Battery Energy Storage System (BESS)
BASE LOAD POWER HUB

Statron ref. 331497

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001	27.06.2024	CPA	First Version

Lifting Arrangement
PCS & BESS Containers

for Base Load Power Hub (BLPH) Project

Classification: confidential

Document no.	PCS & BESS Containers
Document name	Lifting Arrangement
Component / System	BESS
Project code	K559-2254

Version	Date	Name	Description
1.0	2024-06-27	C. Palenzuela	First version

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	Date	Name
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Checked by	2024-06-28	M. v. Dreuten
Approved by	2024-06-28	C. Palenzuela

Table 2: Approval overview

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Identification

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Name and Address of Manufacturer

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Original document

This document is an original document of FREQCON GmbH.

1 Introduction

1.1 About this Document

This document is part of project phase “Detailed Design Engineering” for the Base Load Power Hub (BLPH) Project (K559-2254). In case of any contradiction resulting by the information or specification given in this document, phase 2 or later documents supersede the information provided in this document.

1.2 Display Elements

Symbol	Meaning
➜	Action with one or several steps for which the sequence is irrelevant.
Step 1 : **Step 2 :**	Action with several steps for which the sequence is relevant.
•	First level of list.
-	Second level of list.

Table 1: Display Elements

1.3 Other Applicable Documents

The following documents are applicable:

Document type	Document Name
PCS transport drawing	53396 PCS Container
BESS 1transport drawing	53406 BESS Container 1
BESS 2 transport drawing	53412 BESS Container 2

Table 2: Other applicable documents

1.4 Generic Terms and Abbreviations Used

This following list should help you understand some of the abbreviations used in this document.

Generic Term and Abbreviation	Description
BESS	Battery Energy Storage System
BLPH	Base Load Power Hub
PCS	Power Conversion System

Table 3: Generic terms and abbreviations used

2 Weights

PCS	
Serial No.	FRQ-53396000001
Manufacturer	FREQCON GmbH
Container weight	13.7 t

Table 4: PCS weight

BESS 1	
Serial No.	FRQ-53406000001
Manufacturer	FREQCON GmbH
Container weight (without batteries)	Approx. 15 t
Container weight (with batteries)	Approx. 35 t

Table 5: BESS 1 weight

BESS 2	
Serial No.	FRQ-53412000001
Manufacturer	FREQCON GmbH
Container weight (without batteries)	Approx. 15 t
Container weight (with batteries)	Approx. 35 t

Table 6: BESS 2 weight

3 Environmental Conditions

	Stationary Operation	Storage packaging with protected layers	Transportation packaging with protected layers
Relative Humidity	Max. 95% No condensation; Relative Humidity <60% under corrosive atmosphere	Max. 95%	Max. 95%
Pollution level IEC60721-3-3 IEC60721-3-2 IEC60721-3-1	No conductive dust		
	3S2 coated PCB: Chemical Air: 3C2 Solid Particulate: 3S2	1S3 coated PCB: Chemical Air: 1C2 Solid Particulate: 1S3	2S2 coated PCB: Chemical Air: 2C2 Solid Particulate: 2S2
Atmospheric pressure	70 … 106 kPa	70 … 106 kPa	70 … 106 kPa
Vibration amplitude	Max 1 mm (5 … 13.2 Hz)	Max 1 mm (5 … 13.2 Hz)	Max. 3.5 mm (5 … 13.2 Hz)
IEC60068-2	Max. 7 m/s^2 (13.2 … 100 Hz) sinusoidal	Max. 7m/s^2 (13.2 … 100 Hz) sinusoidal	Max. 15 m/s^2 (9 … 200 Hz) sinusoidal
Impact IEC60068-2-29	Impermissible	Max. 100 m/s^2, 11 ms	Max. 100 m/s2, 11 ms
Free-fall	Impermissible	Impermissible	Impermissible

Table 7: Environmental conditions

4 Transport, Storage and Commissioning

Please observe the instructions for transport in section 4.2 and for storage and professional handling in section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

4.1 Unpacking

⚠ CAUTION

Hazard by sharp edges on packaging

Improper handling during unpacking can cause injuries.

➜ Use appropriate safety gloves to protect your hands from possible cuts.

The packaging of the system consists of cardboard, plastic and corrugated board. After usage the packaging must be disposed according to the local regulations for the disposal of paper products (e.g. recycling). After delivery, the delivered units and components must be checked for completeness and damage. If any damage on the delivered units and components have been found, contact the delivery service or FREQCON GmbH immediately.

4.2 Transport

NOTICE
Inadequate transportation of the device and all of its components may cause damage to the installed components. ➜ Vibrations and jolts must be avoided during transportation. ➜ The container must be transported in a horizontal position (lying down). ➜ Make sure to observe the specific national safety precautions for transport by truck, train or ship´.

NOTICE
Do not transport the containers with installed batteries ➜ Lifting or moving of BESS containers is not allowed if battery modules are inside the container ➜ Remove every battery module from the container before lifting or mowing the container

The containers must be transported to the installation site by instructed personnel.

Make sure that the components can be placed on a level surface.

For information regarding the dimensions and centre of gravity of the containers, see section 4.2.3. The container weights are specified in section 2.

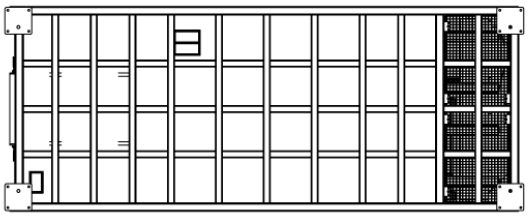
Vibrations and jolts must be avoided during transportation. If the system was damaged during transport, you must immediately inform the responsible transport company.

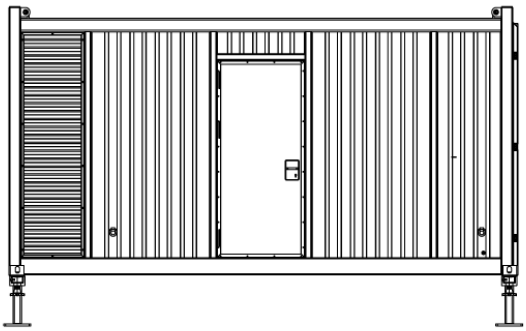
The containers must be transported in a horizontal position (lying down). It is not permitted to tip over the container during transportation or in any other scenario.

