DISCUSSION PAPER

REVIEW OF THE CENELEC STANDARDS ON COLLECTION & TREATMENT OF WEEE

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Summary

The CENELEC standards fulfil an important function by detailing technical requirements for the safe and environmentally sound collection and treatment of WEEE as prescribed by the WEEE Directive. However, there are several shortcomings that should be addressed for the standards to be regarded as 100% state of the art.

We therefore call for an in-depth revision of all the standards, particularly of EN 50625-1, TS 50625-4 and EN 50614. As a start, this paper lists the key aspects that need to be improved for the standards to effectively contribute to a circular economy.

Collection, logistics and storage

EN 50625-1: Collection, logistics & treatment requirements for WEEE - Part 1: General treatment requirements

5.4 Technical requirements – Storage of WEEE prior to treatment: the 12 month-capacity criteria could be reduced down to 6 months as a general baseline (only to be extended in particular and occasional circumstances). Accumulation of a large amount of stock can increase the risk of sub-quality treatment (of WEEE or output fractions) when they need to be reduced rapidly or high-quality downstream treatment capacity is not available. This can happen for instance to avoid exceeding a treatment facility's (or downstream acceptor facility's) authorised capacity in case of interruption of operations (incidents, fires, etc.), when the requirements applicable to the treatment of a WEEE flow or fraction (prior or after treatment) evolve, or when a WEEE fraction does not find any more capacity/demand from downstream acceptors (e.g. because of changes in legal or economic conditions).

TS 50625-4 Collection, logistics & treatment requirements for WEEE - Part 4: Specification for the collection and logistics associated with WEEE

The standard should be revised to include:

- A systematic early check of the condition of the WEEE collected to a) separate WEEE that is suitable for (preparation for) reuse from WEEE that is destined for recycling, and b) assess the presence of pollutants and emissions/leakages risks;
- That WEEE shall be covered at least until a diagnosis of its potential for reuse is done and WEEE separated for (preparation for) reuse is kept covered at all times to avoid damage;
- WEEE separated for recycling should stay covered (either the collection point / facility makes this separation immediately on-site and covers only the WEEE for reuse, or it cannot make this separation immediately on-site and is then obliged to cover and protect the WEEE until this gets done downstream)

The current timespan for WEEE to be left uncovered is up to 14 days, which we believe is too long. Not covering WEEE for such a long period of time without taking stock of their condition and potential for reuse might cause environmental and safety issues, jeopardising the further implementation of the treatment requirements. This period should, therefore, be shortened to maximum 1 week, also depending on the volumes collected and urban/semi-rural/rural typology. There should no exception for large household appliances since they can also be affected by weather conditions.

Protection during transport (at least until the diagnosis has been performed) is also necessary to guarantee the potential for (preparation for) reuse. The possibility of transporting WEEE in open bulk containers using only a net to cover them (i.e. without weatherproof covering) is therefore not acceptable. Controlled or uncontrolled tipping should not be allowed.

In addition, collection points, collection facilities and operators, should have a partnership with reuse actors in order to give them early access to reusable equipment. Reuse operators that are recognised as professional social enterprises should be allowed access to collection points / facilities in order to select equipment that is suitable for (preparation) for reuse.

Preparation for reuse

EN 50614 on Preparation for Reuse

The working group that developed this standard was largely dominated by product manufacturers rather than reuse operators. As a result, the standard does not reflect their reality well and contains overly demanding, unrealistic administrative and technical requirements. This is not desirable because the standard should facilitate, and not obstruct, the work of reuse operators, whose activity contributes to a circular economy . It is important to realise that reuse operators are often small social enterprises not industrial companies.

For instance, reuse operators are required to consult manufacturer's repair and maintenance manuals as well as detailed product recall information, both of which today are either inexistent, incomplete or impossible to access. Without the obligation of manufacturers to provide such information free of charge, as stipulated in the WEEE Directive, reuse operators can simply not meet these requirements.
Furthermore, reuse operators are required to work in accordance with two other standards: a technical specification (TS) for collection and logistics, as well as a standard for the treatment of WEEE. Consulting and applying these standards would add even more costs and administrative burden for reuse operators.

The question is how to achieve a level playing field for all operators, while also recognising the practical reality and limited resources of small reuse operators? Firstly, the standard should be revised to take into account the position of reuse operators, avoiding unnecessary burden. If they are obliged to meet all the requirements (and are potentially subject to audits), they should receive support from EPR schemes and/or public authorities. This can be done through guidance and operational or financial support, while operators should provide repair information free of charge.

Example of a Best Practice: Collaboration between Extended Producer Responsibility schemes and small operators in France

In general, there should be a common understanding between EPR schemes and WEEE operators of the key requirements for environmentally sound treatment. This can be achieved by a joint gap analysis and an action plan to achieve conformity with standards, also addressing the costs of adaptation and investments. This is a key condition to create a level playing field without excluding *a priori* small-scale operators or new entrants on the market. Developing such a conformity roadmap through a multi-stakeholder platform and monitoring by public authorities is crucial.

