

## Residential Heat Pump for Nordic Climates

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**Categories:**

- Mechanical Engineering

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- Heat Pump
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Nordic climates necessitate larger heating requirements than more southern, temperate regions. Typical heat pump systems include single-stage and ground (geothermal heat pumps). These traditional heat pump solutions have lower efficiencies and higher operating cost relative to multi compressor heat pump systems.

Researchers at Purdue University have developed a heat pump system that operates at a relatively higher efficiency and a lower cost. This multistage heat pump can utilize two separate methods of heat transfer. Four modes of operation ensure the pump is operating in the most efficient manner for the given set of environmental conditions. The indoor air coil is also designed to fit the target climate and minimizes unnecessary energy consumption. Oil is well managed by a novel technique in the heat pump system. This ensures the compressors are running with the required amount of lubrication and are highly reliable. In addition, the heat pump is designed for manufacturability and is more suitable to produce and maintain. Finally, the whole system is enclosed in a casing, reducing sound. The compressors are acoustically dampened, allowing the residents of a building to enjoy both proper climate control as well as a quiet atmosphere.

**Advantages:**

- Enables heat pump use in non-traditional, northern, temperate regions
- Lower running cost
- Higher efficiency compared to traditional heat pumps
- Acoustically dampened

**Potential Applications**

- Heating products
- Heat pump manufacturers

**People:**

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### **Intellectual Property:**

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