hz/s occurred and lead to island mode. The following question is how Ireland is handling such accidents.

Gunnar refers to Eric's statement from above and gives his opinion on the experience that 1 Hz/s is too high for RoCoF by referring to an accident in Turkey where disconnecting units within 300 ms would have maintained the stability.

Tony explains that Ireland is currently operating at a ratio of 25% / 75% non-synchronous / synchronous areas. Further he explains that Ireland changed the protection relay to 1 Hz/s. Mario adds that bigger islands (derived from the split of the the CE SA) shows high imbalance and high RoCoF in case of a split and refers to the previously shown study.

Eric replies to Gunnar's question by stating that the 1 Hz/s rule applies to frequency drop and not rise, since it takes time to activate low frequency demand disconnection. He also adds that a stakeholder from the workshop proposed to contact Ireland or the UK to ask how high RoCoF events are treated. However, Eric does not see a comparable state there to continental Europe since the main danger for RoCoF comes from splits, not from a lack of generation.

Luca Guenzi (EUTurbine) raises his concerns regarding the follow-ups from the presented study, which, as he further stresses, is only an initial study. Mario endorses the proposal of setting up a second workshop. Ioannis Thelogitis (ENTSO-E) invites the stakeholders to submit agenda points and open questions to draft an agenda. Focus on inertia and further analysis on RoCoF should be handled, says Luca. Ioannis explains that such aspects should be addressed in a general workshop, not only addressed to GC ESC members.

Sudharsana Govindaswami (Europgen) (1) asks what the impact on the systems will be after RoCoF will be changed. Further her question refers to the calculation of momentum of inertia, where she (2) asks if it is planned to impose a minimum required momentum of inertia. Also, she (3) asks what kind of compensations could be used during an RoCoF event. Mario replies to (2) that this is more a question of mitigation measures. The presented study does not impose that. Ioannis explains that the topic on inertia is too complex and exceeds the scope of today's meeting. He stresses that a workshop should be prepared by ENTSO-E beforehand with the involvement of experts across GC ESC. Uros endorses to offer a workshop of this scope. He also replies to (1) by briefly explaining that there is no automatic redraft of application of new requirements on existing generators.

ACTION: Organise joint SO GC / ESC workshop on the topic of RoCoF and inertia. Stakeholders are invited to submit topics and open points to be added to the agenda of this workshop.

5. EUTurbines position paper on RoCoF related questions

Maxime Buquet (GE Gas Power) presents the position paper (available here).

Gunnar Kaestle (COGEN) refers to amendments EN-50549-1 and EN-50549-2. He explains that in the past there was a RoCoF immunity level of up to 2 Hz/s for converter-based technology versus 1 Hz/s for synchronised areas, now these areas should be harmonised, and both survive 2 Hz/s, which has been broadly accepted across the distributors. Maxime claims that there are several concurrent consultations on this topic, thus receiving no comments might lead to potentially false conclusions. Luca Guenzi (EUTurbine) explains that there was consideration on harmonising the certificates.

Maxime concludes his presentation by saying that there is no need for new requirements for short term duration.

Ioannis Theologitis (ENTSO-E) refers to the study Long-term Frequency stability scenarios and relevant requirements, presented by Joao, where several solutions were shown and further concludes that an optimum mix of all solutions should be found eventually.

Thierry Vinas (EURELECTRIC) refers to Maxime's presentation which states that some countries would not rely on imports, where in fact there are countries with high dependencies. Maxime replies that new requirements for RoCoF would be needed if such high imports of up to 40% are used.

Mario Ndreko (ENTSO-E) reflects those phenomena on continental areas differ very much from those in island areas in such manner that the centre on inertia has to be limited to 1 Hz/s, with an acceptable difference of up to 2 Hz/s and a measurement window of 500 ms. He asks why the measurement window cannot be limited to 300 ms and the RoCoF be increased to 4 Hz/s for 300ms measurement window. Maxime replies that the upscaling leads to high complexity within the simulation, since simulating less than 500 ms means demonstrating a full ride-through study. He further explains that demonstrating full ride-through studies is 10 times less complex than the RoCoF study.

Sudharsana Govindaswami (Europgen) refers to the topic of auxiliary systems around generators and asks how they have to comply with the RoCoF requirements and if those have to withstand the RoCoF capability. Further she asks if auxiliary systems will be included into RoCoF simulation models. Maxime replies that it is not required. Sudharsana stresses that the implementation of auxiliary systems is necessary but also complicated and has to be considered. Uros points out that EG Interaction Studies and Simulation Models published a text on the topic of RfG and IDC and raises that EMD models might be covered in those. Luca Guenzi (EUTurbines), head of this EG, proposes to raise this aspect on the next EG meeting. Mario explains that the ISSM's study focus was not on modelling on RoCoF issues. Tony Hearne (EURELECTRIC) raises the fact that smaller generators of type A and B differ from large generator systems and might not be important for such simulations.

