



Each **Storage Boiler** includes three sub-systems:

1. **Heat Cell** – Blocks of Caldera's patented thermal storage material are enclosed in a vacuum-insulated chamber, and heated directly by electricity from the grid or on-site renewables. Thermal energy is extracted on demand by injecting controlled amounts of pure water into coils embedded in the storage material, which produces steam. Steam can be delivered directly from electricity or from stored heat.
2. **Steam Generator** – A standard packaged heat exchanger uses the steam generated from the Heat Cell to heat feedwater from the site hotwell and generate plant steam to be fed into the site's steam header. Delivery pressure is up to 16 bar.
3. **Compact Substation** – A ready-to-install package which is factory-assembled. It houses the MV switchgear, transformer and LV switchgears to take power from the site's 11kV ring-main and manage the 690V loads to the Heat Cell.

The system is **modular** with an ability to include as many Storage Boilers as required to meet the site's requirements.

	Model SBX.05.4.065-1	Model SBX.1.4.065-1
Nominal energy storage capacity	4 MWh _{th}	
Peak charge rate	500 kW _e	1 MW _e
Peak discharge rate	0.65 MW _{th} (higher output by special order)	
Rating @80°C feedwater temp.	1,000 kg/h	
Duration, rated output @10 barg	5.4 hours	
Turndown ratio	20:1	
Standby heat loss rate	6.5% / 24h	
Roundtrip efficiency (no storage)	96%	
Depth of discharge	0-100%	
Design lifetime	>20 years	
Electrical connection		
Maximum power	500 kVA	1 MVA
Primary rated voltage	11 kV	
Secondary rated voltage	690 V (415 V by special order)	
Enclosure IP rating	IP54	
Steam generator		
Maximum operating pressure	16 bar	
Steam dryness	>95%	
Steam connections	DN65 PN16	
Feedwater connections	DN25 PN16	
System size		
Foundation width	7.6 m	
Foundation length	11.4 m	
Maximum height (heat cell)	7.0 m	
Total installed mass	87 t	

Heat cells are designed, manufactured and tested in accordance with Pressure Equipment Directive 2014/68/EU, and the requirements of harmonised ISO standards.

Caldera Heat Batteries Limited
7 Brunel Way, Fareham
Hampshire, United Kingdom

Phone: **+44 (0)345 034 8644**
Email: **sales@caldera.co.uk**
Site: **www.caldera.co.uk**