

Baseline for type A power- generating modules

(EG BftA)

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Baseline for type A power-generating modules

- Update until June 7th 2021
- nine expert group meetings

(Vice)-Chairs

- Søren Stig Abildgaard, Mechanical Engineer at EC , COGEN Europe
- Florentien Benedict, Expert Regulation Stedin DSO, CEDEC

- Every meeting very high turnout of participants!

- 21 members
 - Cedec #3
 - ENTSO-E #5
 - SolarPower Europe #3
 - VGB #2
 - EDSO #1
 - COGEN Europe #3
 - GEODE #1
 - ACER #1
 - CENELEC #1
 - EFAC #1

Time schedule (1)

- Meetings:

- 1. 7 September 2020
- 2. 29 October 2020
- 3. 17 November 2020
- 4. 15 December 2020
- 5. 21 January 2021
- 6. 1 March 2021
- 7. 9 April 2021
- 8. 18 May 2021
- 9. 03 June 2021

Time schedule (2)

- There will be some extra meetings at the half of June:
 - 15 June
 - 18 June

- Final report: end of June 2021

Questions from the ToR

Q1

- *Considering different banding values implemented across the EU, the requirements that have already been imposed on type B, do we also want to declare them on type A? Which ones? (include a justification).*

Q2

- *Are there any new or additional items or requirements that we want to add to type A based on the evolving system needs and taking into the account the requirements provided in the EN 50549-01 and -2? Make a list of additional requirements in the standard EN 50549-01 and -02.*

Q3

- *Based on the expected growth in population size, should type A requirements differs for Power Park Modules (PPMs) and Synchronous Power Generating Modules (SPGMs) just like it is with type B? If yes, please justify.*

Q4

- *Any new insight and method of determining the certification obligations for type A and possible harmonization.*

Q5

- *Assessment of possible benefits from harmonizing the thresholds between type A and B PGMs.*

Plan of Action

- There has been created 5 subgroups
- For every question 1 subgroup with a chair
- The results have been written in subreports
- Feed back on the subreports has been delivered by the other members of the expertgroup.
- Subreports are the base for the chapters in the final report.
- Subreports are the base for the conclusions and recommendations

disclaimer

- The items on the next slides are work in progress.
- Conclusions and recommendations may have changed in the final report

Question 5

Assessment of possible benefits from harmonizing the thresholds between type A and B PGMs.

- A high diversity exists between the national decisions of thresholds for the classification of type A and B PGMs, the NC RfG establishing depending of the synchronous area, the upper limit between A and B at 100kW (Ireland & Northern Ireland), 500kW (Baltic), 1,0MW (CE and GB) or 1,5 MW (Nordic).
- Subgroup Q5 has tried to assess whether a more coherent scheme at the level of A/B-threshold harmonization is needed, taking into account new requirements for type A PGMs, as a result of Question 1 (additional requirements for type A PGMs).

Question 5

Assessment of possible benefits from harmonizing the thresholds between type A and B PGMs.

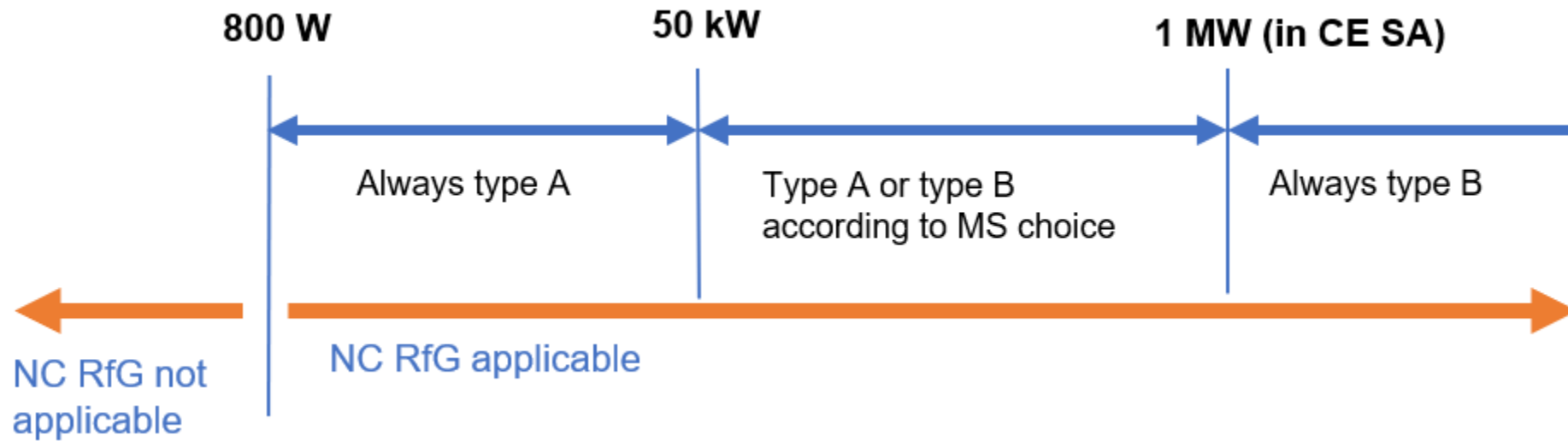
Possible solutions, two possible solutions could be envisaged :