To illustrate, a partnership formed in 2014 between Ecosystem and FEDEREC in France to integrate flows treated by scrap collectors and shredders in the formal WEEE scheme and reporting supporting them to adopt practices in compliance with WEEELabex and the CENELEC standards (see press release and progress status).

Also in France, where EN50625-1 is mandatory by law, EPR schemes like Ecosystem are obliged to develop partnerships with reuse networks like the ENVIE federation and Emmaus. Ecosystem, for instance, provides reuse actors with preferential access to high quality WEEE - typically streams coming from specialised retailers. They also provide technical support and guidance to adopt high-quality requirements and anticipate the future implementation of the standard. On the financial side, the WEEE prepared for

reuse are eligible for financial support from the EPR scheme. This approach, also deployed by Ecologic (FRA), may serve as an example for other countries.

Depollution and treatment

Standards and technical specifications should be improved to ensure that depollution and treatment operations do not undermine employee health and safety: the requirements on infrastructure and pollution prevention measures should be elaborated and updated based on new insights on WEEE composition (due to the "open scope" and new products on the market) as well as the risk of exposure to heavy metals, dust particles, fire etc.

The applicability of standards to some (new) types of WEEE, poorly or not addressed in the current version, should be reworked and improved to cope with their increased collection and presence in WEEE streams (e.g. hot-water boilers as temperature exchange equipment (TEE), cooling and freezing equipment containing vacuum insulation panels, non-household WEEE, "open scope" equipment).

Closing the loop with secondary materials requires reliable guarantees on their compliance in terms of hazardous substances. It is, therefore, crucial to update the standards and ensure that they are in line with new regulatory developments (e.g. POP regulation recast and RoHS) and are future proof given the expected technological trends.

EN 50625-1: Collection, logistics & treatment requirements for WEEE - Part 1: General treatment requirements

4. Administrative and organisational requirements: ideally, a treatment operator should treat all the WEEE received in compliance with the requirements formulated in the standards. If a treatment operator is WEEELABEX certified and claims compliance with the standards toward its clients, this should apply to all the WEEE handled at their treatment plants.

5. Depollution: in line with Directive 2012/19/EU Article 15, there is a need to strengthen the requirements on the provision of information, regarding which substances, mixtures and/or components listed in Annex F are present in which types of WEEE. The provision of this information by the producer(s) helps operator to condition the acceptance and depollution of certain WEEE.

5.5 Depollution monitoring: the general requirement to perform depollution monitoring could be strengthened in a more systematic approach not only on "each step of the process" but also on each output fraction likely to contain hazardous substances. Performing this monitoring is currently only required "where appropriate", with a reference to annexes with a narrow scope (only capacitors, batteries, and brominated flame retardants (BFRs) - only in materials from fractions ≥ 20% of input material, that might contain BFR and are likely to contain at least 10% by mass of plastic). However, the risks of pollutants distribution in input and output fractions justify a more rigorous monitoring.

Annex A - A.3 Printed circuit boards: to reduce the risks of diffuse emission of hazardous substances and to optimise the recovery of (precious) metals, priority should be given to the removal of printed circuit boards and adequate pre-treatment. Although they represent a small

weight portion of WEEE, the recovery of precious metals from printed circuit boards is highly valuable. Mechanical size reduction, like shredding, that prevent the recovery of these (critical) raw materials should be prevented.

Annex A – A.5 Batteries and accumulators: given the high number of incidents and fires related to lithium batteries in WEEE treatment facilities, and the expected growth in the use of portable batteries in a wide range of devices, the CENELEC standard should provide more elaborated requirements to effectively protect workers' safety at storage and treatment sites. These rules could address the early identification of products containing lithium batteries, their adequate removal, handling, storage and transportation.

Annex A – A.6 Plastics: this section should be updated and improved to:

- take into account the most recent regulatory requirements (e.g. POP regulation), to include quantified thresholds to distinguish between "containing" and "not containing" BFR,
- check the validity of the assumption that some WEEE streams (e.g. temperature exchange equipment, large household appliances) are free from BFR, while also evaluating professional WEEE.

Annex B – B.3 Analysis of fractions: the standard requires to measure the quality of depollution on the basis of chemical analysis only on the non-metallic shredder fraction. This could be questioned and further justified if kept as is, as some hazardous substances (e.g. mercury from lamps) are also known to rapidly bind to metallic materials when they are released.

the depollution monitoring only applies to materials from fractions ≥20 % of input material, that might contain BFR and are likely to contain at least 10% by mass of plastic. For some WEEE streams and treatment processes where a high number of small fractions is generated, this rule could be reviewed (and further justified if kept as is) as the first criteria (weighing at least 20% of the input) may exclude significant quantities of plastics from the monitoring, while the WEEE Directive does not include such an exclusion or threshold.