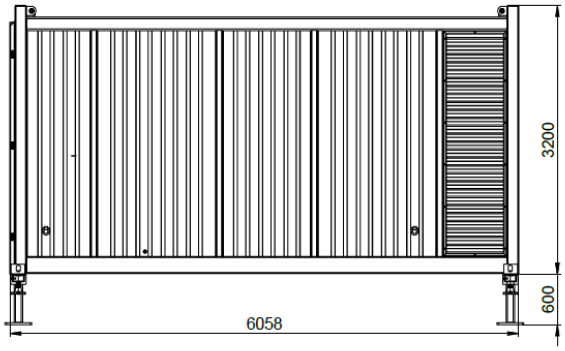


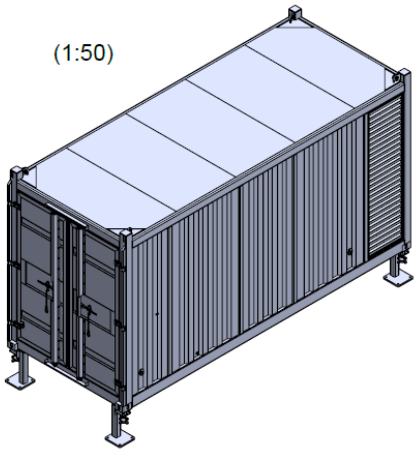
4.2.1 Container Dimensions

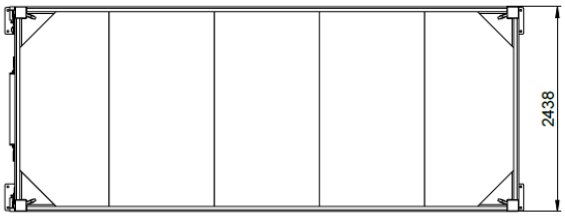
PCS



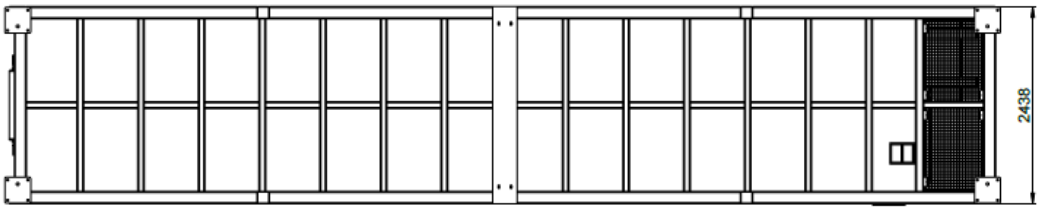


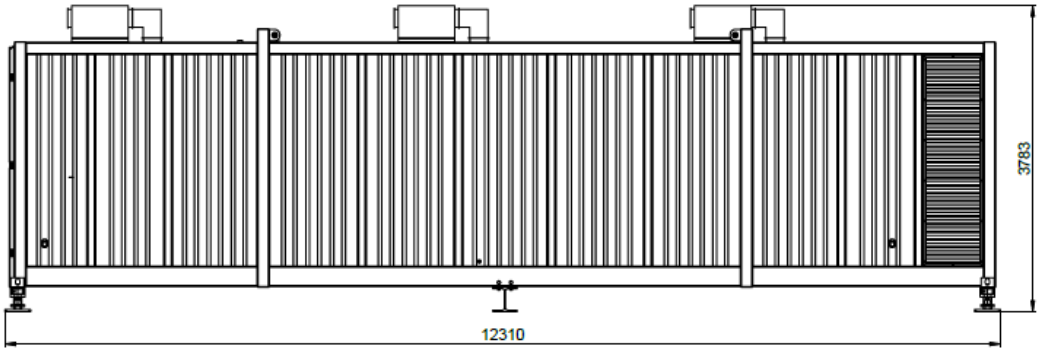


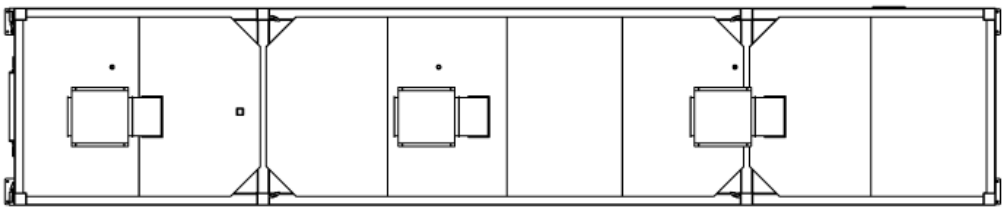


