



CASE STUDY TITLE

Urban Batteries, Dutch Standard for the Operation of Battery Energy Storage Systems to Facilitate the Energy Transition

SUMMARY

The number of solar panels in urban areas is growing rapidly. Local storage of energy is a crucial condition for the successful transition to renewable energy sources in urban areas.

The case study for the operation of battery energy storage systems resulted in the draft of a new standard: NEN 4288. It sets requirements for the safe operation of battery energy storage systems, which are sometimes referred to as 'urban batteries'. This is an addition to NEN 3140, Operation of Electrical Installations - Low voltage. Where NEN 3140 contains regulations for safe operations of electric installations in general, this standard draft deals with the sector of battery energy storage systems.

Applications of battery energy storage systems require a safe operation. Due to the increasing decentralized generation of electrical energy, the need for local storage of electrical energy has grown, and with it, the need has arisen to operate these locally stored electrical energy systems safely.

This standard draft not only makes the technology for operational management safer but also more applicable and efficient. This draft builds on and refers to product and system standards on this topic.

The safe operation is primarily aimed at the personal safety of people who work with the installation, who work near it or who live near the installation. In addition, electrical safety is important to protect the components of the installation and to operate it with high availability and high reliability. The degree of availability and reliability partly determines the economic applicability of a battery energy storage system, but financial considerations should never become more important than safe operations.

AT A GLANCE

COUNTRY

- Netherlands

LEVEL

- National

SDG ADDRESSED

- SDG 7 - Affordable & Clean Energy

BACKGROUND

Mainly due to the growth of solar panels in urban and industrial area, stakeholders demanded a new standard, building on the well-established Dutch standard NEN 3140. Accordingly, NEN 4288 supplements NEN 3140 by examining the (local) storage of energy and its impact on the safe operation of a battery energy storage system. This standard describes the application of NEN 3140 and the additional actions, powers and responsibilities that are necessary for the safe operation of battery energy storage systems.

Just like NEN 3140, this standard can be used to show compliance with the Dutch Working Conditions legislation for safely working on,



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with and near electrical installations and work equipment. Where NEN 3140 focuses on this safe operation in general and is in line with the practice within the electrical engineering sector, NEN 4288 provides regulations on how safe work can be done on electrical installations in the battery energy storage systems sector with a special focus to electrotechnical hazards.

Specific provisions for components included in a battery energy storage system are covered by existing product standards and so-called PGS: publication list of hazardous materials.

The NEN 4288 is currently still in draft and will lead to a new standard and does not replace any previous standard.

STRATEGY

This draft has been drawn up by a working group consisting of a wide group of stakeholders with the necessary technical knowledge and experience from the battery energy storage sector and electrical engineering. The standard is drafted under the responsibility of standards committee 363 623 'Work regulations (NEC 623)'. Intended publication is beginning of 2021.

When the draft is adopted as a standard, it will be published and promoted by NEN. Possibly training for this standard will be offered.

RESULTS & IMPACT

NEN 4288 will provide investors, city councils, housing cooperation groups and insurance companies a safety level to refer to when cooperating in an urban battery project. In general, it will set a baseline for safety in the urban battery industry. Therefore, it will help to reduce injuries, accidents and make electric installations more reliable. It will complement grid extension which is under pressure due to ever-increasing demand. Above all NEN 4288 will set a level playing field so the upcoming industry can innovate, develop and thrive.





CHALLENGES & LESSONS LEARNED

The working group had to pioneer in uncharted territory since the industry is new. Finding the right scope and working in addition to existing standards proved to be challenging. It was necessary to find and combine technical expertise as well as knowledge of standards, a combination that is hard to find and only feasible by bringing producers, developers, grid specialists and legislators together.

Startups can grow quickly. As this happens, engineers have to put all their time in development and production. Despite good intentions there was sometimes little time left to actually write a standard. Furthermore, attracting a Chairperson who could built consensus only succeeded after the first candidate failed.

POTENTIAL FOR REPLICATION

The standard will potentially be the starting point for a European standard at the European Committee for Electrotechnical Standardization (CENELEC). An English translation of the standard is planned.

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