

**Sodium Nickel Technology for Energy Storage Application:  
FIAMM Energy Spring 1-64 620 V 1.4 MWh 400 kW**



**Energy Spring 164 System**

- + 620 VDC Battery System for Energy Storage
- + Suitable for On-Grid and Off-Grid applications as well as Micro-Grid
- + 20' high cube containerized solution with 64 battery ST523 for medium voltage applications
- + 100% maintenance free in operation
- + System does not need to be shut down to replace energy modules (increased uptime, system remains in operation)

**Application**

- + Load Levelling
- + Power Quality
- + Renewable Resource Optimization
- + Utility Grid Ancillary Services
- + Microgrid

**Applicable Standards**

- + CEI EN60435
- + CEI EN64-8/5
- + UNI 9795:2010
- + UNI EN12100:2010
- + EN 61000-6-1

**FIAMM Manufacturing**

- + ISO 9001 Quality Management System
- + ISO 14001 Environmental Management System

**Energy Spring 164 Benefits**



**SAFETY**

- + Zero ambient emission
- + No hazardous components
- + All access from outside: no internal walking



**MODULARITY**

- + Scalable with parallel operation (from 32 up to 64 batteries)
- + Compact footprint: high energy density and design
- + Compatible with DC power supply and bidirectional inverters



**FLEXIBILITY OF INSTALLATION**

- + Suitable for any place of installation
- + Ambient temperature (standard condition): -20°C to +60°C
- + Approved for marine transportation

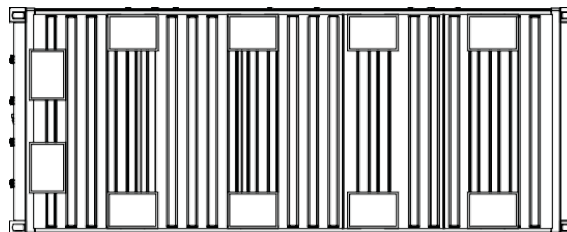
**SoNick™ Tecnology Overview**

- + Long-term safety and reliability with over 15 years of field deployment
- + Multipurpose application: EV, TLC, UPS, Railway
- + Over 100MWh installed globally
- + No auxiliary equipment (air conditioning, generator) needed

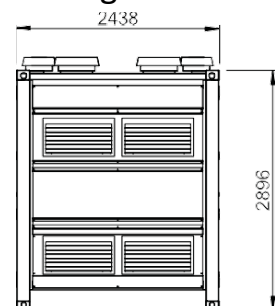
## Energy Spring 164 Technical Specification for configuration of 64 ST523

<b>Battery / Chemistry Type</b>	NaNiCl <sub>2</sub>
<b>Constant Power Discharge (Rated)</b>	400 kW for 3 hours
<b>Nominal Energy Capacity</b>	1.4 MWh (100% DOD)
<b>System Rating (Voltage, Current Capacity)</b>	Nom. 620 VDC, Nom. 2432 Ah
<b>Min / Max Operative System Voltages</b>	500 VDC / 700 VDC
<b>Standard Charge / Discharge hours</b>	8 hours of charge, 3 hours of discharge
<b>Standard Circuit Design</b>	Up to 64 battery modules connected in parallel
<b>Enclosure Dimensions</b>	L: 6058 mm / 238.5 in H: 2896 mm / 114 in W: 2438 mm / 96 in
<b>Weight (metric ton)</b>	25 t (with battery modules), 10 t (without battery modules)
<b>Heater Consumption during floating</b>	<10 kW
<b>Ventilation</b>	Air Conditioning not needed, only forced-air ventilation for power electronics
<b>Design Cycle Life</b>	4500 Cycles at 80% DOD
<b>Product / Material Specifications</b>	Please refer to ST523 battery specifications
<b>BMS Characteristics</b>	Please refer to ST523 battery specifications

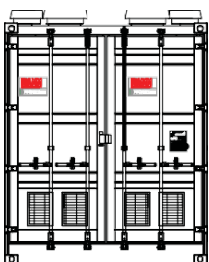
Top View



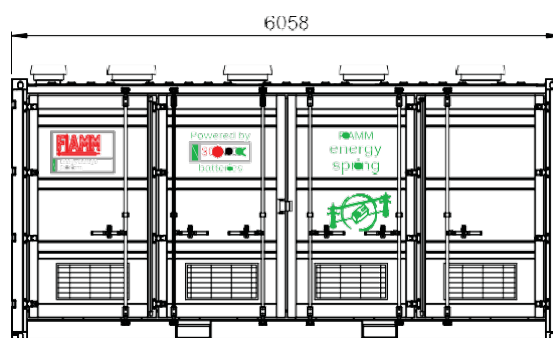
Right side



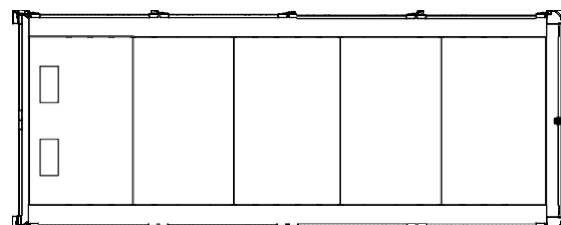
Left side



Front View



Bottom View



### Technical features for BESS Application

- + No cooling system required
- + 100% maintenance free in operation