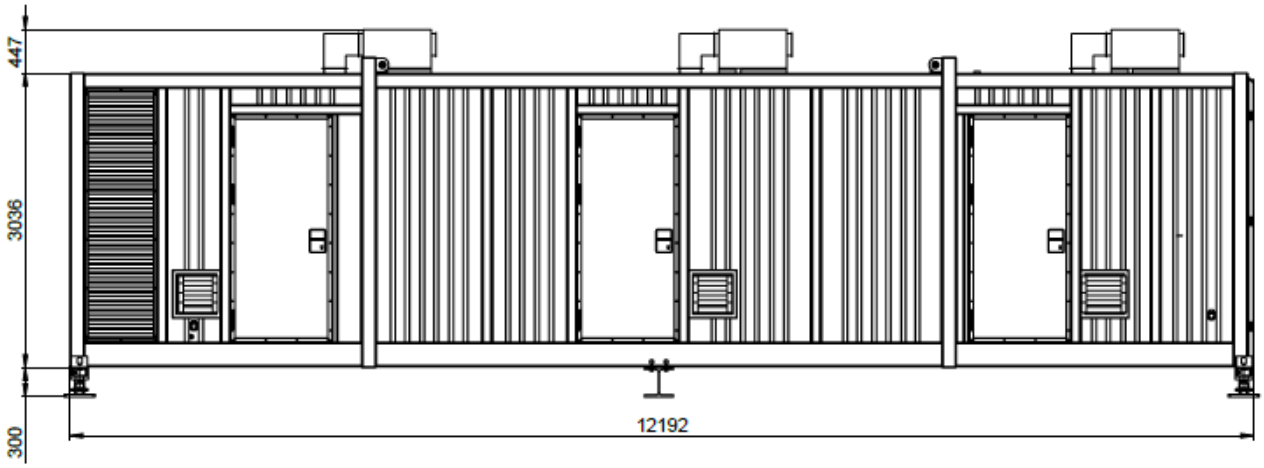


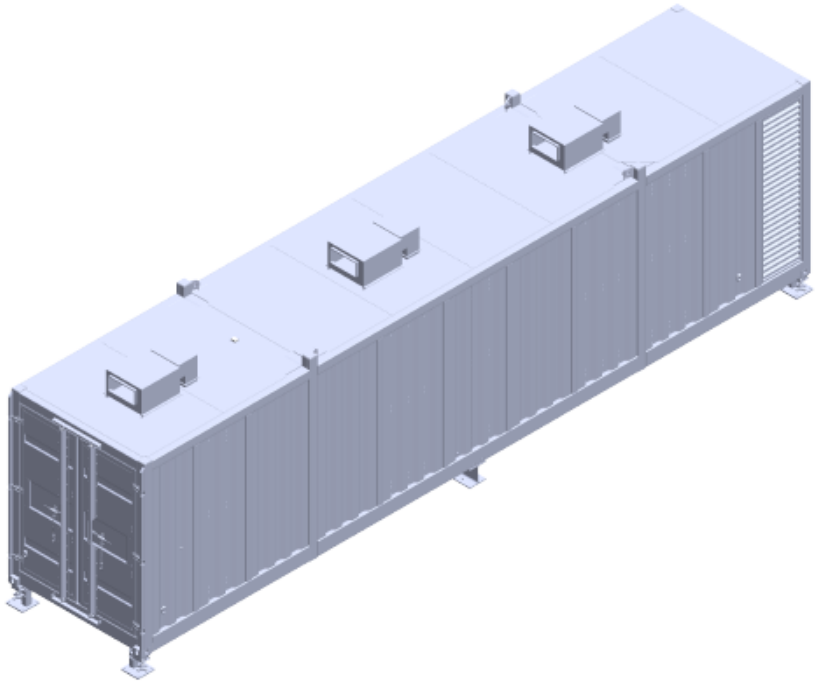
BESS 1



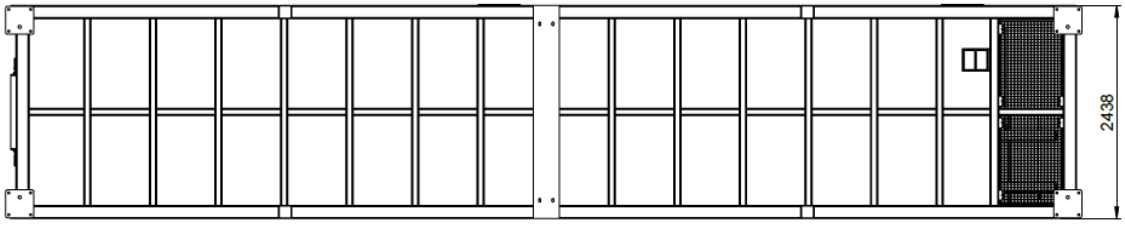


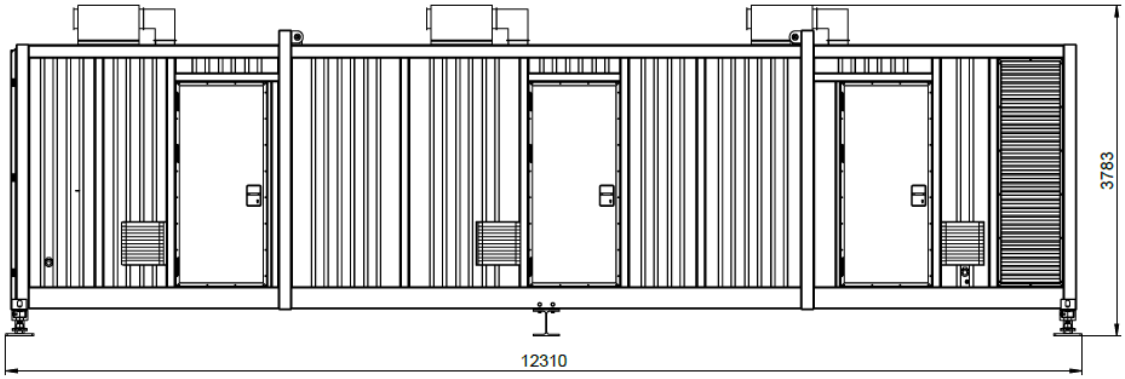


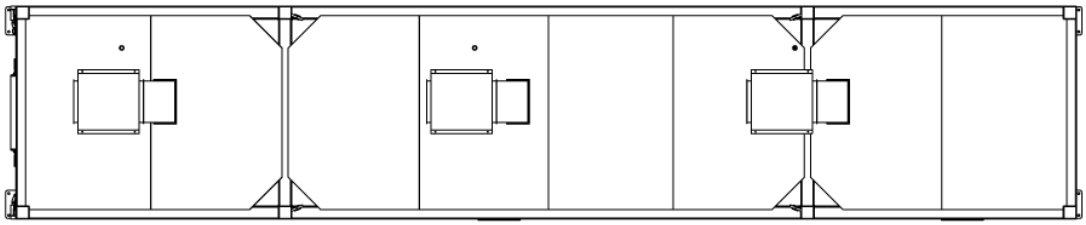

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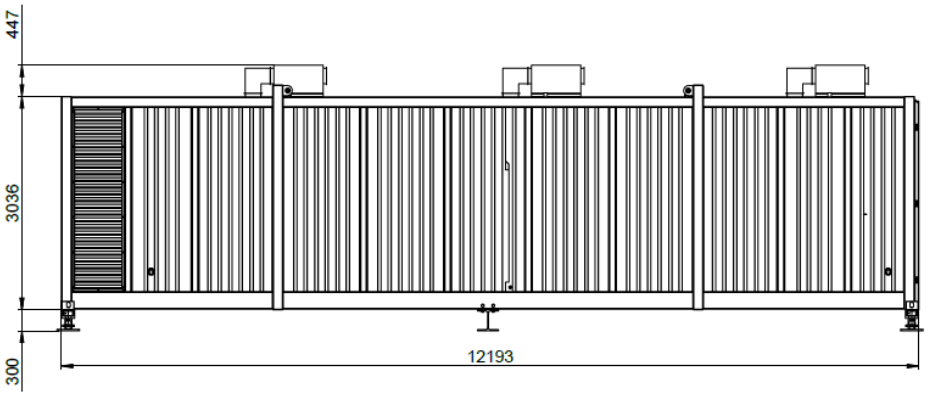


