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**PENDING**

# (IN202311070277)
# A process to create a heat source using solute-solvent pair

## NEED

Inefficient heating systems relying on electricity or high-temperature fuels result in high emissions and poor energy access in rural and off-grid regions. Energy losses reach up to 45% in conventional heat sources due to limited thermodynamic efficiency and dependency on grid infrastructure.

## TECHNOLOGY OVERVIEW

An electricity-free process creates a heat source using a solute-solvent gas-air system and isothermal humidification. The system harnesses thermodynamic open-cycle principles to generate hot, dry air, minimizing energy loss. This modular design enables deployment in low-resource environments without disrupting existing operations.

## TECHNOLOGY KEY FEATURES

A passive heating process using gas/air streams and water without electricity; Multi-stage dehumidification using desiccant mechanisms; Delivers consistent dry heat; Works in off-grid or low-infrastructure environments; Easy integration with existing heat applications.

Read more here

## MARKET ANALYSIS

The global industrial heating equipment market is expected to grow at 5.7% CAGR, reaching $30.3B by 2033. India's heating, ventilation, and air conditioning (HVAC) sector is growing at 7.5% CAGR. Demand is driven by sustainable energy, rural deployment, and low-carbon process heat. [MarketsandMarkets, IMARC, Mordor Intelligence]

## Target Industries

Component suppliers and/or heat system integrators for industrial and decentralized heating and/or clean energy providers focusing on low-emission thermal systems in agriculture, food, and building sectors and/or R&D organizations or innovators in sustainable HVAC, thermal storage, or energy-efficient infrastructure deployment.

## 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.

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