

System For Drying Articles

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ABSTRACT

A system (1000) for drying an article is provided. The system (1000) includes a first closed loop arrangement (100), a second closed loop arrangement (200), and a bypass loop (300). The first closed loop arrangement (100) carries a first heat transfer medium. The second closed loop arrangement (200) may be fluidically coupled to the first closed loop arrangement (100). The second closed loop arrangement (200) may carry a second heat transfer medium to receive the heat of the first heat transfer medium. Further, the bypass loop (300) may bypass the first heat transfer medium from the first closed loop arrangement (100) when the temperature of the first heat transfer medium sensed by the at least one temperature sensor (121) exceeds a required temperature. The bypass loop (300) defines a thermal energy storage arrangement

KEY APPLICATION AREAS

1. Industrial and commercial drying systems.
2. Solar-assisted drying technologies.
3. Food and agricultural product processing.
4. Packaging and paper product drying.
5. Energy-efficient thermal processing.
6. Hybrid renewable energy systems.

POTENTIAL USE

1. Drying agricultural products such as vegetables and other food products using a hybrid solar-electric dryer.
2. Drying corrugated boxes and packaging materials with controlled temperature and humidity.
3. Industrial drying processes requiring uniform heat distribution through heat exchangers and dehumidified air circulation.

4. Energy-efficient drying by combining solar thermal energy with electrical heating only when needed, reducing electricity consumption.
5. Thermal energy storage-based drying using phase change materials (PCM) to store excess solar heat and provide continuous drying during low solar availability.
6. Automated drying systems with temperature, humidity, and airflow monitoring for consistent product quality.