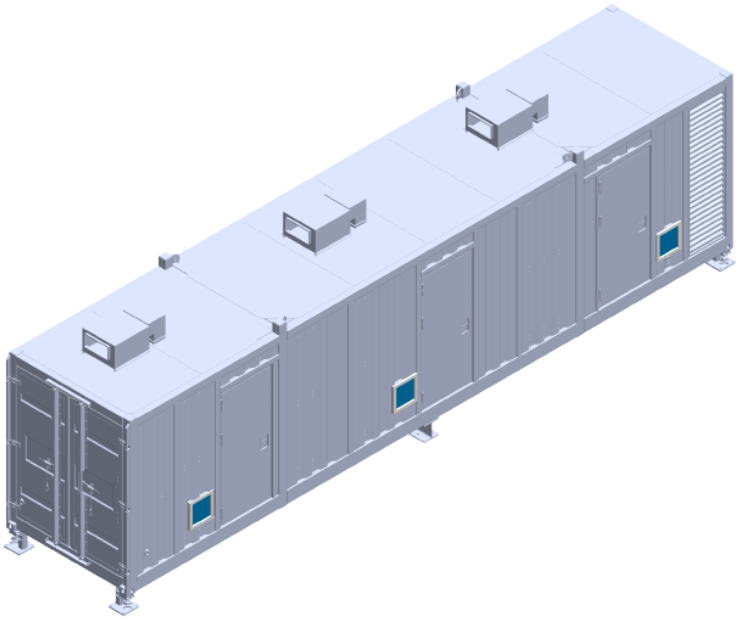
BESS 2








447
3036
300
12193



4.2.2 Container Lifting

⚠ DANGER	
	**Heavy load** **Improper lifting can result in death, serious injury or property damage.** Never lift the container above people. Use only lifting and personal protective equipment approved by OSHA or other national institutions.

NOTICE
Only use an appropriate crane to lift the container, capable to withstand the loads specified as follows: Weight of containers *see section 2*

NOTICE
Observe the container´s center of gravity during lifting: Observe the container´s center of gravity during lifting with crane, shown in section 4.2.3.

To lift the containers with a crane, use the four transport lugs on the top corners of the container (*see following illustration*).

