

32nd Grid Connection European Stakeholder Committee (GC ESC)

Friday, 1st December 2023, 09:30 – 15:00

REMOTE

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	EU Turbines
Bertle	Roman	VGBE
Bolat	Serdar	EU DSO Entity
Cerretti	Alberto	CENELEC
Chambers	Keith	Europgen
Charbonnier	Victor	ENTSO-E
Dekinderen	Eric	VGBE
Dogan	Gamze	ENTSO-E
Eckstein	Steffen	EUTurbines
Gabrijel	Uros	ACER / Chair of GC ESC
Gallego	Santiago	EDSO for smart grids
Govindaswami	Sudharsana	Europgen
Guenzi	Luca	EUTurbine - Solar Turbine
Hearne	Tony	EURELECTRIC
Kaestle	Gunnar	COGEN

Kay	Mike	GEODE
Klonari	Vasiliki	WindEurope
Kuhn	Rose	BNetzA
Martinez Villanueva	Sergio	ENTSO-E
Melnychenko	Mariia	ACER
Moreira	Joao	ENTSO-E
Ndreko	Mario	ENTSO-E
Oberhauser	Klaus	VGBE
O'Connell	Elaine	DG ENER
Prifti	Christina	Wind Europe
Raju	Srinivasa	EUGINE
Sadighi	Nawid	BNetzA
Schaupp	Thomas	CENELEC
Schowe-von der Brelie	Bernhard	EFAC
Treichel	Julian	CharIN
Van Bossuyt	Michaël	IFIEC Europe
Vasilaki	Evangelia	ACER
Vinas	Thierry	EURELECTRIC
Zaccaria	Marco	ENTSO-E

1. Opening

1. Review of Agenda

The Chair welcomes the participants to the 32nd 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 (EU Turbines) asks to inform regarding the publication of a joint position paper from EU Turbine related to RoCoF.

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):

Gamze Dogan (ENTSO-E) presents the follow-up actions and their status from the previous meeting. Mike Kay (GEODE) suggests closing the action at line number 22 in action tracker, given its origin (Great Britain) that does not have any consequence on GC ESC.

2. GC ESC Experts Groups

2a. Identification of Connection Requirements for Offshore Systems (EG CROS)

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

The Chair asks if EG CROS Phase II report constitutes all the necessary amendments which ACER should take into account when launching the consultation on the draft amendments for the NC HVDC. Mario Ndreko (ENTSO-E) replies that EG CROS Phase II report includes the minimum set of urgent and high priority amendments required. The Chair adds that ACER will publicly consult its amendment proposal and will evaluate any comments, as well as conduct any necessary workshops to discuss potential issues which may arise.

Eric Dekinderen (VGBE) asks the Chair to clarify if ACER proposals on NC RfG and NC DC applies only for installations AC-connected to the onshore grid. He mentioned that this moment the specifications for storage and demand are written in different codes, i.e. NC RfG and NC DC for onshore systems and NC HVDC for offshore systems. The Chair replies that questions on coherency between the three grid connection codes can be addressed after ACER recommendations to the European Commission. Moreover, ACER analysis of EG CROS Phase II report can ensure avoiding potential inconsistencies for system users and for system operators when implementing the network codes.

Luca Guenzi (EU Turbines) asks for any room of improvement regarding the definition of an "Isolated AC network" reported in slide n. 6, he suggests considering isolated systems in the definition itself. Mario Ndreko (ENTSO-E) replies that, even if the definition could be improved, the definition proposed by the EG CROS does not consider autonomous systems, while takes into account systems connected to a synchronous area, but not synchronously (in AC). The Chair adds that ACER will look into the EG CROS Phase II report and will evaluate the proposed legal texts, amending any necessary provisions as proposed by the EG CROS to ensure consistency; stakeholders will have the opportunity to comment on the ACER draft HVDC network code revisions.

Gunnar Kaestle (COGEN) highlights that the terminology on electrical energy storage systems has been recently added to the IEV, using IEC 62933-1 (EESS Vocabulary) as a basis (available [here](#)). Moreover, he adds that for multi-vendor HVDC system projects, it could be possible to refer to IEC TS 63291-1 (HVDC grid systems and connected converter stations - Guideline and parameter lists for functional specifications) available [here](#) and the related part 2 (parameters list for developed for the purpose of tenders) available [here](#), which were developed by CENELEC aiming at defining a global standard to support multi-vendor tenders.