TS 50625-3-1 Collection, logistics & treatment requirements for WEEE - Part 3-1: Specification for de-pollution – General

To phase out hazardous substances from output fractions of WEEE, the following requirements should be considered:

- Prevent the dilution of fractions containing hazardous substances with other fractions;
- Set thresholds corresponding to the minimum thresholds allowed for new products put on the market by the EEE industry;
- The screening of WEEE streams and WEEE fractions potentially containing hazardous substances should be regularly updated and reliable, to avoid loopholes caused by incorrect assumptions;
- Fractions potentially containing hazardous substances should be treated within the European Union until depollution meets required thresholds;
- When the presence and concentration of hazardous substances in fractions cannot be measured in a reliable and economically viable manner at the thresholds required, the

precaution principle should prevail: the fraction should not be considered as free from hazardous substances and adequately disposed of.

4.1 Introduction: the target values and limit values should be reviewed and, where necessary revised, to remain "state of the art". Indeed, the composition of WEEE streams and discarded products evolves in time, as do the regulations on substances, thus it is critical to keep them updated to make sure that the TS requirements remain adequate to ensure effective depollution. It should also be assessed whether the monitoring methodology for each WEEE stream and hazardous substance is still valid (because of the open scope or because of product design developments).

Overview of the applicable methodologies
The choice of methodologies per treatment flows and hazardous substance / component / material should be reviewed, based on latest scientific knowledge and regulations on hazardous substances, to ensure that it is future-proof, for devices recently entered or about to enter in the WEEE streams, substances recently regulated and/or recently found in existing flows.

"Plastics fractions" should be better defined, to ensure that all fractions potentially containing BFR are monitored, including mixed fractions containing a portion of plastics. In the case of complex/heterogeneous flows, plastics can be found in multiple output fractions which are not systematically called "plastics fractions".

The case of "other appliances", which typically covers B2B equipment, should be reworked as it was not properly addressed in the first version of the standard.

6. Large appliances, 7. Cooling and freezing appliances: it should be evaluated, based on latest regulations and scientific knowledge, if the current assumption that these WEEE types can be deemed free from BFR, is still valid or not.

8.3 CRT display appliances – Analysis methodology: 2000 ppm threshold should be updated to be in line with REGULATION (EU) 2019/1021 on persistent organic pollutants (recast), annex IV: 1000 ppm, or lowered to 500 ppm if legislated accordingly in the meantime.

8.5 FPD appliances – Analysis methodology: same applies to BFR threshold.

10.3 Small appliances – Analysis methodology: same applies to BFR threshold.

Annex C: target values should be reviewed and revised where appropriate, as the reference of these values is a scientific paper dated from 2013.

CLC/EN 50625-2-3: Collection, logistics & treatment requirements for WEEE - Part 2-3: Treatment requirements for temperature exchange equipment and other WEEE containing VFC and/or VHC

CLC/TS 50625-3-4: Collection, logistics & treatment requirements for WEEE - Part 3-4: Specification for de-pollution - temperature exchange equipment.

Definition 3.108 "step 2": a note to entry could be added to clarify that hot-water boilers should typically undergo "step 2".

Definition 3.115 "class 6": hot-water boilers should be mentioned explicitly as well to clarify that the depollution requirements of this standard also applies to this product category.

4.2 Technical and infrastructural pre-conditions
New technologies, like Vacuum Insulation Panels (VIP), are expected to increase in WEEE flows, creating new technical challenges. It is therefore worth highlighting that operators treating temperature exchange equipment based on this technology should have the necessary equipment to manage this material, capture efficiently the dust/powder which can be generated (e.g. with adequate filter systems) and protect their workers from dust exposure.

As the increasing volume of hot-water boilers present new technical challenges (because of higher metal thickness and their round shape), operators treating hot-water boilers should have the necessary equipment to store, handle and depollute those devices.

4.3 Training: employees should be able to identify and handle new TEE technologies such as Vacuum Insulation panels.

5.5.101: based on experience and knowledge accumulated since the first release of the standard, more specific provisions should be elaborated to help treatment operators deal with Vacuum Insulation Panel technologies.

Conclusion

In conclusion, the current WEEE standards need to be improved in order to remain up-to-date and reflect the state of the art. This should be done as soon as possible. Preceding the revision, a market consultation should gather feedback from a wide variety of stakeholders in all member states, providing sufficient room for critical evaluation. We hope this paper provides insights to accelerate this process, acknowledging that there are even more technical issues to be addressed in the future.

In the meantime, although it may be too early to make all the standards legally binding, the standards on depollution and (final) treatment of lamps, CRT monitors and televisions, PV panels and temperature exchange equipment can have environmental benefits. Referring to these standards in national environmental regulations (like in France and the Netherlands) can help improve current treatment practices, as long as this is done in combination with better monitoring and control as well as practical guidance for smaller operators.

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