PCS

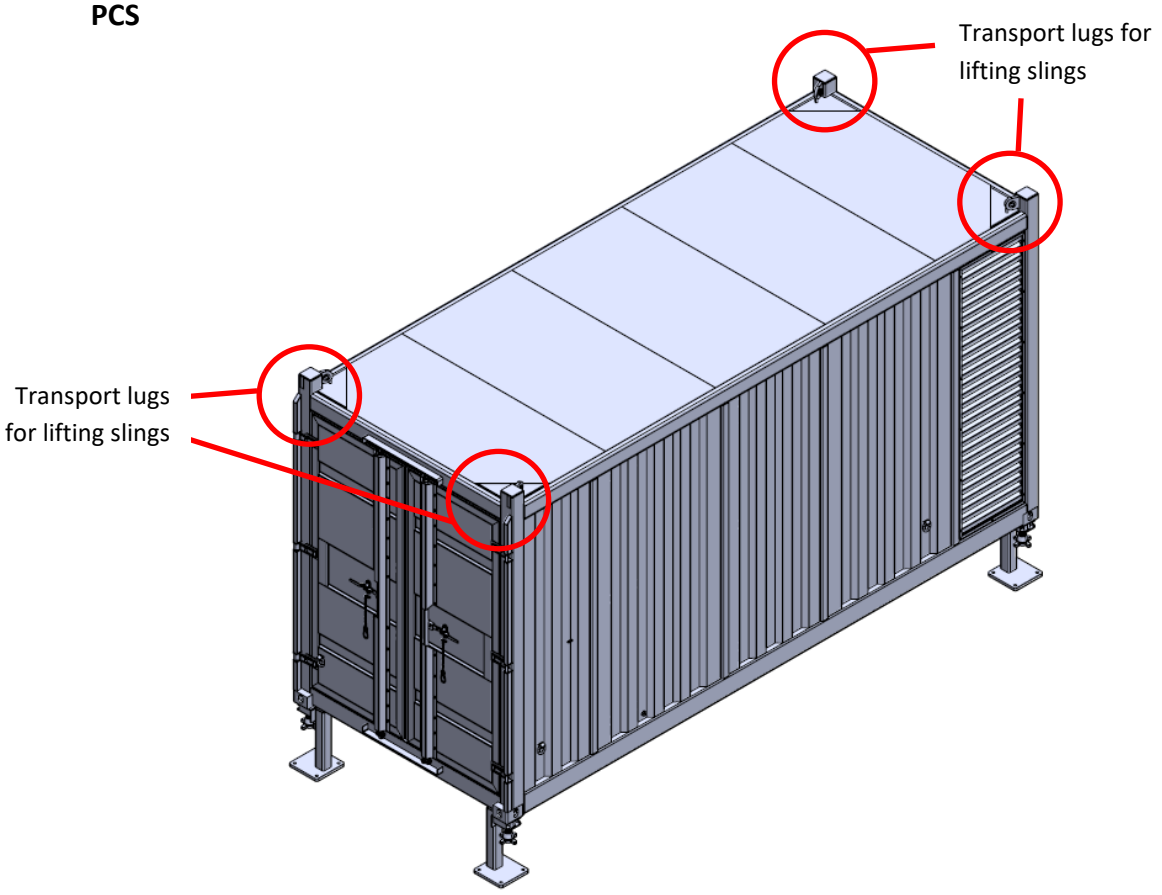


Figure 1: PCS container transport lugs

BESS 1

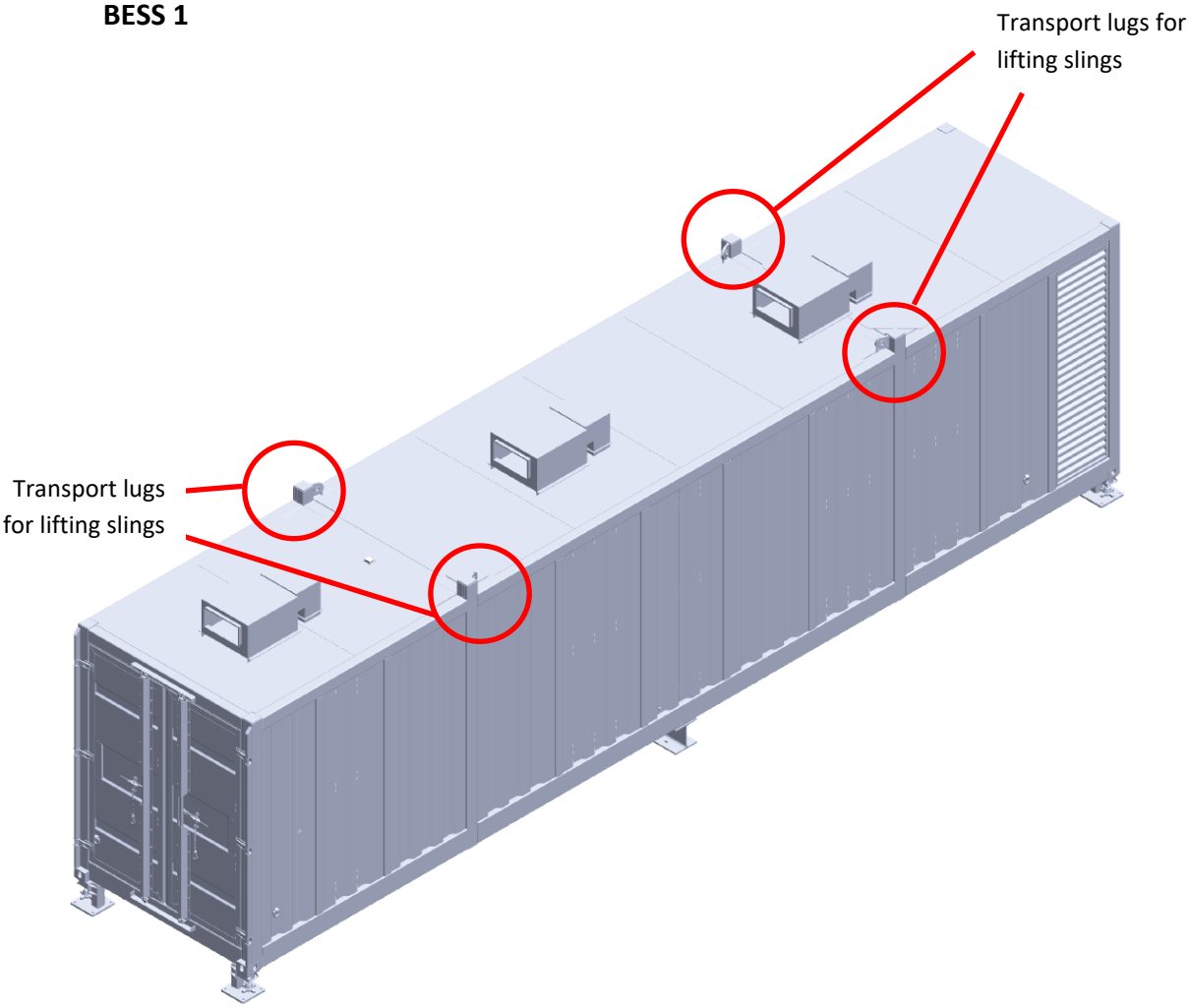