The Chair invites all stakeholders having different proposals for particular provisions or a dissenting view on the proposed provisions of EG CROS Phase II report to submit an email to ACER (during December 2023 and January 2024 (to the attention of the Chair and Georgios Antonopoulos. This will allow ACER to learn any issues before drafting its proposal for the HVDC NC amendments.

Mario Ndreko (ENTSO-E) asks the Chair about the expected timeline for the NC HVDC amendment public consultation. The Chair replies with the following provisional timeline: (1) ACER will take a deep dive into the EG CROS Phase II report proposal in January 2024 considering any potential issues raised by stakeholders concerning the report itself; (2) ACER will work on the NC HVDC amendments proposal presumably in February 2024; (3) the public consultation on NC HVDC amendments draft could start at the end of March 2023/beginning of April 2024. A more concrete planning can be shared by ACER after receiving potential comments from stakeholders after January 2024, potentially via email if it could be ready before the next GC ESC meeting (12 March 2024). Gunnar Kaestle (COGEN) highlights that one of the comments/recommendations of the EG CROS Phase II report was that as the three grid connection network codes are interrelated, they should be amended together. Elaine O'Connell (DG ENER), noting the comment, replies that the EC together with ACER and the stakeholders involved in GC ESC could find potential ways to work on the amended texts to ensure consistency in the legal requirements across the codes, even if the entry into force timeline could be slightly different. The Chair adds that ACER has already committed to support the EC throughout the adoption procedures for NC DC and NC RfG amendments, conveying at the same time any relevant issues to the upcoming NC HVDC amendments, trying to consolidate the texts across all the three network codes where necessary. Mario Ndreko (ENTSO-E) shares ENTSO-E perspective regarding the extreme urgency of NC RfG and NC DC amended codes; the need of a cross-check among the three network codes shouldn't delay the entry into force of NC RfG and NC DC.

The GC ESC approves the EG CROS Phase II report.

ACTION: ENTSO-E secretariat to publish the EG CROS Phase II report on the GC ESC website, in the relevant Expert Group section.

2b. Harmonization of Product Family Grouping and Acceptance of Equipment Certificates at European Level (EG HCF)

Freddy Alcazar (EUGINE) presents the slides (available [here](#)).

Freddy Alcazar (EUGINE) suggests modifying the GC ESC ToR in order to allow more contribution from stakeholders in IGDs drafting. Raju Srinivasa (EUGINE) supports this comment, highlighting the willingness to support the IGDs drafting process together with ENTSO-E.

Raju Srinivasa (EUGINE) asks if a list of European Countries which require equipment certificates is available. Indeed, from the manufacturers' point of view, it is important to know Member states which are planning to implement mandatory requirements for equipment certificates in the future, due to the relevant costs. The Chair replies that a number of ACER implementation monitoring reports, also covering the use of equipment certificates, are available on ACER website. Bernhard Schowe-von der Brelie (EFAC) adds that an investigation on the existing approaches on certification can be also found in the EG HCF final report, even if it should be updated following the most recent information.

Florentien Benedict (EG ACPPM) emphasises that DSO Entity promoted a simpler and more transparent process for certification and this approach has been supported by the EG HCF. Bernhard Schowe-von der Brelie (EFAC) highlights the EG HCF general approach on the requirements called "umbrella certification", which allow amendments for each national implementation through an additional conformity assessment, checking of all the national requirements. Following this approach, the quality of the conformity assessment is preserved allowing at the same time the manufacturer and all the certification bodies to rely on this general approach and perform any additional check at a later stage (via a simpler process for the manufacturers). Keith Chambers (Europgen) and Luca Guenzi (EU Turbines) support this approach to certification.

Bernhard Schowe-von der Brellie (EFAC) adds that the IECRE OD 009 scheme, which has been published in October 2023, represents the first international certification available, even if it only addresses capability certification and cannot be applied for any National grid code implementation. If the NC RfG would open the schemes to this kind of capability certification, every TSO and DSO can refer to this existing scheme, which can be applied for having capability certificates. Florentien Benedict (EG ACPPM) asks for a clarification on the reason why IECRE scheme cannot be applied to National grid code implementation. Bernhard Schowe-von der Brellie (EFAC) replies that it relies on a formal reason, since the overall assessment schemes of IECRE cannot refer to National grid code specification.

