

Sodium Nickel Technology for Energy Storage Application:

FIAMM Energy Spring 164 620 V 1.4 MWh 400 kW



FIAMM's safe, modular and flexible solution for MWh Systems Applications

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

Applicable Standards

- + COUNCIL DIRECTIVE 2006/95/EC on low voltage equipment safety
- + COUNCIL DIRECTIVE 2004/108/EC on electromagnetic compatibility

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 +40°C / -4°F to 104°F
- + Approved for marine transportation

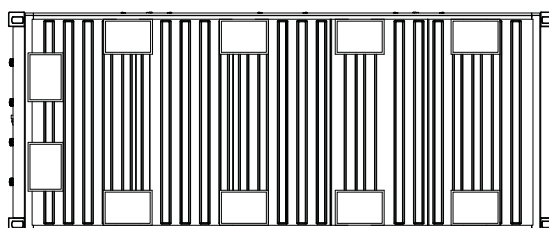
SoNick™ Tecnology Overview

- + 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

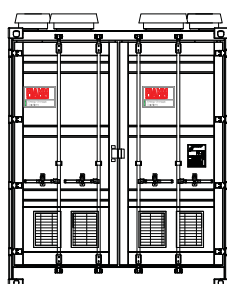
Energy Spring 164 Technical Specification for configuration of 64 ST523

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

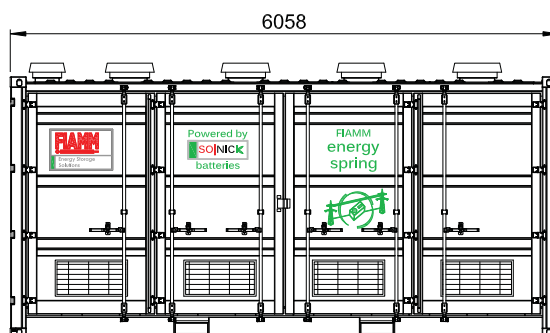
Top View



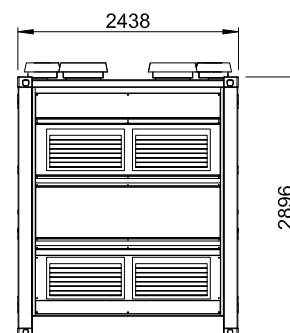
Left side



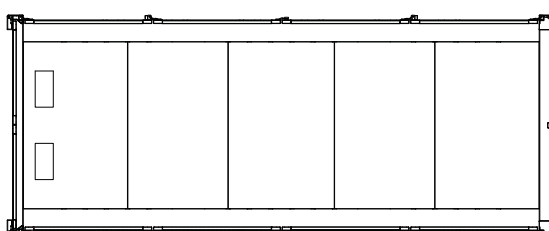
Front View



Right side



Bottom View



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