Thermal energy storage cyprus

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The PROTEAS Facility is the largest research infrastructure in Cyprus. It is devoted to research, development and testing of Renewable Energy Sources with emphasis on Concentrating Solar Thermal (CST), Thermal Energy Storage (TES) and thermal Desalination of Sea Water (DSW) for bridging the gap between fundamental research and industrial needs.

PROTEAS is a multi-purpose facility built around a central hub of molten salt Thermal Energy Storage (TES), hybridised with batteries and other forms of storage. The facility is capable of poly-generation of heat and electricity using renewable energy technologies (CST, Wind, PV) and integration of these energy technologies with the TES, batteries, and seasonal water storage. Optimal solar radiation and environmental conditions are monitored via a state-of-the-art BSRN station. PROTEAS is complemented and enhanced by the Thermal Energy Storage Lab (TESLA) at the main Campus of CyI at Athalassa where instrumentation, controls and studies on suitable materials are also conducted.

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Fig. The TESLAB molten salt (MS) TES. The principal steam lines of the 10kWth Rankine Cycle demonstrator plant which connect to the MS TES steam generator and superheater are also indicated.

The TESLAB was originally created for research in molten-salt thermal energy storage and, more specifically, allow for the development of ancillary hardware such as level sensors and heat exchangers, prior to being commissioned at the CyI CSP platform, PROTEAS. The 250 kWhth TES has been used to test the first Rankine cycle developed in-house by the ARES group.

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an outlook for future research directions and describes possible research applications.

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