2b. ENTSO-E and EG HCF common proposal to RfG legal text

Sergio Martinez Villanueva (ENTSO-E) presents the slides (available [here](#)).

Freddy Alcazar (EUGINE) highlights that the current legal text implies that a certificate could be accepted if made by a certifier from another member State, doesn't imply that a certificate from another member state can be accepted. Sergio Martinez Villanueva (ENTSO-E) specifies that accepting certificates issued by a certification body under other regulation is not mandatory for a TSO. ENTSO-E believes that the TSO shall decide via the compliance scheme if the regulation or the requirements is more stringent. He adds that the conditions to accept certificates from other regulation must be defined by the relevant system operator in the compliance scheme. The Chair suggests postponing any further discussion on this topic, after the publication of ACER's proposal for the EU Commission of the final version of the legal text.

Luca Guenzi (EU Turbines), given the relevant amount of information collected by the EG HCF and to avoid losing valuable material, reports on the discussions carried out among EG HCF members for the potential development of an IGD on certification topic. Moreover, since IGD drafting is under ENTSO-E responsibility, he believes that an update on IGDs ownership could be done, e.g. via a modification of the GC ESC ToR.

3. ACER update on the GC NCs amendments

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

The Chair informs that ACER intends to publish the NCs amendment recommendation and all related annexes around 20th of December 2023.

Regarding ACER draft proposal on GC NCs amendments, Thierry Vinas (EURELECTRIC) asks if the revisions described have been carried out after stakeholders' consultation or after a discussion with National Regulatory Authorities. Georgios Antonopoulos (ACER) replies that those updates are mostly related to stakeholders' contribution, after the public consultation. Michaël Van Bossuyt (IFIEC Europe) asks for a clarification regarding the evidence of any change carried out by ACER and the relative reasoning behind. The Chair replies that an evaluation report concerning the stakeholders' comments, received by ACER during the public consultation, and ACER's position and reasoning, will be available.

Regarding the implementation timeline, Elaine O'Connell (DG ENER) confirms that it is still valid, foreseeing to start dealing with the NCs amendments in the first half of 2024, with the goal to complete the process by the end of 2024. GC ESC will be kept updated by EC in case of any update on this topic.

4. EU DSO Entity: Grid Forming future implementation challenges

Tony Hearne (EURELECTRIC) presents the slides (available [here](#)).

The Chair asks a clarification regarding EU DSO Entity intended role within the identified challenges and trends and regarding potential steps towards achieving the objectives. Tony Hearne (EURELECTRIC) replies stating that DSO Entity will certainly maintain a coordination role among the diverse DSOs population, especially regarding research activities, in coordination with ENTSO-E and avoiding duplicating efforts. Florentien Benedict (EG ACPPM) adds that no actual plans are available at this moment, but the discussion is ongoing and will be reflected in the annual plan for 2024, e.g. regarding potential studies to be carried out, possible funds as support, stakeholders to be in charge of these studies, etc. Mario Ndreko (ENTSO-E) emphasizes that regarding research studies, ENTSO-E has a Research, Development and Innovation Committee (RDIC) and within this framework the grid forming topic has been researched and there have been carried out some major EU-funded projects, such as MIGRATE and OSMOSE with full physical demo of storage with grid forming in France. Mario Ndreko (ENTSO-E) adds that a lot of work has been done via some demos, also for medium voltage storage, where leading TSOs have been demonstrating the technology in OSMOSE project. Moreover, DSOs can improve these results adding e.g., DSO protection schemes, etc. Mario Ndreko (ENTSO-E) states that ENTSO-E can share any work which have been already carried out on grid forming as well as any potential EU-funded project ongoing or planned, via the support of colleagues from the RDIC. Tony Hearne (EURELECTRIC) agrees on the proposed approach. The Chair invites DSO Entity and ENTSO-E to share the progress of the research as well as any plan regarding this topic in next years.

Catarina Augusto (SolarPower Europe) shares that it could be very relevant to know the developments at DSO level on grid forming topic. Tony Hearne (EURELECTRIC) comments that DSO Entity will internally assess the most advanced work carried out. Florentien Benedict (EG ACPPM) adds that from DSOs point of view the change from grid following to grid forming is very welcome, however some time is needed for DSOs to organize and startup, in order to share any plan and update on this topic.