- 1. Not to harmonize the thresholds for type A/B and to leave open to Member States the possibility to make their choice according to the national situation.**
 - This first 'solution' should not really be considered as a solution, but rather as an option, meaning we do nothing and leave the existing legal text as it is.

- 2. To define a minimum level of the A/B threshold at 50kW.**
 - If the new technical requirements proposed (in Question 1) are accepted to be included for Type A PGMs , the proposal is to define a new minimum level of the A/B threshold to 50 kW, whilst retaining 100kW, 500kW, 1MW or 1,5MW as the upper threshold. This means that all PGMs between 800W and 50kW are of type A. The figure below shows graphically the proposal.

Question 5

Assessment of possible benefits from harmonizing the thresholds between type A and B PGMs.



Question 3

Based on the expected growth in population size, should type A requirements differs for Power Park Modules (PPMs) and Synchronous Power Generating Modules (SPGMs) just like it is with type B?

- It seems to make sense to make a distinction between type A PPMs and type A SPGMs, but instead of approaching this from a general perspective it makes more sense to look into the details of this possible split for each additional requirement that has been proposed to impose on type A PGMs and therefore to tackle the question when handling the Q1 (question 1) of the ToR.

Possible solution(s) and recommendations

- Solutions and recommendations on splitting type A in PPMs and SPGMs will be provided for the technical requirements proposed in Q1.

Question 1

Considering different banding values implemented across the EU, the requirements that have already been imposed on type B, do we also want to declare them on type A?

Q1:Fault-ride-through (FRT) and Post-fault active power recovery (PFAPR)

- For system security reasons, like preventing large-scale loss of generation, that are illustrated within following paragraphs of this report, it is proposed to extend the FRT requirement to Type A PPM.
- This requirement demands the ability of the PPM to remain connected to the system during faults within a defined voltage-time profile, and thus avoiding disconnection of the power generating module. This is defined for Type B in article 14.3 of the enacted version of RfG.
- In combination with the FRT requirement, it is essential that the maximum time in which the active power from the PPMs affected by a fault shall recover, understanding that even if they stay connected, they may reduce their active power during, and just after, the clearance of the fault.
- Hence, it is proposed to extend the requirement from article 20.3.a (i.e. applicable now to type B, C and D PPMs) to be applicable for PPM type A.

Question 1

Considering different banding values implemented across the EU, the requirements that have already been imposed on type B, do we also want to declare them on type A?

Q1:Active Power Control (APC)

- Already many Type A PGMs, particularly those that are toward the upper end of the maximum Type A range, ie hundreds of kW (up to 1MW) are now being connected on flexible connection contracts where the generation owner and the DSO has agreed a connection contract whereby the DSO can reduce the PGM output to avoid network overloading.
- Type B PGMs need to have an input port to reduce active power generation (Art 14.2(a)). The equivalent Type A requirement is to have a similar facility simply to cease all active power generation within 5s (Art 13.6). Clearly the Type B flexibility is of greater benefit than the simple binary Type A response.
- The Type B modulation of active power output as required in Art 14.2(a) should be extended to Type A power generating modules. Ideally this functionality should extend to all Type A PGMs.