Figure 2: BESS 1 container transport lugs

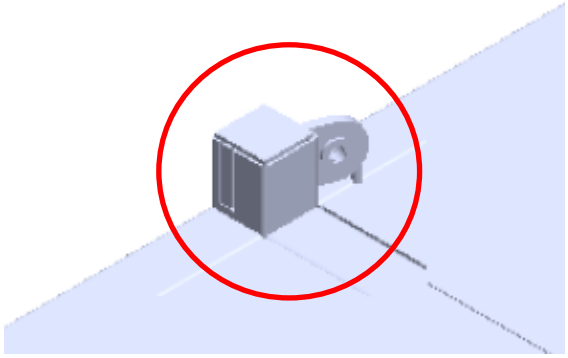


Figure 3: Transport lug

BESS 2

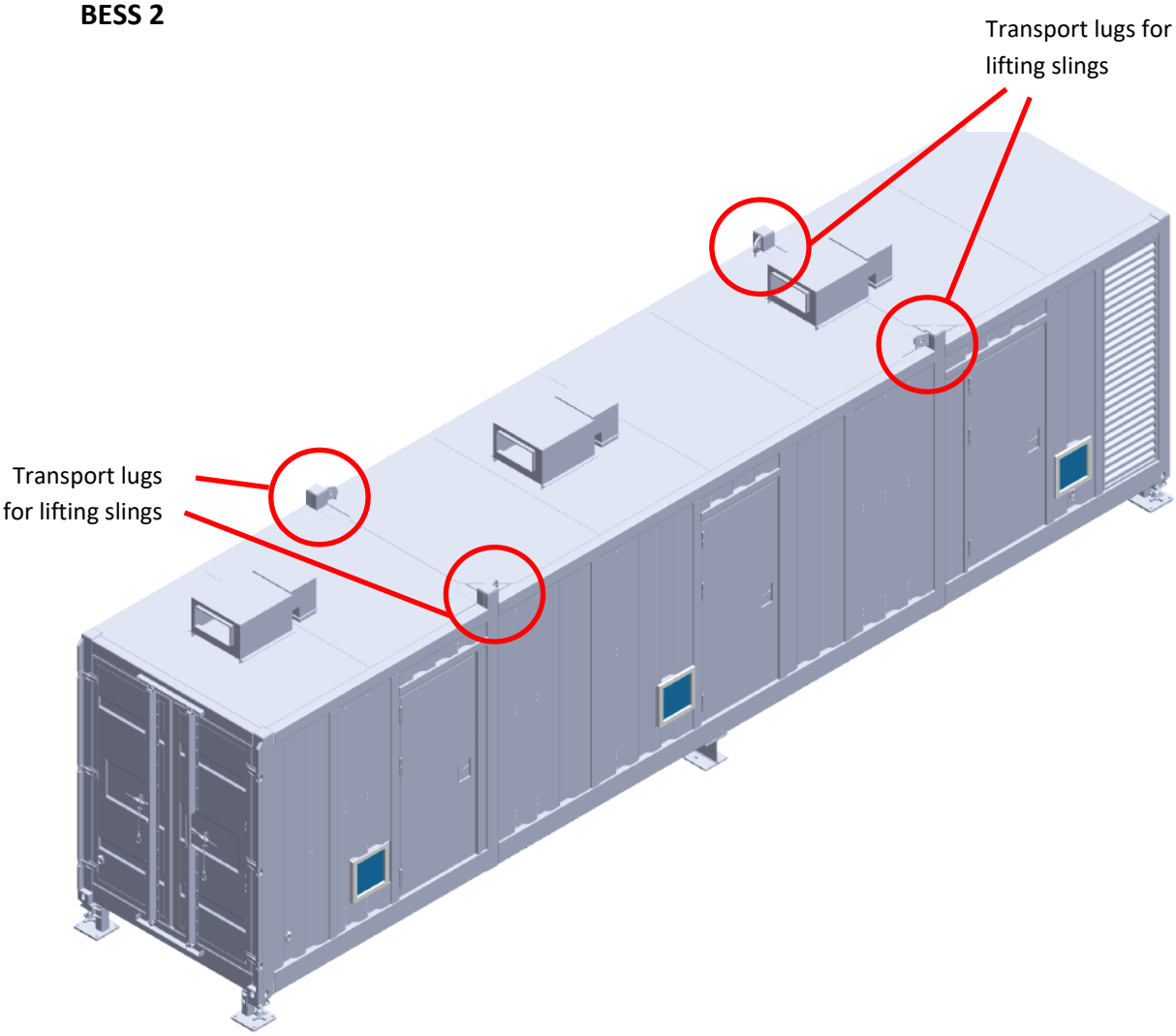