Alberto Cerretti (CENELEC) states the willingness to carry out a research study with the support of Polytechnic of Milan, aiming at observing the effect on transmission and distribution systems moving from grid following to grid forming inverters. TSOs and manufacturers involvement in the project is considered crucial. Considering a limited amount of budget available on his side, he calls for potential stakeholders interested to join the project, being able to dedicate some budget.

5. Joint-session SO-GC ESCs

5a. ENTSO-E: Update on inertia project

Joao Moreira (ENTSO-E) presents the slides (available [here](#)).

Joao Moreira (ENTSO-E) highlights the expected roadmap for the second stage of the project, regarding the output data analysis after calculation. Results are expected by 2024 second quarter.

The Chair asks Joao Moreira (ENTSO-E) to summarize stakeholders' perspective and comments on the published report, shared during the ENTSO-E public webinar held on 27th November 2023. Joao Moreira (ENTSO-E) replies that the project is taking into account the identification of kinetic energy needs to meet a specific goal of system resilience. One of stakeholders' comments relied on the necessity to identify the proper way to provide an equivalent response by different means than synchronous classical machines (e.g., STATCOMs with grid forming capability and inertial response power park modules). ENTSO-E report considers this issue as an objective need as it would be required by synchronous machines and can be calculated. Moreover, ENTSO-E believes that each Country should decide the best way to translate the kinetic energy needs into other means by using different solutions (i.e., since the issue strongly depends on technology, no absolute answer could be given through the report). Joao Moreira (ENTSO-E) adds that Project Inertia is looking at the foundational aspects of resilience against RoCoF, and solving this challenge represents a first step that will be the foundation for many other challenges. The Chair asks for a clarification on the proposed approach, asking if ENTSO-E is proposing to adopt a principle of subsidiarity, meaning that member States or TSOs whose control area experience (or will experience) impacts of diminishing inertia, will use measures from a catalogue, and define a roadmap for implementation. Joao Moreira (ENTSO-E) confirms and adds that, within the Inertia Project, ENTSO-E is working to define criteria in terms of minimum requirements at TSO level that each control area should comply with. In particular, as soon as an amount of kinetic energy required at synchronous area level to meet a given purpose is defined in order to withstand RoCoF, the way to split it between Countries should be defined. Different ways to carry out this issue exist, one could be to define the proper split of the given amount of energy, one other could be that each Country should always guarantee a minimum energy level. Both approaches seem to lead to very similar results, ENTSO-E is investigating on the most effective approach to meet the goal.

The Chair asks if Inertia Project considers the impact of market schedules on the available kinetic energy contributing to inertia. Joao Moreira (ENTSO-E) confirms.

Eric Dekinderen (VGBE), commenting about Project Inertia report which states that inertia could help to solve grid instability, asks if ENTSO-E has planned to draft any study regarding other kinds of instability, such as for instance short circuit power. He believes that addressing these instability topics separately could lead to miss the ideal solution for both issues. Joao Moreira (ENTSO-E) replies that short circuit power, although it represents a common problem, has very local specificities. For the same reason, Inertia Project report states that the best selection of means to meet the kinetic energy needs should be taken at national level (e.g. a TSO might improve its system by raising short circuit level or adding new voltage control capabilities via a synchronous condenser or a STATCOM, with a more regional level of detail). Being aware that other stability issues exist, the proposed approach is to not limit the ways to pursue the optimal solutions. Eric Dekinderen (VGBE) asks if ENTSO-E intention is not to provide guidelines related to a minimum level of short circuit power in each region (following the same approach for inertia). Joao Moreira (ENTSO-E) confirms this approach at this moment. Thomas Schaupp (CENELEC) adds that the evaluation of short circuit power needs or dynamic reactive power needs, and static reactive power needs are usually taken into account in the national grid planning processes (it is considered an issue, since short circuit power and dynamic reactive power resources are vanishing from the transport system and moving to the distribution system, hence requiring additional grid assets). Mario Ndreko (ENTSO-E) adds that if a PPM could be more robust, it would be possible to avoid the deployment of condensers to solve voltage issues (e.g in case of FCR low). ENTSO-E was not pushing for grid forming PPMs with inertia since the presence of a storage represents a cost (in case of an underfrequency which requires to provide energy). Herve Biellmann (EU Turbines), since synthetic inertia is not mandatory for PPMs so far, asks for clarification about how PPMs can compensate inertia degradation. The Chair highlights that this requirement is not mandatory as such, but it could become mandatory in the future if so decided at the national level. In general, there are two ways to provide synthetic inertia for the upward regulation are foreseen: by additional energy storage attached to the converter or by running the PPM at a reduced output power. The Chair emphasizes that the connection requirements which are in the network codes are designed to dimension and choose the correct equipment compliant with the requirements applicable to connect the system to the synchronous area. How those capabilities are then delivered in operations is detailed in the operational agreement or connection agreement, depending on what the national legal framework prescribes. Georgios Antonopoulos (ACER), regarding the consulting draft, adds that Type B PPMs will need to provide synthetic inertia for over-frequency issues, while for Type C is allowed for TSOs to request additional energy storage beyond the inherent energy storage capability of the device.

