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Regulatory framework for lithium-Ion battery storage systems

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Introduction

In the dynamic realm of renewable energy, lithium-ion battery energy storage systems have emerged as pivotal for effectively harnessing surplus energy from solar parks and wind turbines. These systems offer a strategic solution for storing excess energy during off-peak periods and releasing energy during peak demand, thus promoting efficient energy distribution. This is an important system in view of the grid congestion currently taking place on the Dutch energy network. However, the integration of these innovative storage systems come with a critical need for well-defined regulations and risk management strategies.

This article provides an overview of the current and upcoming regulatory framework concerning the lithium-ion battery energy storage systems in the Netherlands.

Understanding inherent hazards

Lithium-ion batteries, while highly efficient energy storage devices, carry inherent risks that demand careful consideration. One of the most concerning risks is thermal runaway – a rapid, uncontrollable increase in battery temperature that can lead to fires or explosions with the potential release of toxic gases (eg, hydrogen fluoride). This may happen due to:

- a manufacturing defect;
- impact as a result of falling or a collision (eg, during transport);
- overloading; or
- an excessive operating temperature.

Current legal framework

In the Netherlands, the supply, installation and maintenance of the lithium-ion battery energy storage systems are governed by a range of laws and regulations that pertain to areas including:

- environmental management;
- zoning;
- construction;
- external safety; and
- transportation.

The following legal instruments play a key role.

Environmental Permitting (General Provisions) Act

Environmental Permitting (General Provisions) Act provides the overarching legal framework for permits and regulations related to environmental matters. It covers various aspects of projects, including the construction and the establishment or modification of environmental facilities and activities that may affect the environment. The Environmental Permitting (General Provisions) Act integrates multiple permits into a single integrated environmental permit.

Environmental Management Act and Activities Decree

All businesses operating in the Netherlands are subject to environmental regulations, which cover various aspects such as:

- noise;
- energy;
- waste;
- air; and
- soil quality.

The Environmental Management Act and Activities Decree both contain a general duty of care provision pertaining to the environment. Furthermore, it is important to determine whether lithium-ion battery storage systems should be considered an "environmental facility"

pursuant to the Environmental Management Act. Environmental facilities are subject to the general regulations outlined in the Activities Decree and, in certain instances, may require an integrated environmental permit for the activity establishment or modification of environmental facilities pursuant to the Environmental Permitting (General Provisions) Act .

Building Decree

The Building Decree encompasses provisions concerning:

- the construction, modification and demolition of structures;
- the state and utilisation of existing structures, open plots, and land; and
- safety during construction and demolition.

The Building Decree sets quality standards for structures and contains provisions relevant to fire safety and compartmentation. A space housing a lithium-ion battery storage system is typically regarded as a structure.

Spatial Planning Act

The Spatial Planning Act provides the framework for the regulation of spatial use and the allocation of designations in zoning plans. If the realisation of a lithium-ion battery storage system is in conflict with the designated use pursuant to a zoning plan, an integrated environmental permit for a deviation of the zoning plan must be obtained.

External Safety (Establishments) Decree

This decree applies to lithium-ion battery storage system containing over 10,000 kilograms of packaged flammable hazardous substances, including fluorine-containing compounds potentially triggering a permit requirement under the Environmental Law Decree.

General municipal bylaw

Municipalities have the authority to establish general municipal bylaws. These cover a broad spectrum of provisions related to public order and safety in the broadest sense of the term. This extends to areas such as traffic, hospitality matters and environmental protection. Each municipality possesses its individual general municipal bylaw, wherein it regulates these aspects in accordance with its distinct approach. General municipal bylaws can include provisions pertaining to lithium-ion battery storage system.

Nature Conservation Act

Pursuant to the European and the Dutch Nature Conservation Act it is required to assess potential significant negative effects of a project (construction and operation) on nature conservation areas, the so-called Natura 2000 areas, unless – based on objective data (eg, a preassessment or Aerius calculation) – it is clear up front that the project will not have any significant negative effects on a nature conservation area. If it is not immediately clear which effects a project may have on a nature conservation area, an appropriate assessment must be drawn up and a permit pursuant to the Nature Conservation Act (ie, a nature permit) is required. The nature permit will only be granted if the conclusion of the appropriate assessment is that the nature conservation's natural characteristics will not be negatively impacted.

