

A thermal energy storage device and a solar space heating assembly

Application Number: 202211003420

Inventors: Pushpendra Kumar Shukla, Dr. P Anil Kishan

ABSTRACT

A thermal energy storage device (100) and solar space heating assembly (400) are disclosed. A cuboidal tank (102) has a base (104), a cover (106), and a plurality of walls (108) extending between the base and the cover. A dual coil arrangement (110) within the cuboidal tank enables heat transfer using fluids. A first pipe (112) extends from a first fluid inlet to a first fluid outlet for a first flow path of a first fluid. A second pipe (114) extends from a second fluid inlet to a second fluid outlet for a second flow path of a second fluid. A Phase Change Material (PCM) is provided within the cuboidal tank about the dual coil arrangement. The thermal energy storage device (100), a solar thermal collector (300), and a radiator (402) form the solar space heating assembly (400).

KEY APPLICATION AREAS

1. Thermal energy storage (TES).
2. Solar space heating systems.
3. Solar thermal energy utilization.
4. Phase change material (PCM) energy storage.
5. Off-grid heating solutions.
6. Residential and commercial heating.

POTENTIAL USE

1. Space heating for homes and buildings.
2. Thermal energy storage for day-night heating.
3. Off-grid heating in remote and cold regions.
4. Solar-powered drying applications.

5.Industrial process heat storage.

6.Energy-efficient temperature-controlled heating systems.