SOLAR COOL
Heating and Cooling

Case Study

Solar Thermal Refrigeration

Solar thermal assisted compression technologies providing effective and efficient process cooling.

SolarCool Technology increased the efficiency of the existing process cooling plant in Malta, Southern Europe. A novel, combined technology designed to harvest the free energy from the sun, creating thermal energy to assist the refrigerant compression process.

Customer Situation

The largest fresh bread manufacturer in Malta, boasting a wealth of high profile customers.

As with most businesses in the sector, this facility consumes a vast amount of electricity on a number of applications including process cooling, freezing, refrigeration and comfort cooling throughout.

Current Situation

Provide a test bed facility on one of two 5-stage (220kw) process cooling systems.

Challenge – achieving a projected 30%+ reduction in electricity consumption.

Benefits

*Reduce electricity overhead
*Reduced ongoing equipment maintenance costs
*Extended equipment lifespan
*Reduced CO2 production

Refrigeration is one of the highest consumers of electricity in Europe.

Within the food retail and fresh food production markets, refrigeration accounts for well in excess of 60 % the total energy demand, and therefore CO2 production.

Reducing this is very important if Europe is to achieve ambitious emission reductions, decrease the excessive reliance on imported energy and reduce costs to business and industry.

A common barrier to most energy generation/saving technologies is the high initial investment cost resulting in long payback periods even with high energy prices. However, solar thermal cooling return on investment is considerably lower than most renewable energies, boasting ROI's up to 10-times lower than that of PV & Wind for example.

Energy earns, or simply burns
...the choice is yours

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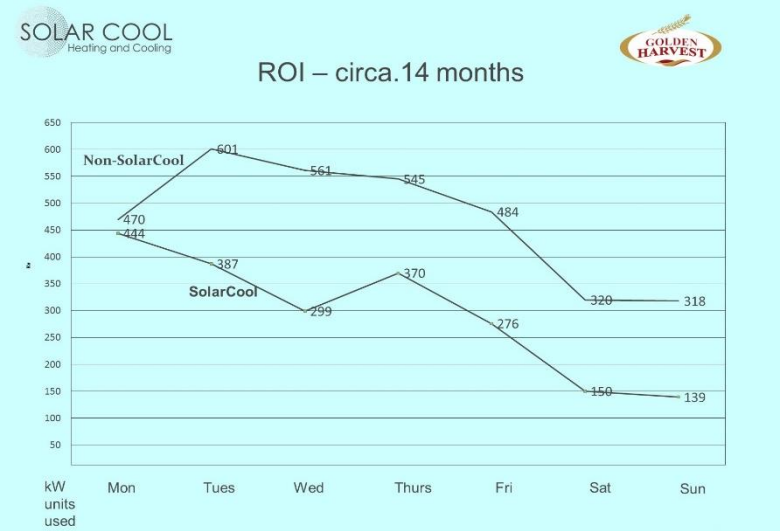
A 40,000sqft food processing site, situated in San Gwann, Malta.

- External ambient temperatures c.33°C
- Plant room ambient temperatures c.31°C
- **Process Cooling required temperatures 16°C**

"Malta benefits from at least 3,000 hours of unbroken sunshine every year. The potential for energy reduction here is vast, in particular for food production & food retail businesses." - **Chris Micallef, Technical Director, SolarCool Energy Ltd.**

Post installation only two of the five compressors were in constant operation, with the third dropping in and out of operation as required at the highest load points.

Resulting in a 53% energy reduction with the sun is in the sky, and a 41% reduction over the full period of the 27/7 operation. In turn, a ROI of c.1.4-years. Projected over a five year period, this investment boasts a flat rate return of c.**39%**



> *"I have to be honest, I was personally sceptical about the projected abilities of SolarCool when first presented to me. However my son was completely the opposite, and talked me into progressing with the testing. I am now very pleased he did, as we could have walked away from a fantastic opportunity!"* **- Chief Engineering Contractor, Golden Harvest**

Project Partners

- Angelo Aquilina Ltd
- Modern Refrigeration UK Ltd
- SolarCool Europe GbmH
- Golden Harvest Ltd

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