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(54) Title: SYSTEMS AND METHODS FOR COMPRESSED AIR ENERGY STORAGE AND CONTROL THEREOF

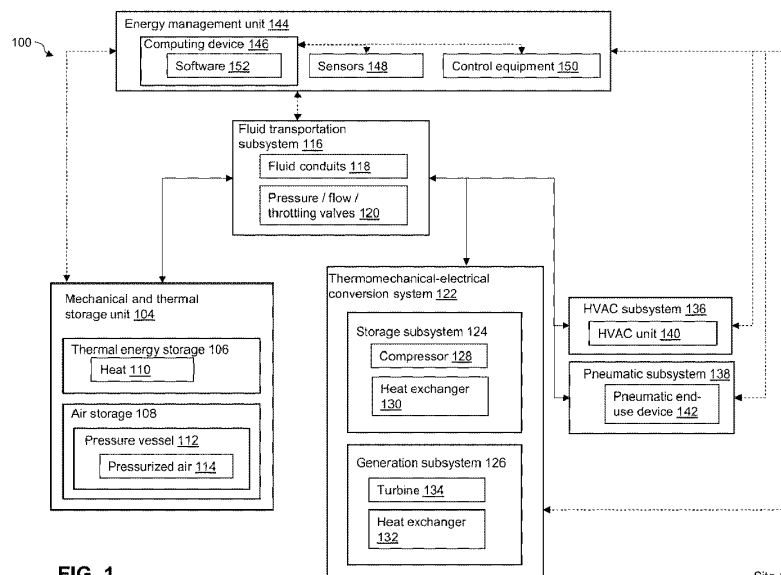


FIG. 1

Site 102

(57) Abstract: Systems, methods, and devices for energy storage are provided. A system for energy storage includes a thermomechanical-electrical conversion subsystem for converting energy formats and a mechanical and thermal storage unit for storing energy formats. The thermomechanical-electrical conversion subsystem includes a storage subsystem including a compressor and a first thermal energy exchanger and a generation subsystem including a power generator and a second thermal energy exchanger. The storage subsystem compresses a fluid to generate compressed fluid and thermal energy. The generation subsystem generates power from the compressed fluid and the thermal energy. The mechanical and thermal storage unit includes a pressure vessel for storing the compressed fluid and a thermal energy storage for storing the thermal energy generated by the fluid compression and for providing the thermal energy to the generation subsystem for generating power.

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