STORAGE BOILER DATA SHEET

Each **Storage Boiler** system is comprised of three sub-system packages:

1. **Heat Cell** – Blocks of Caldera's patented thermal storage material is 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, producing steam. Steam can be delivered directly from electricity, from stored heat or both together.
2. **Heat Exchanger** – A factory-assembled package, including a standard plate & shell heat exchanger, pumps and controls, manages the extraction of heat from the Heat Cell in response to a change in site steam demand. The internal steam loop exchanges heat with feedwater from the site hotwell, generating plant steam to feed into the steam header.
3. **Power & Control System** – A factory-assembled package that connects the Heat Cell to the site's MV power grid and controls charging. This includes an energy management system which dynamically responds to variable input power (e.g. from variable renewables) and/or output heat demand.

The system is **scalable** to meet **any** charging, discharging or thermal storage requirement.

Example specification	Model SBX-2.0-5.3-1.3
Nominal storage capacity	5 MWh
Maximum charge rate	2.0 MW_e
Charge response (switching time)	< 1 s
Charging efficiency (full load)	97%
Maximum discharge rate	1.30 MW_{th} (2 t/h)
Minimum discharge rate	200 kg/h
Roundtrip efficiency (direct electric)	97%
Round trip efficiency (typical daily cycling)	95%
Heat loss rate (in standby)	3.6% / 24 h
Depth of discharge	0-100%
Design lifetime	20 years
Primary rated voltage	10 to 33 kV
Secondary rated voltage	690 V dc
Enclosure IP rating	IP54
Maximum operating pressure	10 bar
Steam dryness	>95%
Feedwater temperature range	80 – 100°C
System size	
Power & Control System footprint	6.1 m x 2.4 m
Heat Exchanger footprint	6.0 m x 2.0 m
Heat Cell footprint	3.0 m diameter
Heat Cell height	9.8 m
Heat Cell mass	120 t

Nominal storage capacity assumes 6 bar delivery pressure and 80°C feedwater temperature.

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

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All specifications subject to change without notice.

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