



Retrofit Peltier Cooling Device

WiSys: T180052US02

Inventors: Brandon Behringer

WiSys is seeking a strategic partner skilled in the manufacturing and distribution of insulated storage containers or portable mini refrigerators. Ideally, this partner could provide a route to market for the commercialization and use of this retrofit Peltier cooling device.

Overview

Insulated storage containers, i.e., coolers, continue to serve as the primary means for the portable preservation of food and beverages. Coolers are often essential for camping, picnics, tailgating, or backyard gatherings. After stocking the cooler with perishable food and an array of cold beverages, one typically adds ice to maintain the desired temperature. However, the ice inevitably melts, and this temperature cannot be maintained indefinitely. An alternative to the insulated cooler is the portable mini refrigerator. While these devices can provide and maintain continuous cooling, they are generally too large and heavy to transport outside of a recreational vehicle or camper. The truly "portable" mini refrigerators suffer from capacity issues as too much internal space is sacrificed to accommodate the cooling and electrical components. While the current markets for insulated coolers and portable mini refrigerators are estimated at about \$500 million and \$1 billion respectively, and continued growth is projected in both sectors, there is still a need for a cooling solution that rises above the limitations of these current offerings.

The Invention

A student from the University of Wisconsin – Parkside has developed a Peltier cooling device that can be retrofitted to a portable cooler and provide continuous cooling. Broadly, this technology has the capability to convert any traditional insulated cooler into a portable mini refrigerator. Use of this device does not require any permanent modification to the cooler. Instead, the device mounts in place through use of a lid adapter that allows a thin thermally conductive material to pass through and guarantees a sealed closure of the cooler lid. Initial testing has demonstrated that this device has the capability of cooling a room-temperature beverage faster than an in-home refrigerator. Overall, the small footprint of this device ensures minimal space is used inside the cooler and storage capacity is kept almost fully available.

Applications

Continuous cooling device to be used with insulated coolers.

Key Benefits

- The overall system can be retrofitted to any exiting cooler or developed to be sold as one complete package.
- Eliminates the need for purchasing and using ice to keep food and beverages cold.
- Provide portable cooling during disaster relief efforts.
- Small footprint to maintain maximum cooler storage capacity.
- Lightweight to enhance portability and make traveling easy.
- Cost-effective to manufacture.
- Reversing polarity can convert the device into a continuous heating unit.

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| info@warf.org | 608.960.9850

Stage of Development

The current prototype can be retrofitted to a variety of different commercially available coolers, and through additional development can have its cooling capabilities enhanced even further.

Tech Fields

- [Animals, Agriculture & Food : Food safety & quality](#)
- [Engineering : General engineering technologies](#)

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