Electricity Act 1998

The Electricity Act 1998 provides the general regulatory framework for the electricity market. The provisions on the qualification of electricity infrastructure could have implications for the operation of a lithium-ion battery storage system as part of a larger system, depending on the specific circumstances.

Recently, an amendment of section 1(7) of the Electricity Act 1998 was adopted by the Dutch House of Representatives that aims to facilitate cable pooling (ie, the combined use of energy infrastructure by energy storage systems and production units). Under the current rules, a lithium-ion battery storage system and a production unit that are connected by a private entity (not being a network operator) may together qualify as a "network", the operation of which requires an exemption from the energy regulator pursuant to section 15 of the Electricity Act 1998. Pursuant to the amended provisions, a lithium-ion battery storage system and a production unit that are directly connected will qualify as a single production unit. The Dutch Senate still must adopt the amendment.

The Energy Bill that was introduced to Parliament in June 2023, aims to replace the Electricity Act 1998. Due to the upcoming general elections in November 2023, the expected timeline of the legislative process is still unknown.

The transport of lithium-ion batteries is also subject to legal requirements. These requirements depend on the type of transport.

Carriage of Dangerous Substances Act and Aviation Act

The rules that apply to the transport of hazardous substances in the Netherlands are divided between the Carriage of Dangerous Substances Act for all transportation on land and water, and the Aviation Act for air transportation. The Carriage of Dangerous Substances Decree contains a further specification of the rules in the Carriage of Dangerous Substances Act. Specific (technical) regulations for each type of transportation are included in regulations based on these laws. These regulations incorporate the international agreements that are in effect within the Netherlands. Regarding hazardous substances, the Aviation Act is further detailed in the Transport of Hazardous Substances by Air Decree.

Upcoming Environment and Planning Act and underlying decrees

As of 1 January 2024, the Environment and Planning Act will enter into force. The above-mentioned national legislation will then be incorporated into the Environment and Planning Act and will not undergo substantive changes.

Under the Environment and Planning Act, four general administrative measures and a ministerial regulation contain the rules for the practical implementation of the Act. The Environment and Planning Act is structured as follows.

Decree on Activities in the Living Environment

The Decree on Activities in the Living Environment contains the general rules that citizens and businesses must adhere to when conducting specific activities within the physical living environment. The decree also specifies which activities require an environmental permit.

Decree on Construction in the Living Environment

This decree outlines rules that citizens and businesses must follow when engaging in specific activities within the physical living environment. These activities include:

- construction;
- renovation;
- use;
- maintenance; and
- demolition of structures.

The regulations cover safety, health, sustainability and usability.

Decree on the Quality of the Living Environment

Contained within the Decree on the Quality of the Living Environment are substantive standards for municipalities, provinces and the national government, aimed at achieving national objectives and meeting international obligations.

Environment Decree

The Environmental Decree is directed towards citizens, businesses and governmental bodies. It complements the Environmental and Planning Act by determining, among other things, which administrative body has the authority to grant an environmental permit and the procedures involved.

Environment Regulation

The Environmental Regulation includes provisions such as the data and documents required for an environmental permit application, technical execution specifications for environmentally burdensome activities, and the methods to be applied when calculating the location-based risk and distances of attention areas.

Publication Series Hazardous Substances 37-1

Because the aforementioned regulations did not specifically address lithium-ion battery storage systems, the Publication Series Hazardous Substances 37-1 (the publication) was produced.⁽¹⁾

The publication is a set of guidelines and regulations that has been published to ensure the safety of storage, use, and transportation of lithium-ion batteries and battery energy storage systems with a total installed capacity of more than 20 kilowatt hours. The general purpose of the publication is to minimise and control the risks and hazards associated with these energy carriers, both for the safety of people and the environment. The publication also aims to contribute to grid stability and the seamless integration of renewable energy sources.

At this moment, the publication functions as a guideline, but as of 2024 it will come become legally binding as part of the aforementioned Decree on Activities in the Living Environment.

The publication establishes the necessity of a fundamental level of safety that encompasses the following measures.

