Case Study

Solar Thermal Refrigeration

Compression technologies partnered with solar assisted heat absorption. A 1MW, 60,000 Sq. ft. refrigerated fruit packaging facility based in Kent, UK.

Image 1: The 1 MW cooling system on the roof of the Chingford fruit facility. Source SCE picture gallery

Clients Position

In addition to the heavy importance of reducing costs, Chingford Fruit have a strong in house commitment to installing technology and products that reduce harmful emissions into the environment.

Colin Ormerod, Central Services Manager at Chingford said “we have been on the lookout for credible efficiency solutions for our refrigeration and air conditioning plant for some time. We came across SolX Energy Ltd. last year, and it really captured our interest. Although I have to say, it did take some time to convince our refrigeration contractors, however they are now fully on board having had first-hand experience of the product and the installation process, to the point where they have actually presented SolX Energy to a number of their other clients”.

Although the data logger shows a reduction in energy consumption of c. 92,500kWh over the evaluation period. Colin Ormerod also confirmed that production in the plant was actually much higher than the previous year in comparison, and therefore the true saving is more likely well in excess of 100,000kWh.
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Image 2: the solar thermal collectors installed in parallel on the roof of the Chingford fruit facility. Source SCE picture gallery

The rooftop on the Chingford Fruit facility has had 54-solar thermal collectors installed in parallel across 750kW of the 1MW cooling capacity refrigeration system. The installation itself was completed by ZetaCool Services Ltd, an accredited SolX Energy Ltd installation partner, who managed the installation process in partnership with Chingford’s existing refrigeration contractors STS Refrigeration - part of the ICA Group.

Image 3: the solar thermal collectors and the refrigeration system on the roof of the Chingford fruit facility. Source SCE picture gallery

Energy earns, or simply burns...the choice is yours
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Usage data is monitored and stored by the client’s in-house t-mac technologies system, which measures all water, gas and electricity usage throughout the facility on an individual plant basis. The installation of the Solar Thermal system was commissioned on February 27th, 2016, at this point direct year-on-year comparison began. The data below covers the period February 28th, 2016 to May 10th, 2016.

Figure 1. Screenshot prior to solar installation.  
Source: clients’ t-mac system

Figure 2. Screenshot with solar installation.  
Source: clients’ t-mac system

Figure 3. The prior vs. evaluation period figures, transferred from the t-mac data system on a bar graph.  
Source: SCE image gallery

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ThermX is an innovative, green technology designed to harvest the free energy from the sun, thus creating thermal energy to increase the efficiency of the refrigeration process, in this particular case by c. 27%.

**Original Proposal**
Provide a solution with the goal of reducing overall energy consumption within the site, while providing a return on the clients' investment below 3-years.

ThermX™ can be retro-fitted onto most well-known HVAC and Refrigeration systems of all sizes, with the proviso that the system has variable load ability - inverter, staged, screw-type, and digital scroll for example. In standard cooling units, the compressor has to manage the full compression load, however at the time it is most needed (i.e. when the sun is out), the ThermX system takes over a level of the capacity, allowing the compressor to reduce its workload, significantly reducing the amount of electricity consumed by the entire system. Subsequently, the whole system has a much easier life and is therefore less prone to maintenance issues.

**Benefits**
*Reduced electricity overhead*
*Reduced equipment maintenance costs*
*Extended equipment lifespan*
*Reduced CO2 emissions*
*Future proofing against potential - carbon taxation*

**Project Partners**
- SoX Energy Ltd
- t-mac data technologies
- ICA Group Ltd
- Chingford Fruit
- ZetaCool Service Ltd
- STS Ltd

“This area of the UK benefits from around 4.5-hours of unbroken per day on average over the year, therefore why let the sun be the problem, when it can actually be the solution” - Chris Micallef, SolX Energy Technical Director.

To find out more...
If you’d like to know more about this project, please
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