

MAN turbomachinery for compressed air energy storage (CAES)

Compressed air energy storage (CAES) is a proven technology which uses geological reservoirs (e.g. caverns, salt mines) to store large amounts of energy for long periods of time. This is a very economical solution for large-scale applications and can make large amounts of renewable energy available when needed. MAN Energy Solutions offers state-of-the-art components for CAES systems including air compressors and air expanders.

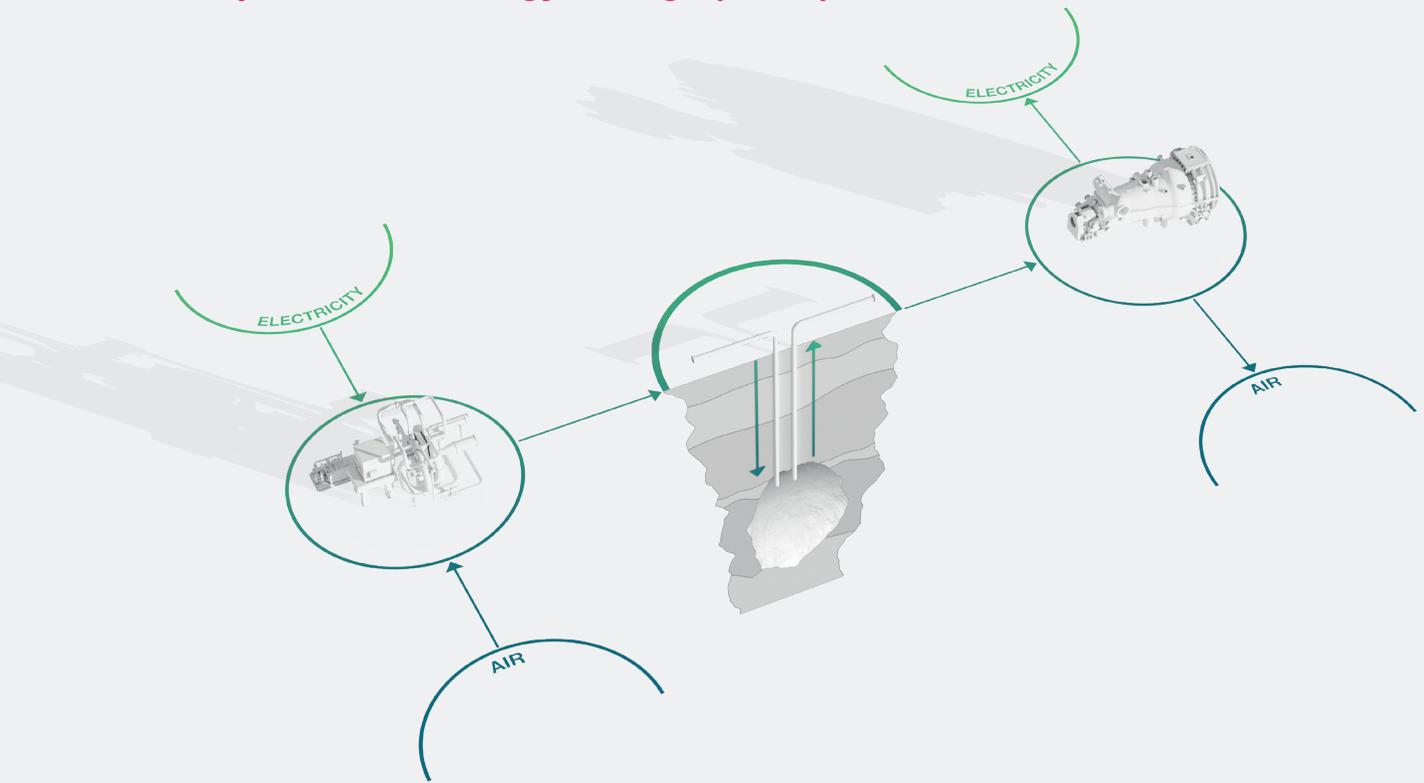
Benefits at a glance

- MAN compressors and expanders are highly efficient and flexible
- Systems based on proven technology developed over decades
- Low capital investment and leveled cost of storage
- High power outputs and high capacities
- Suitable for many energy services including spinning reserve and black start



MAN turbomachinery

for compressed air energy storage (CAES)



Technology

An electrically driven compressor is used to compress ambient air which is then stored at high pressure in subterranean reservoirs. When stored energy is required, the compressed air is passed through an air expander which drives an electricity generator. CAES can also be equipped with a thermal storage system to store the heat generated during compression in order to improve the round-trip efficiency.

MAN turbomachinery for CAES

MAN Energy Solutions is a leading provider of key turbomachinery equipment for CAES. Our compressors and expanders are based on proven technology developed over decades. In 1978, MAN supplied the compressors for a CAES facility (300 MW/1 GWh) located in Huntorf, Germany, which was the first ever to be built in the world and is still in operation to this day.

MAN compressors

MAN Energy Solutions provides not only radial or integrally geared compressors but also combined axial/radial type compressors for large units. MAN compressors cover suction flow rates up to 1.5 million m³/h and max. discharge pressures up to 250 bar (3625 psi).

MAN expanders

MAN air expander power recovery units for CAES systems are based on over 100 years of in-house experience. MAN expanders and steam turbines can be used for power generation and mechanical drive applications up to 180 MW. MAN expanders are suitable for a wide range of process gas conditions such as nitric acid, terephthalic acid, air and steam. They are designed for high inlet temperatures up to 760 °C (1400 °F) or high inlet pressures up to 140 bar (2031 psi).

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