SMART PAD FOR HOT AND COLD THERAPY WITH POWER RECYCLING

IITM Technology Available for Licensing

Problem Statement

- Conventional pads need manual heating and cooling, which is inconvenient.
- Lack of Dual Functionality in Electric Pads: Existing electric pads provide automatic heating but lack a cooling option.
- Current alternative solutions are complex and cumbersome, requiring additional components like fluid reservoirs and hydraulic pumps.

Intellectual Property

- IITM IDF Ref. **1697**
- **IN 514383 - Patent Granted**

TRL (Technology Readiness Level)

TRL - 5: Technology validated in relevant environment.

Technology Category/ Market

Category - Smart therapy pad technology, Medical & Surgical Devices
Applications- MedTech, Chronic Pain Management, Post-Surgical Recovery,
Industry- Therapeutic Devices, Healthcare and Medical Devices

Market - Smart Therapies Market Size is predicted to expand with a **14.17% CAGR** during the forecast period for 2023-2031.
The **high demand for IoT in the healthcare** industry is expected to drive the market growth of smart therapies.

Research Lab

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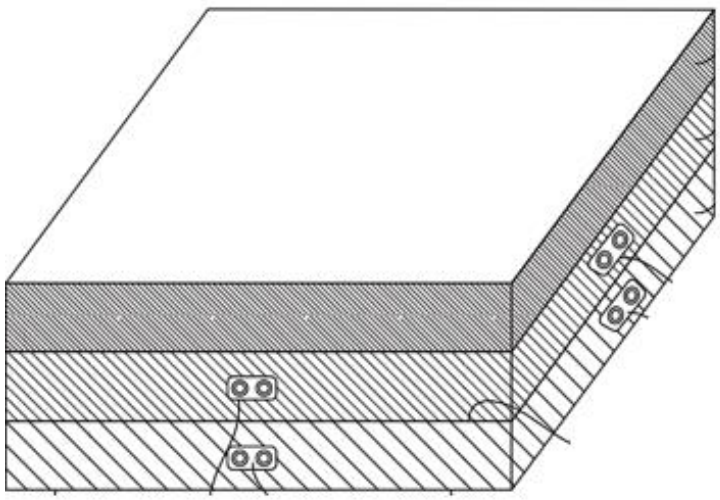
FIG. 1. Shows the smart hot and cold pad device module.



Technology

1 Dual-Function Smart Therapy Pad

- The invention is a smart therapy pad that provides both heating and cooling through a thermoelectric device, with heating or cooling determined by the voltage polarity.

2 Energy Recovery System

- A thermoelectric generator on the pad recovers energy from heat exchange, converting it into electric charge, which can be stored in a battery or reused, enhancing energy efficiency.

3 Programmable and Expandable Design:

- The pad includes a controller for setting programmable temperature-time cycles and can interconnect multiple pads to cover larger skin areas, powered by single or multiple power sources.

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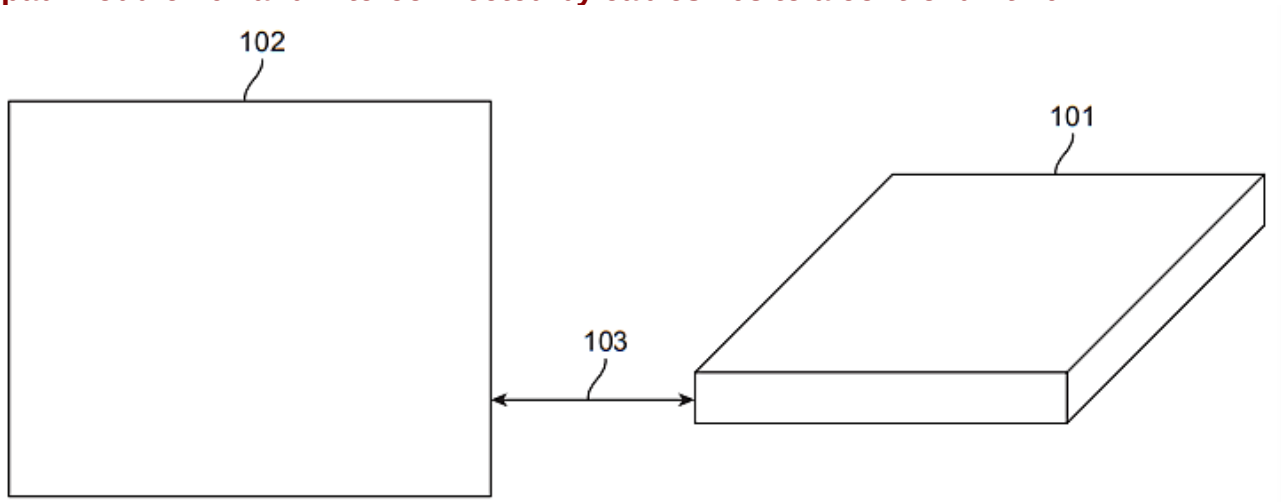
FIG. 2. illustrates smart modular hot and cold pad system. The system having a pad module 101 and interconnected by cables 103 to a control unit 102.



Key Features / Value Proposition

1. Versatile Therapy Solution	Provides both heating and cooling therapy, offering comprehensive pain and inflammation treatment options.
2. Energy Efficiency	Integrates a thermoelectric generator to recover and reuse energy, reducing overall power consumption
3. User Convenience:	Eliminates the need for manual heating or cooling, with automatic and programmable temperature settings.
4. Customizable Treatment:	Features a programmable controller for tailored temperature-time cycles, enhancing therapeutic efficacy**.**

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