



Essential Water and Energy Services Pty Ltd

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Specifications for 1MWh CAES Air Battery

| SPECIFICATION | DEFINITION | VALUE |
|-----------------------------------|--|-------------------------|
| System type | Compressed Air Energy Storage Adiabatic method with heat storage. | |
| Rated Continuous Discharge Power | The rate at which the CAES can continuously deliver energy. Storage component's entire specified state of storage (SOS) range. | 20 - 250kW |
| Capacity / Useable power | Amount of usable power available | 1000kWh |
| Rated Apparent Power – AC systems | The real or reactive power (leading or lagging) that the CAES can provide into the AC grid continuously without exceeding the maximum operating temperature of the CAES system. | 312.5kVA - AC 0.8 alpha |
| Rated Power – DC systems | DC systems only have power not reactive power. | N/A |
| Solar power | DC input with EDS protection | 1000V DC 300A |
| Rated Continuous Charge Power | The rate at which the CAES can capture energy for the energy storage component's entire SOS range. | 300kW |
| Rated Continuous Current | The current that the CAES can provide into the grid or load continuously and can be charged by the grid or other source eg. Solar, continuously without exceeding the maximum operating temperature of the CAES system. | 450A 3-phase |
| Frequency | As per order | 50/60Hz |
| Output Voltage Range | The range of AC grid voltage or load specified load voltage which the CAES will supply at, in accordance with the CAES specification. | 230/250V |
| Total Response Time | The response time shall be measured in accordance with a chart provided starting when the signal (command) is received at the CAES boundary and continuing until the CAES discharge power output reaches $100 \pm 2\%$ of its rated power. | TBA subject to test |

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| System Round Trip Efficiency | Total round-trip efficiency from beginning of life (BOL) to end of life (EOL), defined as the ratio of the delivered output energy of the energy storage system to the absorbed input energy required to restore it to the initial state of charge under specified conditions. | 72% +/- 3% |
| Maximum CAES Pressure | Maximum rated pressure at which the CAES operates (at maximum SOS) | 250 bar |
| Minimum CAES Pressure | Minimum rated pressure at which the CAES is still functional (at minimum SOS) | 10 bar |
| Maximum Rated Receiver Pressure | The maximum pressure at which the manufacturer rates the air receiver. Should have a safety margin as specified in the OHS Act. ISO11120-X | 275 bar |
| Ramp Rate | The maximum rate, expressed in megawatts per minute, that the CAES can change its input and output power. This may vary in multiple dimensions such as SOS and/or other parameters of the system that may be broken out into multiple line-item values. | 10,000 kW/min |
| Enclosure Type | Steel container, purpose fitted for sub-components | 12 metre |
| Equipment Footprint | Area required | 32m ² |
| Height | Equipment height plus safe clearance distances above the equipment as per the OHS Act. | 2.5m + 0.5m |
| Weight | Total dry weight | 10,000kg |
| Operational | Temperature range | -10 to +40 deg C |
| Operational | Relative humidity | 10 to 90% non-condensing |
| Operational | Placement outside, in a basement, on a rooftop, on a level concrete pad with power reticulation points. | |
| Operational | Noise level | <= 60 dBA |
| Operational | Water output is dependent on the humidity of the air | Variable up to 5,000 litres per day |
| Grid Communication Standards/Protocols | ISO 11120: ISO 3744:2009; 61000-6-2:2005; sans 10142- 1; ISO 1217:2009; | AS/NZ standards apply to systems manufactured in Australia |
| Typical Recharge Time | With input power as per minimum rating | 6 hours |

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| Monitoring | GSM, digital radio, satellite where applicable. Basic dashboard for monitoring subject to monthly rental and Internet connection. Monitoring of every LiGE CAES System is compulsory. All Data belongs to LiGE | |
| Lifespan | CAES systems operational lifespan | 30 years |
| Maintenance Schedule | Main parts for servicing or replacement according to the unit runtime. Air Filter, Compressor Seals, Electrostatic Air Filter Clean, Valves, Oil top-up, Compressor Bearings and Transmission, Coolant Pump/Blower. | 5 year renewable maintenance agreement |
| Warranty and Replacement Schedule | Warranty inclusions and exclusions include replacement schedules, timespan of warranty and any limitations. | 5 years on parts and unit, subject to maintenance agreement |
| Availability of System | Initial lead time to delivery of a system from confirmed order is expected to be between 8 to 16 weeks. These lead times are expected to reduce as production ramps up. | |

Subject to change without notification.