Luca Guenzi (EU Turbines), regarding the potential countermeasures and the way to design them, highlights that RoCoF and frequency limits should represent the criteria to be taken into account within Project Inertia phase II, in order to evaluate critical conditions.

Joao Moreira (ENTSO-E) remarks about how the inertia from new equipment will be considered for the future. Looking at TYNDP scenarios and at market studies, solar and wind generation do not provide inertia. At the same time, deriving additional kinetic energy needs to meet a given purpose, it is assumed that those solar and wind assets will be connected to the network. Two ways to provide additional kinetic energy exist: via synchronous condensers and STATCOM with storage permanently on the grid, or via inertia provided by PPMs which can be on the grid if they have entered the market. Hence, grid forming capability and inertial response from PPMs is considered very important and needed in the largest possible amount to be effective. Trying to be solutions neutral, the first step should be having assets permanently on the grid, nevertheless in order to anticipate as much as possible the grid forming capability of PPMs to be offered, a process support for instance via market incentives could be foreseen. The Chair suggests designing qualitative assessment to guide member States, aiming at supporting efficient implementation plans at national level. Joao Moreira (ENTSO-E) replies that some PROs and CONs for the different mitigation measures have been published in the Inertia Project report. Nevertheless, further details for each solution will be added as additional support (keeping a neutral approach about the solutions).

Herve Biellmann (EU Turbines) asks for clarification regarding wind farms and how a decrease in speed is taken into account in the kinetic energy estimation. Joao Moreira (ENTSO-E) reports Inertia Project assumptions regarding the contribution to inertia of converter connected generation, stating that, given all the uncertainties, this contribution has not been considered yet in the study. In the future, modelling will be improved considering this kind of contribution. Mario Ndreko (ENTSO-E) adds that in the future kinetic energy could be shared by grid forming PPMs equipped with storage, providing a response quite similar to a synchronous machine. Inertia constant equivalent of a grid forming PPM is not mandatory (in the existing RfG), however, if it would be, the response time and the reaction would be similar to a synchronous machine, it would have true inertia and it could contribute.

Alberto Cerretti (CENELEC) suggests defining specific set of requirements for grid forming capabilities in order to pursue standardization at DSO grid level, aiming at reducing costs.

5b. Update of SO-GC ESC ToR

Marco Zaccaria (ENTSO-E) shares the comments made by VGBE on the latest proposal for GC ESC ToR updates, circulated by the Chair to stakeholders via email before the current ESC meeting.

Concerning the possibility to merge the two SO and GC ESC ToR, the Chair states that for the moment the proposal is rejected; however, this proposal will be taken into account for future ToR revision. Regarding some editorial updates proposed by VGBE, the Chair supports the proposals and no objections from stakeholders have been raised. Concerning ESC secretariat services, the Chair highlights that DSO Entity will be involved, e.g., via hosting one of the 2024 physical back-to-back SO-GC ESC meeting (i.e., on 26th and 27th June 2024). Luca Guenzi (EU Turbines) asks for clarification if EU Turbines' comments have been considered. The Chair confirms that EU Turbines have been taken into account.

