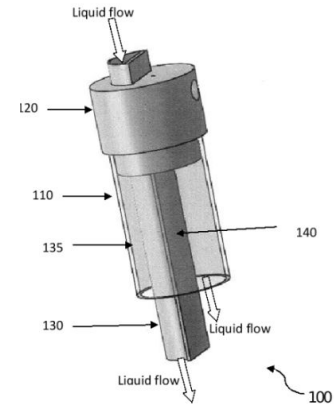


**GRANTED****(IN474154)**

## A liquid-cooled hybrid solar energy collector



### NEED

Overheating of photovoltaic (PV) cells reduces their energy conversion efficiency by up to 25%, leading to lower electricity yields and higher operational costs. Existing cooling methods struggle to maintain uniform temperatures and waste valuable thermal energy.

### TECHNOLOGY OVERVIEW

This invention introduces a liquid-cooled hybrid solar energy collector, which cools PV cells from both sides while simultaneously generating electricity and hot liquid. It efficiently manages heat, increasing PV output and providing dual energy streams without redesigning solar farms.

### TECHNOLOGY KEY FEATURES

Dual-side liquid cooling, enhanced PV efficiency, transparent tube with absorber tube, simultaneous electricity and thermal energy generation, compatible with parabolic trough collectors, glass or plastic tube materials, adaptable fluid choices like brine or deionized water.

[Read more here](#)

### MARKET ANALYSIS

The global solar hybrid systems market is expected to grow at a CAGR of 8.2%, reaching \$1.5 billion by 2033, driven by demand for improved energy yield and dual-energy solutions. [Source: Allied Market Research, 2024]

### Target Industries

Renewable Energy, Solar Energy Systems, Industrial Process Heating, Solar component manufacturers, system integrators for hybrid energy solutions, industrial energy optimization providers, R&D for solar thermal-electric systems.

### AT A GLANCE

- SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation and Infrastructure), SDG 13 (Climate Action)

Technology is available for licensing/ co-development.

Reach out to Prof. Deepak Chitkara, Coordinator, BITS Technology Enabling Centre,  
BITS Pilani Contact Details: [tec.bits@pilani.bits-pilani.ac.in](mailto:tec.bits@pilani.bits-pilani.ac.in), 91 1596-255913