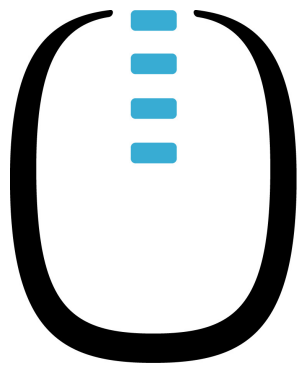




FENECON

Supplement to the Ordinance on
Installations for Handling Substances
Hazardous to Water (AwSV)

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1. About this document

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1.1. Target audience

This technical information is intended for designers, installers, and operators of FENECON Industrial L energy storage systems with lithium-ion batteries.

1.2. Applicable documents

- Installation and service instructions
- MSDS

2. Handling substances hazardous to water

The FENECON Industrial L battery energy storage system is an aboveground system for handling water-polluting substances in the commercial sector ('HBV system in accordance with AwSV').

The electrical energy storage system, which is a container, is installed on a reinforced concrete floor slab. It requires a ground clearance of 40 mm to allow for the drainage of condensation and rainwater. Rainwater can enter the container through the ventilation opening in the roof and along both long sides in the central area of the unit. The floor slab also serves as a barrier against glycol leakage from the battery cooling system (a total of approximately 120 liters of ethylene glycol, Water Hazard Class 1), since it is currently not technically feasible to ensure the safety of the cooling circuit within the container. This thus complies with the requirements of § 35 (3) AwSV.

The coolant flows through channels with branch lines to the individual battery cells. This means that in the event of a leak, the coolant can escape both in the center—where it would then flow onto the concrete floor slab—and from the sides in the battery pack area, where it would then flow into the drip pan beneath the battery pack.

Inside the battery container itself, the cooling and control unit is located in the center, while on the right and left there are 36 battery modules weighing 85 kg each, arranged in 12 slide-in modules, each holding three battery modules. According to the manufacturer's specifications, the liquid in the battery cell accounts for up to 50% of the mass; these substances are classified as Water Hazard Class 1 and 2. According to the mixing rule, the liquid (electrolyte) must be classified as Water Hazard Class 2. The solid mass of the battery also contains cobalt, which is classified as Water Hazard Class 3. The individual battery cells are automotive battery cells that are approved for use in road traffic; they therefore have approval under hazardous materials regulations.

There is a drip pan with a capacity of 279 liters located beneath each of the right and left battery packs.

Given the design of the facility, it can be assumed that this constitutes a storage facility for drums and containers as defined in § 31 AwSV. The required containment capacity must therefore be 10% of the total volume. The total volume of liquid is 1,530 liters for each of the right and left battery packs (85 kg × 36 batteries with a 50% liquid content). Thus, a containment capacity of 153 liters must be provided. Should an accident also occur in one of the channels, a maximum of 120 liters of coolant would be added, for a total of 273 liters.

The existing spill containment pans are therefore sufficiently sized.

The solid portion of the batteries, with a total weight of at least 3 metric tons for substances classified as Water Hazard Class 3, requires a system classified at hazard level (GS) C. The liquid portion of the system, consisting of 3.06 metric tons of Water Hazard Class 2 liquid, requires classification as hazard level GS B. According to § 39 AwSV, paragraph 10, this results in an overall classification of hazard level Class C.

2. Handling substances hazardous to water

In accordance with Annex 5 of the AwSV, this means that the systems must be inspected prior to commissioning, following significant modifications, on a recurring basis every 5 years, and upon decommissioning. The inspection must be performed by experts in accordance with § 47 of the AwSV. These experts must be qualified in accordance with §§ 52 and 53 of the AwSV.

In addition, the system must have facility documentation in accordance with § 43 AwSV and operating instructions in accordance with § 44 AwSV. As a general rule, the system operator is responsible for preparing and maintaining these documents.

The refrigeration system will use the gaseous coolant R410A, which has no impact on water resources.

The energy storage facility is not intended to be extinguished in the event of a fire; therefore, no fire-water retention is required. The planned concrete floor slab thus serves to prevent damage to the soil and groundwater in the event of a fire.

If you have any questions, you can find our contact information here:

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