Luca stresses that RoCoF is a rare event for which reason it is difficult to collect real data for larger systems.

Aren Assiet (EUGINE) concludes three aspects on RoCoF requirements: (1) RoCoF events do not physically damage affected machines. (2) Regulation stability insurance and restoration is an aspect of simulation. (3) To maintain protection of a system, disconnection might also be activated. He asks how to proof those aspects. He anticipates that the difficulty of proving the aspects decreases with their number.

6. ESC Expert Groups

Expert Group: Identification of connection issues for offshore systems (EG Offshore) – tentative title

Mario Ndreko (ENTSO-E) presents ToR of the EG CROS and a related presentation (available here).

Uros Gabrijel (ACER) asks if there is data exchange at the control functions tackled. Mario clarifies that EG CROS foresees to discuss how to enable connectionstudies on multi-vendor offshore islands and tries to provide recommendations and data exchange models. Uros emphasizes that he meant real time data exchanges, whether it's centralised control. Mario replies that there is no discussion up to date of centralised control. He continues that generally speaking offshore islands become a large, synchronised area capacity-wise, and thus it should be ensured the users also support onshore-systems.

Tony Hearne (EURELECTRIC) asks if the station top right of the shown figure (slide 5) is tail fed for a loss of the feeder to it. Mario explains that besides a classical end-to-end connection there could also be a coupling of interface points and HVDC offshore, which would be an interconnector, whereas the requirements would need to be harmonised and also how system could survive in the event of disturbances (e.g. frequency regulation of offshore AC islands). He further explains offshore systems are energised and operated on HVDC offshore remote converter stations, which provide voltage relays on frequency regulation, PPMs only follow it. If those system grow, further capabilities, i.e. PPMs would provide grid forming functions, shall be all exhausted in phase II.

Gunnar Kaestle (COGEN) says that HVDC grid control is only for optimizing purposes, and that in case that communication of HVDC grid control fails due to error links, it must not cause a failure of the whole system. For that reason, there is need to have a back-up which listens to the analog signal which allows a basic supply scenario.

Eric Dekinderen (VGB) stresses that the intention of EG Offshore is not to consider real DC grids which in his opinion is very important. Mario agrees with Eric and further explains that the EG Offshore only focused on DC terminals with single vendors, for multi-vendors there is not enough know-how and experience for new requirements. If multi-vendor projects will be initiated DC side requirements would be needed.

Uros reflects on the fact that islands could grow to a few GW of installed capacity and asks if it is then envisaged that islands will be operated like control areas with FCR or a control block constellation

Mario further informs that the report of Phase will be circulated to GC ESC members for review and approval and presents the timeline of the EG CROS Phase II, which is part of the slide deck.

Expert Group: Harmonization of Product Family Grouping and Acceptance of Equipment Certificates in European Level – tentative title

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

Eric Dekinderen (VGB) refers to shown subgroups' tasks, i.e., harmonised approach for equipment certificates for Type A and asks why Type A since definition of Type A is not uniform across Europe. Freddy replies that the term 'smaller produce units' better describes the referred units. Eric proposes to use the capacity limit as the limiting factor.

Mike Kay (GEODE) stresses the importance of addressing right recipients for questionnaire and proposes to reach out for GC ESC members to identify those ones. Freddy agrees and encourages the present members to share proposals for recipients.

Gunnar Kaestle (COGEN) informs that harmonisation and testing for Type A and Type B units (EN 50549-10) has been finished last year and is currently under approval at CENELEC members and will be finalised afterwards if no further comments are submitted.

Alberto Cerretti (CENELEC) first asks Freddy why the questionnaire contains no question on reference documents among the involved subjects, which he treats as equally important. Further he claims that national committees were not involved.

Alberto then refers to Gunnar's previous contribution and explains that Gunnar is just referring to RfG requirements. He continues by saying that not applying a different certification process on TSOs than on DSOs is not advisable. He also explains that a European standard has already been defined in the past but not approved though. Freddy replies to Alberto that EN 50549-10 will be taken into account for different proposals. He also refers to the questionary which does comprise a question on reference documents. Freddy continues and explains that it is very difficult to define certificates which can be applied in all European countries, though more selective certificates for certain key requirements are being established. Freddy also explains that many requirements can be tested via onsite visits next to regular commissioning, whereas requirements like RoCoF require special testing equipment. Alberto believes that focus is only on larger generators connected to a transmission system, small generators connected to a distribution system cannot be covered by presented documents. Freddy ensures all types are considered.

ACTION: Members of GC ESC share proposals for questionnaire recipients.

