

# Solar thermal panels create a demand for a unique sensor maintenance system



Solar thermal panels use the sun's free energy to heat water for domestic and commercial applications. This results in hot water throughout the year, reduced energy bills and a lower carbon footprint.

Unlike other solar panels, Soltropy's award-winning and innovative design doesn't need antifreeze. It is ice immune, uses flexible modules, and integrates with standard heating systems.

The Soltropy system is already on the market and is enjoying sales success across domestic and industrial sectors.

Solar thermal is 3 times more efficient than normal solar panels that produce electricity.

## The challenge

One of the demands for the Soltropy product is in dairy farming, where hot water is essential to clean floors and equipment between milkings. To manage this requires a large scale Soltropy system of around 300 solar tubes (compared to around 30 tubes in a domestic model).

Soltropy approached CENSIS with a well thought-out concept to create a sensor system for the maintenance of the system. If there's a tube defect in a domestic model, it's fairly easy to access a roof and check which of the 30 tubes is faulty. But an industrial-scale model with 100 tubes or more in a possibly remote location is trickier to check. Soltropy knew that an IoT-enabled multi-sensor system was required, where the system could be health-checked remotely. They applied for The CENSIS Milk Round accelerator programme to access help with the technology.



Dairy farm saving **£6,000** per year\*

No antifreeze required



“ I was delighted to work with the CENSIS team. I have an engineering background and had a good grasp of what needed done, but the CENSIS team were able to run with my ideas and build and test a prototype to prove the concept. This has propelled my business much faster than I would have been able to achieve without CENSIS's expertise. We now have a viable route to a commercial product 2 years earlier than I would have expected.

Stuart Speake, Managing Director, Soltropy

## Working with CENSIS

CENSIS and the Soltropy team worked closely to test the feasibility of a sensor system to measure the temperature of each tube and assess when it developed a fault. A wire per tube wasn't feasible to run on such a large installation, so the team created a 'bussing' system of 100 sensors and built a prototype running on just 3 wires.

## The result

The Soltropy panels use an innovative modular approach, which makes it easy to remove and replace single tubes. It also enables maintenance according to need, rather than a more frequent scheduling regime, saving fuel costs and time.

## What's next

The 100-panel kit has been tested in the lab at CENSIS and is now ready to be installed at scale in a real world environment for further testing.

Going forward, Soltropy can see the potential demand being not only from farms, but from any larger scale commercial or industrial building that needs a supply of hot water.

Their improved product offering will be sensor-ready, and will provide the data required for farmers and buildings and facilities managers to make informed decisions about their maintenance programmes.

The Milk Round accelerator is hosted by CENSIS to assist individuals and SMEs to fast-track innovative technologies from proof of concept to demonstration and testing. Accelerator winners receive a tailored support package to deliver products, processes or services to build digital capability and meet net zero targets.

The programme is part of the UK Research and Innovation Strength in Places 'Digital Dairy Chain' project that aims to establish Cumbria and South West Scotland as a leader in advanced, sustainable and high-value dairy manufacturing.



<https://censis.org.uk/access-our-services/services-and-facilities/milk-round/>

\*The current system on the farm contributes around 12,000 kWh of free no carbon energy. If this energy was supplied by electricity at 50p per kWh, this equates to a saving of £6k per year. Savings are dependent on current electricity prices.