Figure 4: BESS 2 container transport lugs

4.2.3 Sling Angles and Centre of Gravity

PCS

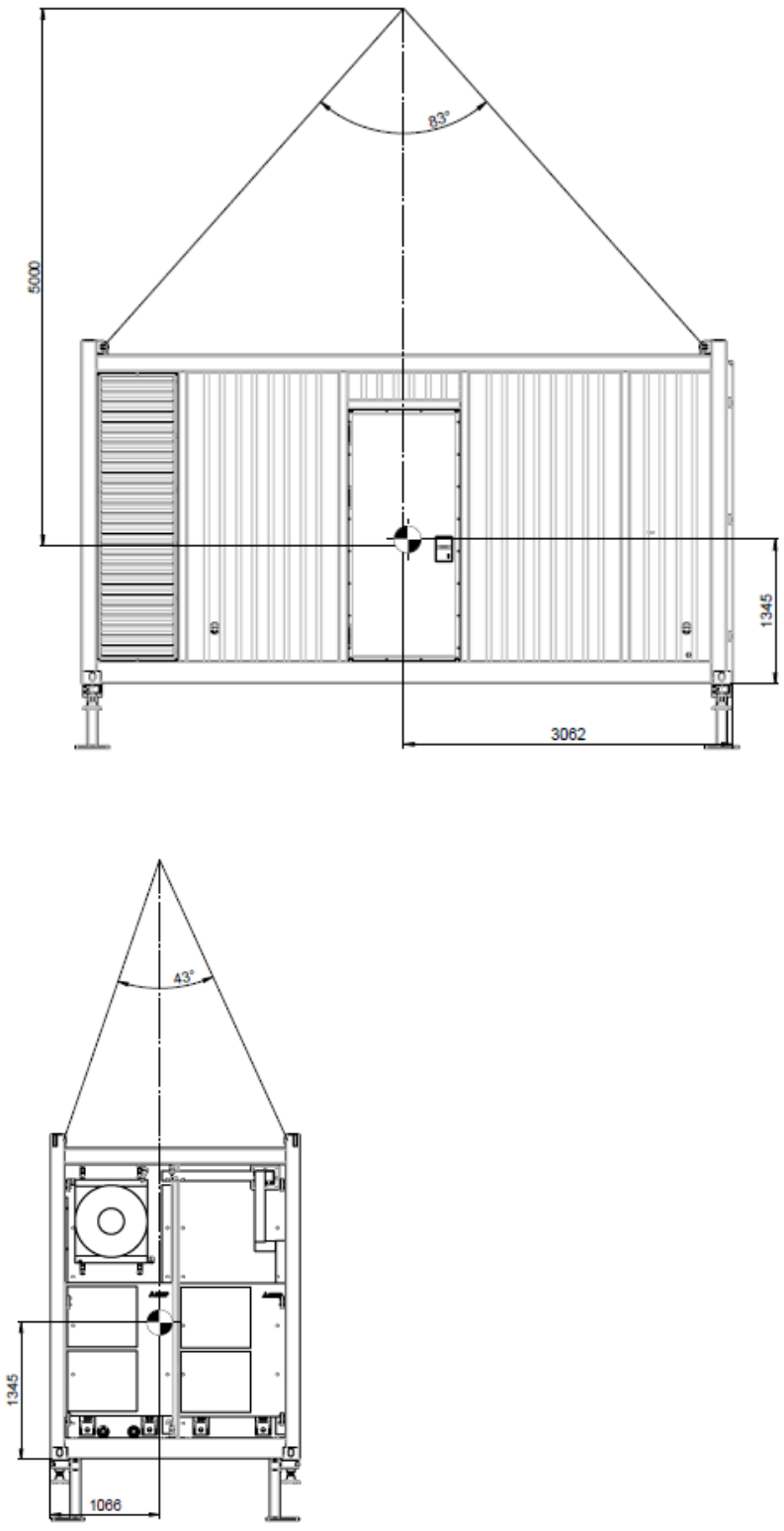
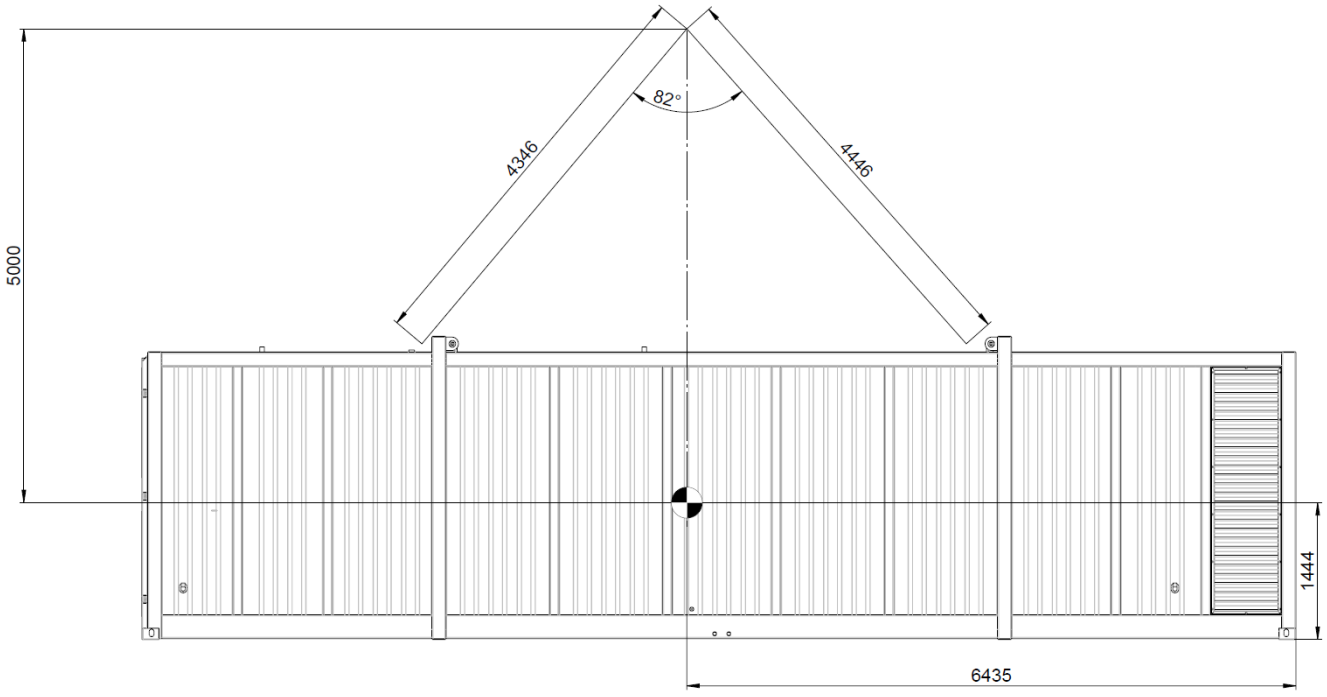


