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PROVIDING CLEAN COOLING WITHOUT CONSTANT POWER

   AGRICULTURE & ENERGY

How is a novel design bringing essential refrigeration to areas with intermittent electricity?

Spotted: Access to refrigeration is vitally important for businesses, health care facilities, and individual homes. However, in Sub-Saharan Africa, just **17 per cent** of households have access to a refrigerator, with that figure even lower for rural areas. This is due to a lack of affordability and poor access to reliable electricity.

Startup SureChill is working to address this with a cooling technology designed to run with intermittent electricity. The company leverages the fact that water is most dense at 4 degrees Celsius, which is also the optimum temperature for fresh produce and vaccines to be kept at. The technology further relies on the fact that when ice freezes, it stores a lot of cooling power.

The refrigerator stores energy as ice at the top of the refrigeration container, with water at 4 degrees Celsius surrounding the rest of the device to keep items at the desired temperature. When power is available, the water is cooled and rises to 'charge' the 'ice battery' at the top. When power shuts off and the water in the system warms, the now hotter (and less dense) water rises to the ice battery at the same time as the ice begins to melt and fall as cooler water. The meeting of the warmer and cooler water has an equalising effect that keeps the temperature stable for 10 or more days without power.

Video source [SureChill](#)

Corporate Marketing and Commercial Director of SureChill Ceri Jones told Springwise that “this unique method of cooling allows a constantly stable temperature, with or without power.” This means the technology is well-suited to areas of irregular power, whether that’s because grid access is unreliable, or they rely on intermittent energy sources, like solar. SureChill has also embedded pay-as-you-go technology into their fridges and has launched innovative leasing and rental models that allow customers to pay per unit of cooling.

SureChill’s focus is on setting the benchmark in cool chain solutions, and hopes to grow from its “current footprint of working with partners in 10 countries to having continent-wide distribution and partnerships.” Ceri added that the company is eager to develop ways of designing new products, “driving wider access to cooling (...) so that we deliver its life-changing benefits to people that need it the most.”

Improving access to refrigeration is the goal of a number of recent innovations, including [solar refrigerators](#) for fishermen and a new material that can deliver [electricity-free cooling](#).

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Takeaway:

Ceri told Springwise that the company is inspired by the belief that everyone should have access to the life-changing benefits of refrigeration. “Cooling is a foundation of modern society, wherever you are in the world. Spanning essential health services to providing comfort and quality of life, from keeping vaccines and food safe to chilling cold beverages. Cooling is everywhere and vital to everyday life.” With refrigerators that can work efficiently even when power is intermittent, along with the company’s pay-as-you-go option, SureChill is helping deliver wider access to essential refrigeration.