Legally Mandated Protective Measures

These measures are required by law and regulations as standard practices for the activities regarding lithium-ion battery storage systems. Compliance with these measures is essential to ensure a baseline level of safety. Placing a fire extinguisher in the vicinity of the battery storage system or installing smoke detectors are examples of such measures.

Proven and accepted best practices

Proven and accepted best practices are measures that are considered indispensable according to established and accepted best practices. These measures encompass aspects of the energy storage systems such as:

- design;
- construction;
- commissioning;
- operation;
- maintenance;
- modification;
- inspection; and
- decommissioning.

Good housekeeping

This term refers to the overall care, cleanliness and orderliness of an activity or business unit. For example, ensuring clear pathways around battery storage systems with proper signage indicating emergency exits. Good housekeeping is a critical factor in preventing hazardous situations. It is assumed that companies have these aspects in order, as also described in the duty of care articles of the Environment Act and the Working Conditions Act.

Measures of good craftsmanship

These measures pertain to the skills of workers to deliver high-quality work while ensuring their safety and health. Adherence to these measures ensures that tasks are carried out with competence and attention to safety (eg, ensuring that only trained and qualified personnel are responsible for the installation, maintenance and repair of such a lithium-ion battery storage system).

Lithium-ion battery energy storage

Besides this general duty of care, the publication lists a total of 67 measures that a lithium-ion battery energy storage system must comply with. These measures are divided into a number of categories:

- Design and construction – this includes the minimum safety requirements that a battery energy storage system must meet (eg, a battery energy storage system must have overcurrent protection and short-circuit protection). In addition, the critical components in the battery energy storage system must be protected against ingress of water and dust.

- Use of the battery energy storage system – this includes, the requirement that a new battery energy storage system may be put into service only after a commissioning inspection has taken place. Furthermore, a battery energy storage system must have a system for monitoring (eg, undesirable temperature rises).
- Maintenance, inspection, documentation and safety – the publication prescribes that a battery energy storage system must be inspected periodically, at least annually, and that an up-to-date manual describing the technical installation must be present, for example.
- Safety – this includes measures regulating internal safety distances, fire safety, an emergency plan, pictograms and designations.

In some cases, the Environment and Planning Act and the Decree on Activities in the Living Environment allow for a measure other than the prescribed measure by the publication. This requires the prior permission from the competent authority.⁽²⁾

Regulation importance

The importance of this new regulation is further underscored by the commitment to renewable energy expansion with the Dutch climate and energy minister's intention to mandate the installation of such battery storage systems in new solar parks. The minister's announcement, expected to be detailed by the end of 2023, showcases a proactive stance toward improving grid stability and sustainable energy solutions.⁽³⁾ Additionally, according to the Netherlands Authority for Consumers & Markets, battery systems that help the grid stability should get a discount on their transmission tariff.⁽⁴⁾

Comment

This article has provided an overview in the current and upcoming regulations regarding the lithium-ion battery storage systems. The Environment and Planning Act, which will include the publication, will serve as an important regulatory framework governing lithium-ion battery energy storage systems. Additionally, it will serve as a vital safeguard against the inherent risks posed by these innovative technologies. The potential for thermal runaway events and the release of toxic gases underscores the necessity of comprehensive regulatory framework. By adhering to these regulations, stakeholders ensure not only the safety of personnel and communities but also the long-term viability of renewable energy storage solutions. The minister's proactive approach and the bill on cable pooling with energy storage systems signals the importance of the future of the lithium-ion battery storage system.

*For further information on this topic please contact [Tobias Kok](#) or [Veij Jacobs](#) at *Stek Advocaten BV* by telephone (+31 20 530 52 00) or email (tobias.kok@stek.com or veij.jacobs@stek.com). The *Stek Advocaten BV* website can be accessed at www.stek.com.*

Endnotes

(1) The publication is available [here](#).

(2) This is an overview of key legal instruments and considerations, but it is important to note that this list is not exhaustive. Legal requirements and regulations may evolve over time, necessitating ongoing vigilance and compliance with the most current and applicable laws and regulations.

(3) Parliament's letter on solar energy development is available [here](#).

(4) The Netherlands Authority for Consumers & Markets battery systems press release is available [here](#).