Figure 5: PCS - Sling angles and CoG

BESS 1



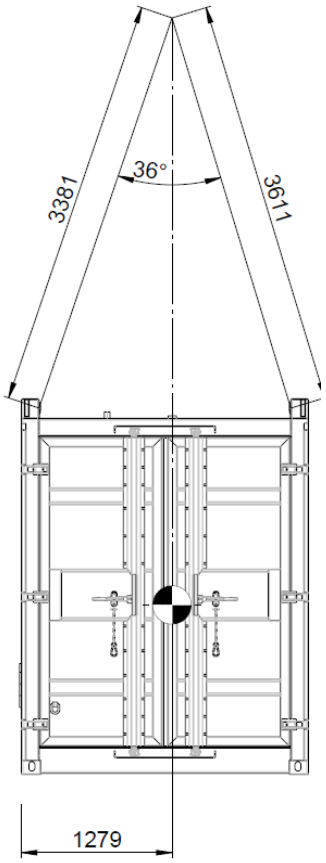


Figure 6: BESS 1 - Sling angles and CoG

BESS 2

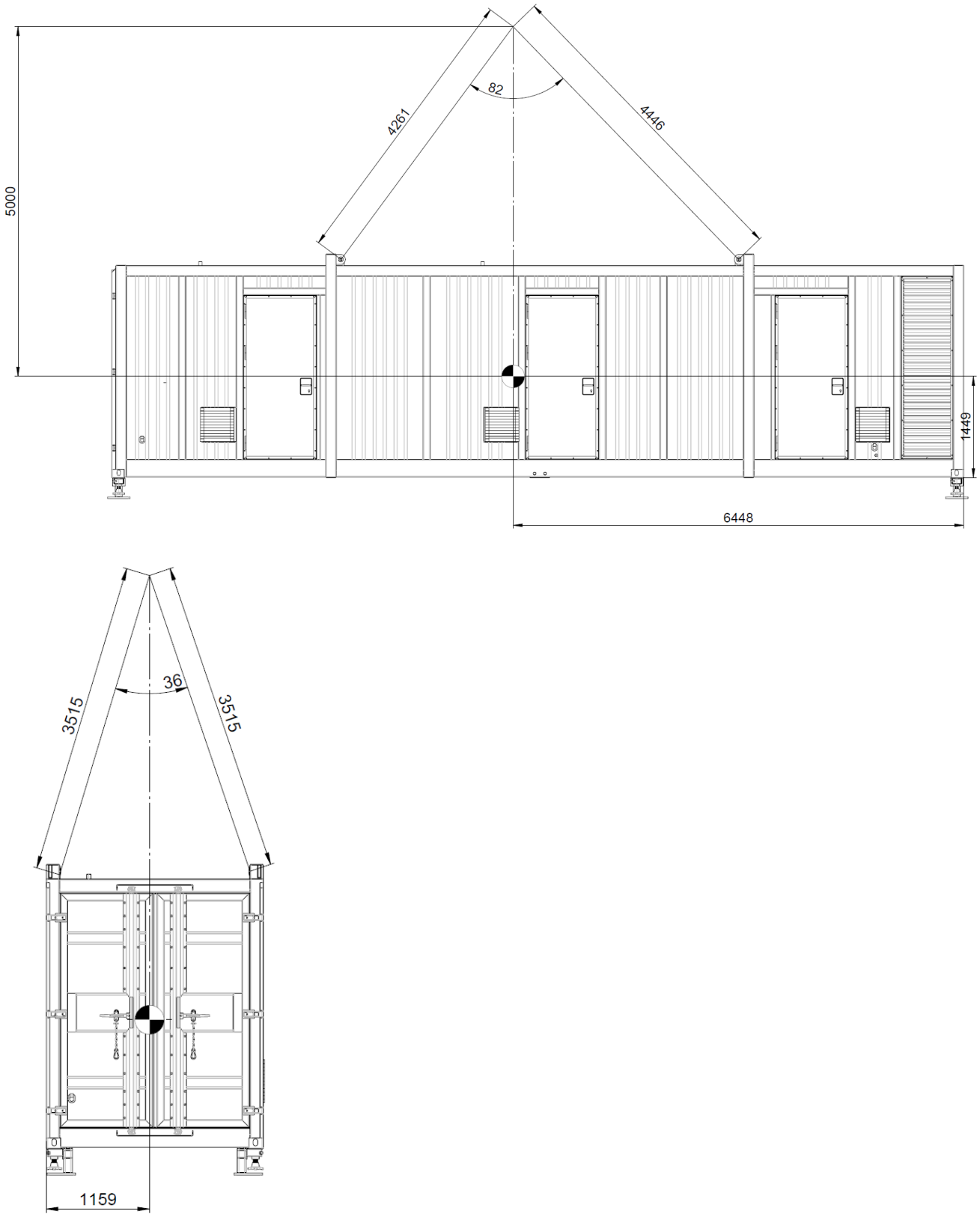


Figure 7: BESS 2 - Dimensions, sling angles and CoG

4.3 Installation location

⚠ GEFAHR	
	**Danger from and for unauthorized persons** Unauthorized persons are not aware of the dangers in the work area and may endanger themselves and third parties danger. ➜ Keep unauthorized persons away from the work area. ➜ If in doubt, speak to persons and direct them away from the work area. ➜ Interrupt the work as long as unauthorized persons are in the work area. ➜ Always keep the entrance door(s) locked when not performing work on the system to prevent unauthorized persons from entering the container.

⚠ CAUTION	
	**Danger to life due to unsuitable lifting material** While lifting the container and/or battery modules use only suitable lifting equipment and lifting tackle ➜ Make sure that all the material and equipment is designed for the weight and all required inspections have been done. ➜ Make sure that no person is under the container or battery module during lifting.

NOTICE
Equipment damage due to intruding animals Prevent animals from entering the interior of the container from below through the cable glands or recesses. ➜ Secure the container from the outside with suitable protection against the entry of animals.

The PCS & BESS Containers are designed for outdoor installation, on a flat and level surface. Make sure that the environmental conditions meet the values of section 3 “Environmental Conditions”.

The entrances to the container must be accessible from every side to allow for visual inspections or maintenance and repair work, if necessary.

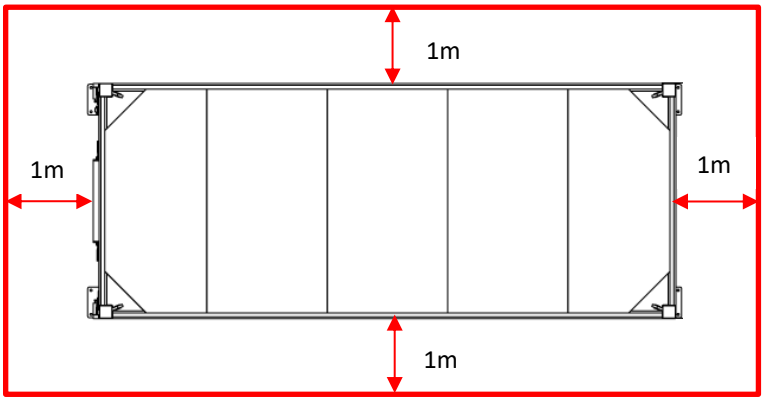
Air inlets and outlets of the container, as well as on the cabinets inside the container, must always be kept free and cleaned of dirt in order to ensure the required air flow of the installed fans.

4.4 Required Site Space

When placing the containers to the site (not final installation site) leave 1 m space around the containers.

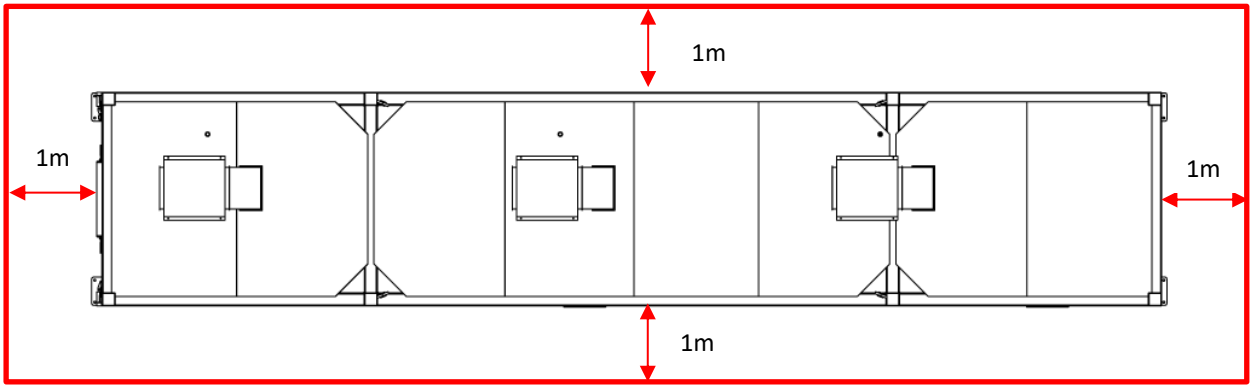
PCS

Top View



BESS 1

Top View



BESS 2

Top View

