



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

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, in turn generating steam to be fed into the site's header. Delivery pressure is up to 16 bar. Outputs to hot water, hot air or thermal oil are also available.
3. **Compact Substation** – A ready-to-install package, which is factory-assembled, takes power from the site's MV ring main and manages the loads to the Heat Cell. It houses MV switchgear, transformer and LV switchgear.

The system is **modular** and **configurable** with an ability to include as many Heat Cells as required, and adjustable for site network, charging and discharging requirements.

| Specification | Model SBX-1.8-5.3-1.3 |
|--|--|
| Nominal storage capacity | 5.3 MWh |
| Maximum charge rate | 1.80 MW _e |
| Charge response (switching time) | 30 ms |
| Charging efficiency (full load) | 99% |
| Normal operation discharge rate | 1.30 MW _{th} (2 t/h) |
| Boost mode discharge rate | 2.60 MW _{th} (4 t/h) |
| Minimum discharge rate | 32.5 kW _{th} (50 kg/h) |
| Standby heat loss rate | 4.8% / 24 h |
| Roundtrip efficiency (direct electric) | 98% |
| Depth of discharge | 0-100% |
| Design lifetime | 20 years |
| Primary rated voltage | Up to 20 kV |
| Secondary rated voltage | 690 V |
| Enclosure IP rating | IP54 |
| Maximum operating pressure | 10 bar (16 bar available by special design) |
| Steam dryness | >95% |
| Feedwater temperature range | 80 – 100°C |
| Foundation width* | 6 m |
| Foundation length* | 14 m |
| Maximum height (Heat Cell) | 9.0 m |
| Heat Cell installed mass | 82 t |

*Footprint subject to size of substation and other site requirements.

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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