



**CENELEC**

EUROPEAN COMMITTEE  
FOR ELECTROTECHNICAL STANDARDIZATION

# **TC8X CONTRIBUTION TO PC\_2022\_E\_08: Public Consultation on the amendments to the grid connection network codes**

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Date: 2022-10-25

Place: Ljubiana

TC8X WG03 intends to contribute to Public Consultation PC\_2022\_E\_08 on the amendments to the grid connection network codes by the following touching points:

- ▶ Phase jump immunity for Type A-B PGMs
- ▶ FRT (and PFAPR):
  - ▶ UVRT for Type A PGMs;
  - ▶ OVRT for all Types
- ▶ Additional requirements for EESSs
- ▶ New requirements for EVs and in particular, charging infrastructures

Phase Jump immunity is a requirement introduced in EN50549 family Standard.

- ▶ Requirements: at present only Rocof immunity is defined. In AMD1 to EN 505491/2 (clause 4.5.2), expected by 2<sup>nd</sup> half 2023-1<sup>st</sup> half 2024. In AMD, phase jump will be introduced, in aligned with -10
- ▶ Compliance tests: already described in EN50549-10
  - ▶ Phase Jump immunity cause by change in System impedance (clause 5.3.2.1) (no disconnection)
  - ▶ Phase Jump immunity cause by automatic reclosing operation (clause 5.3.2.1) (no damage)  
Note: Disconnection of synchronous devices is admitted in the IT-Standard CEI 0-16 ( clause 8.5.12.2 note 48)
  - ▶ Phase Jump immunity caused by voltage dips (clause 5.3.2.1) (no disconnection)

As there is no phase jump ride through requirement and no withstand without damage requirement in EN 50549-1/2 :2019 and EN 50549-2:2019 this test is intended to evaluate the operational capability of the generating unit. Once a requirement will be defined, this test procedure will be adapted accordingly

Phase Jump immunity actually, not present in RfG: TC8X suggests to introduce this in alignment with CLC Standards (therefore CENELEC TC8X position)

UVRT (also for Type A PGUs,) is a requirement already present in EN50549 family Standard

- ▶ Requirements: defined in EN 505491/2 clause 4.5.3 UVRT;
- ▶ Compliance tests: described in EN50549-10 clause 5.3.3 (UVRT)
- ▶ Not applicable for some categories of Type A Generating Units (μCHP <50kW are excluded) ( 50549-1/2 clause 4.5.3.1)

Note: UVRT is already present in some National Standards, e.g IT (CEI 0-16 clause 8.8.6.1, CEI 0-21 clause 8.5.1 point a&b - UVRT for above 11,08 kW), DE (UVRT), AT (UVRT)...

## It's an outcome also of GC ESC BfTA

- ▶ UFRT (and PFAPR) introduced in EG BftA final report (sep.2021)  
Not applicable for same categories of Type A Generating Modules ( excluded μCHP and μHydro <50kW)

OVRT for all PGUs is a requirement already present in EN50549 family Standard

- ▶ Requirements: defined in EN 505491/2; clause 4.5.4 OVRT
- ▶ Compliance tests: described in EN50549-10 clause 5.3.3 (OVRT)

Note: OFRT is already present in some National Standards, e.g. IT (CEI 0-21 clause 8.5.1 point b - PGMs above 11,08 kW), DE...

FRT requirements actually, not present in RfG: TC8X suggests to introduce in alignment with CLC Standards (therefore CENELEC TC8X position)

## The family standard EN 50549 has defined the EESSs as PGU

- ▶ Requirements: defined in EN 50549-1/2 (EN50549-1/2 clause 1 note 4)
- ▶ Compliance tests: described in EN50549-10
- ▶ EN50549 family Standard considers EESS as a generators in all operating points unless the state of charge prohibits further charge or discharge (EN50549-1/2 clause 1; clause 3.2.3)
- ▶ EN 50549 -1/2 extends the requirements for type A –B PGU to EESS (EN50549-1/2 clause 1-note 4)
- ▶ Some additional requirements that in RfG are only for Type C-D, in EN 50540 family are extended for all PGU, also for EESSs LFSM-U (EN50549-1/2 clause 6)
- ▶ EESS's requirements actually, not present in RfG: TC8X suggests to introduce in alignment with CLC Standards (therefore CENELEC TC8X position)

## EVs participation to PS stability

- ▶ EVs (including V1G) connected to the grid should participate in defense strategies, namely LFSM - U disregarding whether there is a vehicle to grid function available or not
- ▶ In addition, V2G connected to the grid, should be considered as EESS (therefore generators, i.e. interface protection is needed) (EN 50549-1:2019 / EN 50549-2:2019, clause 4.9)

[Standpoint of CLC TC8X WG03, discussion ongoing in CENELEC TC8X](#)

# WG03's standpoint regarding requirements definition and compliance verification

- ▶ EN50549 family Standards defines both detailed requirements and compliance tests for type A and B PGUs:
  - ▶ Different requirements definitions and compliance tests description are present today in existing National Standards (not for all EU Countries) but are different each other
- ▶ A stronger reference to EN-Standards in RfG 2.0 would push towards European harmonization that will:
  - ▶ Speed-up the transition towards a carbon free energy infrastructure
  - ▶ Assure technical neutrality
  - ▶ Assure an open market for products and solutions
- ▶ ESC-EG-GC-HCF (TC8X actively present) should take this into consideration, as well as RfG 2.0

A stronger reference of NCs to Standards ensure them to define hi-level requirements and leaving their detailed definition to usual standardization



# WG03's standpoint regarding Grid Forming Inverters

- ▶ ESC-GC-EG ACPPM is working on system needs and their possible satisfaction through Grid Forming inverters (Class III)
- ▶ TC8X WG03 (actively present) position is:
  - ▶ Protection strategies and operation solutions not mature enough and detailed evaluations not yet completed to allow a simple, safe and cost effective massive introduction of Grid Forming inverters on MV and LV distribution networks of each EU Country in a generalized way
  - ▶ Gridforming inverters , on the other hand, could be immediately connected to the HV/MV busbars (HV or MV through dedicated feeders) avoiding unwanted impact on the DSO grid.