The Chair asks ENTSO-E secretariat to transpose the changes made in the GC ESC ToR to SO ESC ToR and invites all stakeholders to share any potential further comments. Bernhard Schowe-von der Brelie (EFAC) asks to integrate the IGD development in the ESC ToR, aiming at involving stakeholders in the process. The Chair leaves the answer to ENTSO-E since the regulation states that IGD drafting is under ENTSO-E responsibility. Gamze Dogan (ENTSO-E) replies that the point is noted, and it would be possible to give any feedback only after an internal assessment, and since the very short notice, it is not possible to decide to include the IGD topic directly in these Terms of Reference, to be approved today. Victor Charbonnier (ENTSO-E) agrees and adds that an internal check is also needed in order to evaluate if all IGDs need the same level of stakeholder engagement. Mike Kay (GEODE) highlights that the legal requirements of the ESC and IGDs are quite separate, hence, if ESC intends to make an update of the IGD governance, RfG 2.0 shall consider it as well. The Chair comments that this rests with the EC as ACER RfG 2.0 proposal is already under the Board of Regulators assessment. Serdar Bolat (EU DSO Entity) suggests approving the updated ESC ToR today. Victor Charbonnier (ENTSO-E) adds that ENTSO-E would have difficulty to share the legal mandate to draft IGDs, but this does not mean that stakeholders cannot be more involved in the IGDs development, e.g., via technical groups actively contributing to the discussion beyond the public consultation. The Chair proposes to approve the current version of the updated ToR version, coming back during 2024 with potential ESC ToR further amendments, to cater for any legislative changes introduced by the EC. Moreover, he states that ACER will encourage ENTSO-E to provide stakeholders sufficient time to comment any development on IGDs beyond the ToR update issue. No objections from stakeholders have been raised.

The Chair approves the updated version of the ESC SO and GC ToR and asks ENTSO-E secretariat to publish both SO and GC ESC updated ToR on ESC website.

ACTION: ENTSO-E secretariat to publish SO and GC ESC updated ToR on ESC website.

6. CENELEC update on Work program TC8X WG03

Thomas Schaupp (CENELEC) presents the slides (available [here](#)).

Raju Srinivasa (EUGINE) asks the possibility for new members to join the works regarding the new topics presented. Thomas Schaupp (CENELEC) replies that new participants are welcome and shall be delegated by their national committee to TC8X working Group 3.

The Chair asks if there are any plans to develop standards for EVs/charging infrastructure. Thomas Schaupp (CENELEC) replies that Vehicle-to-Grid is already integrated in the Dash 1 and Dash 2 as being the same as an energy storage, having the same requirements as a generator. Charging stations without feeding back should be included in the self-regulation of dispatchable loads project. The Chair, regarding Vehicle-to-Grid, asks if any need to change regarding the onboard converters is foreseen. Alberto Cerretti (CENELEC) replies that for the moment the working group lacks experts on this topic. Hence, EV manufacturers or any other relevant stakeholders are welcome to join CENELEC TC8X. Thomas Schaupp (CENELEC) adds that they are not aware of any urgent item that need to be changed in view of RfG 2.0. Once RfG and DCC 2.0 are published, a further check for updates will be carried out.

7. AOB

GC ESC meetings in 2024

GC ESC 2024 meetings dates and venues are approved and are reported below for the sake of reference:

- 12 March (Brussels, ENTSO-E premises)
- 27 June (Brussels, EU DSO Entity premises)
- 11 September (Ljubljana, ACER premises)
- 9 December (Remote)

SO ESC 2024 meetings have been approved on 30th November 2023 SO ESC meeting and are reported below for the sake of reference:

- 13 March (Brussels, ENTSO-E premises)
- 26 June (Brussels, EU DSO Entity premises)
- 12 September (Ljubljana, ACER premises)
- 10 December (Remote)

EU Turbines joint position paper on RoCoF requirements applied to SPGMs

Luca Guenzi (EU Turbines) shares that EU Turbines has published together with VGBE and Eurelectric the joint position paper "Assessment of on Rate of Change of Frequency (RoCoF) requirements applied to Synchronous Power Generating Modules (SPGMs)" (available [here](#)). Regarding the structure of the document, a general approach to grid frequency stability is reported in the introductory chapters, followed by an assessment of the impact of high RoCoF on large nuclear turbogenerators and on smaller types of units (40 MW-300 MW) and by some simulations carried out on the capability of generating units to face specific RoCoF profiles. Moreover, a focus on CENELEC EN 50549 for very small generators (below 40 MW) is covered.

8. Follow-up actions:

1. ENTSO-E secretariat to publish the EG CROS Phase II report on the GC ESC website, in the relevant Expert Group section.
 2. ENTSO-E secretariat to publish SO and GC ESC updated ToR on ESC website.
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