Expert Group: Advanced Grid Services and Controls for Grids with High Penetration of DER – tentative title

Ioannis Theologitis (ENTSO-E) briefly presents orally last meeting's results. He also encourages to name interest for open position of Head of the named Expert Group. The position will be supported by ENTSO-E secretariat. Nominations shall be provided in the following two weeks.

Sudharsana Govindaswami (Europgen) asks if there will be a specific time period within which the draft must be delivered. Ioannis explains that current ToR assumes a drafting period of 9 months, which means that including the approval process the time frame will reach around one year. He further refers that the workload for members is presumably one meeting per month, but further could follow if required. Sudharsana points out that a wider range of members than only manufacturers is advisable. Ioannis explains that the group has a lot of members from different ranges, 42 in total, only Chair is missing. Also, it is possible that further experts will be contacted for specific topics.

Gunnar Kaestle (COGEN) asks if the members from the EG have been encouraged to appoint nominees for the Chair. Ioannis informs that all members have already been provided with the call for nominations and clarifies that the leading person should not lead the content of the group's work. Gunnar asks for a one-pager which he could distribute to potential workstreams, preferably from either the wind or solar industry. He stresses that the Chair should be familiar with the technical aspects of the topic, which Ioannis agrees with but also points out that mainly the Chair should manage the EG in first place.

Vasiliki (WindEurope) informs that no member from WindEurope is willing to chair the position, but they were more people at WindEurope wanting to become a member. She would ask among those whether they are keen to chair the open position. Ioannis emphasizes that this person shall act neutrally.

ACTION: Ioannis Theologitis (ENTSO-E) will distribute a call for nomination, which can be shared by GC ESC stakeholders with workstreams.

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

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

Marc Malbrancke (CEDEC) refers to amendments related to EN 50549-1 and -2 when standards would be available. Alberto informs the amendments will be submitted in May 2022, whereas the approval on addition 2 is planned in parallel.

Aren Assiet (EUGINE) refers to EN 50549-10 and asks whether it is correct to publish a European standard if there are already national standards and how is it impacting those. Alberto explains by referring to Italy where there is a national standard, however it is planned to align with EN 50549-10. He further informs that EN 50549-10 should be valid for all countries but is not inevitably applicable instead of the national document. Countries are free to choose.

Knud Johansen (ENTSO-E) asks whether current reference for compliance verification and assessment is addition 1 for EN 50549-1 and EN 50549-2. Alberto replies that yes, this is the case, but not all requirements are fully specified in EN 50549-10, thus they are not comprised by addition 1. However, the amendment of EN 50549-1 and EN 50549-2 is scope of further work. Knud further asks if addition 2 of EN 50549-10 will address new versions of EN 50549-1 and EN 50549-2. Alberto confirms that.

Mike Kay (GEODE) asks when the EN 50549-1 and EN 50549-2 are going to be published. Alberto explains that the enquiry for EN 50549-10 will be send out end of March and if it will be approved without comments it will be published possibly by the end of the year, for more information see slide 4.

Gunnar Kaestle (COGEN) informs that standards are not legally binding only if they are being referred in national legal documents. If this is not the case, the dealing parties have to declare to which document they are referring to. He confirms that the decision on which standard is used is up to the corresponding country. He further explains that the decision to not oblige the member states to apply the same standard has been rejected 10 years ago. Also, he points out that using the standard for testing will decrease costs of the tests.

Sudharsana Govindaswami (Europgen) raises that a standard is not an enforcement meaning it is not a law.

Mike clarifies that the intention of CENELEC is to provide standards, i.e., EN 50549-10, which facilitate drafting or applying national standards where there is a lack.

8. *AOB*

Eric Dekinderen (VGB) was not happy with the process of the amendments' reviews. Ioannis Theologitis (ENTSO-E) says that the only solution is to maintain the timelines of expert groups and that silence is being considered as acceptance. If a proposal for change is not adopted due to too little feedback this can be discussed. Eric points out that the problem lies in lack of numerous feedbacks.

The Chair concludes the meeting and informs that it has not been yet decided whether the next GC ESC meeting will take place in person, there are ongoing discussions on the restrictions from ENTSO-E. However, the decision will be circulated in advance to ensure that the members can plan their trip accordingly.

9. *Follow-up actions:*

1. Implement review of shortlisted amendments without justification as agenda point on next GC ESC meeting in June.

2. Organise joint SO & GC ESC workshop on the topic of RoCoF and inertia. As a required previous step stakeholders are invited to submit topics and open points to conform the agenda of this workshop.
3. Members of GC ESC share proposals for questionnaire recipients.
4. Ioannis Theologitis (ENTSO-E) will distribute a call for nomination, which can be shared by ESC stakeholders with workstreams.