

Voltage Quality Regulation in Europe
Opinion on ERGEG Public Consultation
Document

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General Remarks

We agree with the objectives set out in the document disclosed for public consultation. It is in the interest of licensees, regulators, appliance manufacturers and consumers to improve voltage quality and establish its regulatory environment.

In the future, when establishing limits and indicative values it is important to take into consideration that power supply will never be free of faults and outages due to its nature (complicated technology).

One should not promote false illusions to customers with regards to the continuity of the service. At the same time the achieved quality must be maintained and improved, a near ideal situation must be achieved. The approach, that first we should fine tune the indices of voltage quality, better define the measurement methods and chart existing system quality level by country and define the extent of expected quality gradually for each country, is fully acceptable.

As the document disclosed for consultation reads „revenue cap and price cap gives the network companies strong incentives to reduce their costs”. Unfortunately due to this both measurements and, after the establishment of the standard, the compliance with it (investments) are likely to incur significant costs to the licensee. The results of demand and satisfaction surveys taken in our supply area among mass consumers show, that less than 10% of the consumers are willing to make financial contribution for a better quality power supply.

We miss solid facts from the documents which would support the need for improved voltage quality (measurement results, statistics).

In our opinion, voltage quality should only be improved gradually, taking the achieved quality level of the given country as a basis (a level which consumers accepted).

Factual Remarks

1. Improvement of Definitions and Measurement Regulations

- a) In the case of measuring rapid voltage change the duration of the following should be clearly defined
- the averaging measurement period before a so called „single rapid change”
 - the („interval”) duration of the change (between two subsequent levels) and
 - averaging measurement interval after the change.

According to measurement and practical experiences typical single rapid voltage changes caused by electric appliances usually happen in 40 ms, thus it would be useful to set this 40 ms as the duration of the change. This duration could also be used as measurement interval for the pre-/post- change status.

- b) In the definition of voltage drop, it is true that the following should be defined precisely and based on professional experiences
- what should be the interval used the measurement of the effective value during the measurement of voltage drop,

- what should be the lower voltage threshold, to be increased, below which the voltage dip is considered interruption, and
- what voltage hysteresis should be applied to determine the end of the voltage drop event.

It would be useful to increase the voltage drop measurement interval to 40 ms, and even with this value we will measure several dips which do not cause interruption on the consumer's side.

We support the harmonisation of the calculation of the continuity indices.

2. Limits for Voltage Variations – Avoid „95 % of time” Clause and Avoid Long Time Intervals for Averaging Measured Values

On the consumer's side, the more perfect the quality, the better, but it also has significant cost (tariff) consequences. Ensuring 100% (although would be beneficial for the consumer) would put an enormous responsibility for the Distribution Licensee. As an interim solution 95% could be increased to e.g. 97%, implemented during a couple years interval. OR: we could apply a time interval (for 5% of the time according to the 95% criteria), stating that the 10 minute mean voltage can only be in the 85-90% band for 2 (may be 1) hours at maximum 2 times a day.

3. Enlarge the Scope of EN 50160 to High and Extra- High Voltage Systems

These statements are fully justified, a standard extension is necessary!

4. Avoid Ambiguous Indicative Values for Voltage Events

These statements are also fully correct and justified, voltage events must be (1) classified and (2) specified numerical thresholds must be introduced for the classes.

5. Consider Duties and Rights of All Parties Involved

We agree with the contents of this chapter. During measurements it was often an issue to decide the degree of responsibility of the consumer and the Distribution Licensee. (e.g. mandatory baseline short-circuiting power)

Thus it is important that in the future we promote devices that are capable of identifying sources of disturbances to a certain degree (at least wave-train disturbance recording function, and time series analysis of classified rapid voltage change distribution (with smaller devices));
in the case of more complex devices: measurement of share in higher harmonics and flickers).

6. Introducing Limits for Voltage Events According to Network Characteristics

We agree with the proposition, it is also necessary, so as to make new coming consumers aware of the supply characteristics of specific type networks (different standard regulations). This way many voltage related complaints could be avoided. On the other hand unrealistic demands could not be asked from the Distribution Licensee e.g. with regards to voltage dips on overhead line networks.

7. Develop the Concept of Power Quality Contracts

The proposition is justified, we have already made remarks with regards to Item 5.

Issues for Consultation

a) General Questions on the Recommendations to CENELEC for Revising EN 50160:

- *Do you agree with the general messages of the 7 recommendations given in Chapter 4?*
YES. See above for details.

Are there any other major voltage quality issues missing from those that have been considered in this document?

Is it necessary to continuously measure quasi-stationary higher harmonics, or sampling is sufficient? In our opinion, with the numerous measurement devices, we must control the general level of the higher-harmonic pollution (simpler, cheaper devices), while specific higher-harmonics related issues require purpose-built specialised devices.

- *Do you have any evidence, based on survey on both networks conditions and customers' needs in given countries, about costs and benefits related to the implementation of recommendations? Can you help us in qualifying and quantifying these benefits?*

We carry out a mass consumer demand and satisfactions survey, based on which we can derive conclusions.

b) Specific Questions on the Recommendations to CENELEC for revising EN 50160:

What is an appropriate responsibility sharing curve between equipment and grid in the voltage duration plan (both for voltage dips and swells)?

All equipment must be able to withstand dips lasting less than 40ms, otherwise the equipment's interruption tolerance must comply with the ITIC curve.

- *What is an appropriate way of protecting equipment against damage or failure due to short-duration overvoltages (voltage wells): limits for voltage swells (as events) or a shorter time interval (that the today's 10 minute in EN 50160) for averaging continuously measured values (related to supply voltage variations)?*

The issue must be handled in the scope of overvoltage events and not in the shorter time interval averaging.

- *Are there benefits, further than customer protection (for instance: reduction of losses), important enough to give reasons for reducing the range of voltage variations from $Un \pm 10\%$ to a narrower band?*

We do not know of any further benefit.

- *How to consider random year-by-year variations in setting limits especially for voltage dips and other event correlated to weather influences?*

For example by using 3 year averages.

- *For some topics (as for instance voltage steadiness within the tolerance band) the research made already available aggregate voltage quality indices; should those aggregate indices be used for regulatory purposes? Why or why not?*

As a guideline they should be used, but due care must be taken because the indicative data of the different countries can differ significantly due to the varying local conditions.

- *How can power quality contracts be defined in order to focus improvements in voltage quality levels according to customers' preferences?*

The Distribution Licensee guarantees a defined extra quality, for a specific, well calculated extra tariff or annual fee.

c) Questions on the Future of Voltage Quality Regulation

As discussed in Chapter 5, setting minimum limits for every parameter of voltage quality (especially voltage events, for which only indicative values are given in EN 50160) still remains and open issue. Which are pros and cons of introduction national VQ limits and requirements by the national regulators?

National regulation would be more straightforward, since the situation of the different countries can be very different due to the different conditions.

Do you believe that a "two-tiered" option (definitions and measurement rules set homogenously at EU level; limits set country by country by relevant authorities) can be a more effective way for improving or at least not deteriorating voltage quality?

Yes.

In the published consultation material it is mentioned that a few countries set up independent organisations which analyses customers' quality related complaints based on the nature and duration of the events and the costs incurred for the customers. This should be extended and applied as a general practice for the other CEER countries. Experiences should be assessed together and conclusions should be drawn while taking into consideration national characteristics.