Question 1

Considering different banding values implemented across the EU, the requirements that have already been imposed on type B, do we also want to declare them on type A?

Q1:Reactive Power Control (RPC)

- DSOs have obligations to maintain the voltages to customers within certain limits. The emergence of relatively large loads or generation on the LV network challenges this, and can also inhibit the connection of new customer loads and generation.
- The RfG is silent on reactive power capability and voltage control for Type A PGMs.
- There seems to be three clear possibilities for the EG to try to choose between:
 - (1) Article 13 could be modified to include a simple requirement for RSOs to specify the reactive power and reactive power control needs.
 - (2) Make reference to EN 50549, indirectly in Article 13.
 - (3) Do nothing
- The EG decided that the status quo, ie not introducing any changes to the RfG in this regard, was the most appropriate response at this time.

Question 2

Are there any new or additional items or requirements that we want to add to type A based on the evolving system needs and taking into the account the requirements provided in the EN 50549-01 and -2?

- No new or additional items have been nominated to add to type A based on the evolving system needs and no new or additional items have been nominated taking into account the requirements provided in the EN 50549-01 and -02.
- However, there has been discussion about the possibilities of certification with the aid of EN 50549-10. Can the EN 50549-10 be used or be helpful for the certification process?
- The consideration and conclusions of that discussion have been added to Q4 - Any new insight and method of determining the certification obligations for type A and possible harmonization.

Question 4

Any new insight and method of determining the certification obligations for type A and possible harmonization.

- There is a common understanding in the subgroup, that the regime for certification and harmonization should be improved and strengthened.
 1. Manufacturers do not sell universally compliant Type A equipment.
 2. Non-compliant Type A PGMs have been connected.
 3. DSOs have a poorly defined responsibility to ensure compliance.
 4. Generally the smallest PGMs are connected without the DSO knowing in advance.
 5. DSOs do not have the resources, or the more general legal powers, to have the necessary interaction with owners of small PGMs.
 6. We are proposing new FRT requirement for Type A.
 7. It is not possible to prove FRT compliance of Type A on site: manufacturers' assurance of compliance is required.
 8. The principle Type A requirements of operating frequency range, LFSM-O and the future FRT are of key value to TSOs.
 9. An assurance regime is desirable that is as common to all member states as possible.

Question 4

Any new insight and method of determining the certification obligations for type A and possible harmonization.

- A few options have been discussed:
 1. A requirement that all equipment and/or information provided by manufacturers of Type A PGMs (or components) is subject to an assurance scheme.
 2. Should such a scheme be per RSO, or common per TSO, nationally, or throughout the EU?
 3. Could it be based on EU harmonization legislation?
 4. Should it be based on 50549-10?
 5. Should it be based on detail written into the RfG?

Question 4

Any new insight and method of determining the certification obligations for type A and possible harmonization.

- Although, there is no direct agreement, there is a common understanding between the stakeholders that the regime for certification and harmonization must become more practical and should be improved and strengthened.
- There is a need to improve the compliance processes and the use of EqCs, to improve the harmonization of the approaches, to work on a harmonized certification scheme and to ensure proper accreditation.

Solutions:

- It could be relevant to make use of the IGDs that are under development. Or draft other IGDs to deal specifically with this issue.
- It could be relevant to make use of standards like EN 50549
- It could be relevant to amend the RfG to mandate compliance certificates for generator equipment that is issued by authorized certifiers.
- Specifically for 'unfinished generators' it could further be relevant to amend RfG with a procedure for type A similar to type B, C and D.
- Specifically for 'finished generators' it could further be relevant to amend RfG with provisions in line with the existing EU framework of Union harmonisation legislation and type testing.

Question 4

Any new insight and method of determining the certification obligations for type A and possible harmonization.

- Although the NC RfG does not give much guidance to the creation of a certification regime, it is still open to the use of certifications.
- Before changes the NC RfG, it should also be assessed which possibilities exists already.
- The IGDs and standards should also be viewed for this purpose.

→The EG does not have enough depth of expertise in legal assurance schemes to propose a compelling solution at this time. Hence there is a recommendation for more work on this topic.