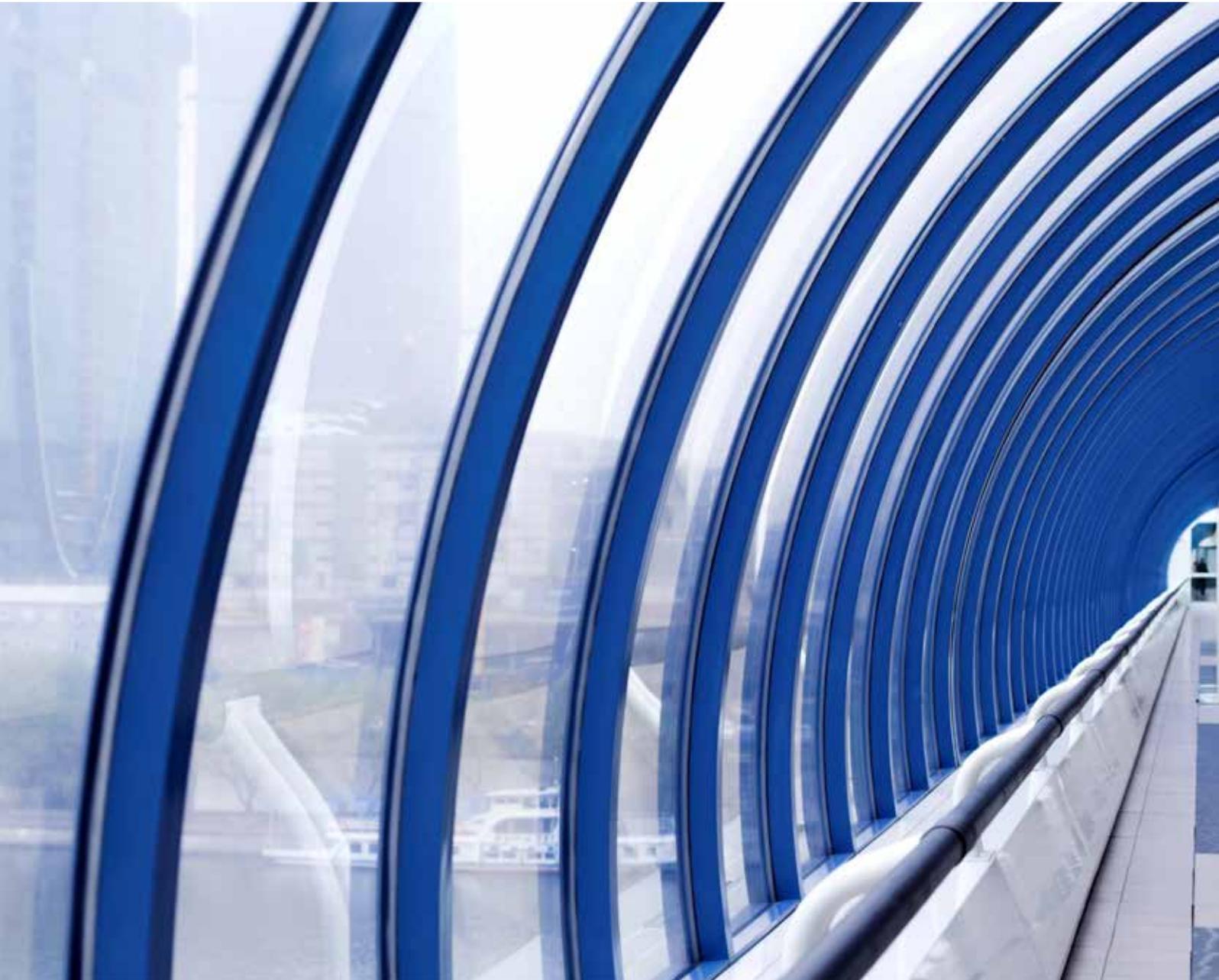


ICS Cool Energy Ltd

Leading the way in Complete Temperature Control



One Solution



ics cool energy

Who is ICS Cool Energy Ltd?

ICS Cool Energy Ltd is a specialist in the sale, rental, servicing and installation of temperature control and HVAC solutions. ICS Cool Energy offer 24/7 nationwide servicing and maintenance of all temperature control equipment.

Founded in the 80's and built across specialist divisions, ICS Cool Energy Ltd employs over 180 people. With over 25 years experience, the company has enjoyed a period of sustained growth based on their ability to provide high quality, technically innovative product solutions to meet the demands of their growing customer base.

ICS Cool Energy Ltd is highly experienced in providing temperature control solutions for a wide range of industries including; Food, Beverage, Chemical, Pharmaceutical, Plastics, Rubber, Manufacturing and Medical, as well as HVAC solutions for Data Centres, Server Rooms, Factories, Facilities, Hotels and Leisure.

ICS Cool Energy Ltd is a truly global organisation operating offices out of Southampton, Birmingham, Bradford, London as well as in Scotland and Ireland along with European operations in Germany, Switzerland, Austria, Poland, Italy, France and the Netherlands.

In addition, ICS Cool Energy Ltd has a network of re-sellers in Asia, South America, Australia and Russia.

What can ICS Cool Energy offer you?

ICS Cool Energy Ltd is proud to be able to offer Process and HVAC chillers for sale or rental (**up to 2000kW**), along with Tool Heaters and Heat Pumps on a same day or next day delivery basis.

ICS Cool Energy Ltd can also offer complete turnkey packages, project managing all aspects of design, installation and service to suit individual requirements whilst offering complete peace of mind.

If you are unsure of what specific temperature control your site requires, a local engineer, who is experienced at providing a first-class assessment will be able to assist you with your decision-making.

...ICS Cool Energy Ltd
the temperature control experts

“

Your company provided a professional and efficient service and the representatives were a pleasure to work with.

”

Major London Consultant



Why customers choose ICS Cool Energy

Every customer is assigned a dedicated Engineer offering the best advice for each application making sure each project runs smoothly and trouble free.

ICS Cool Energy Ltd is also able to offer customers **three to five** year warranties on all temperature control equipment sales, along with **24-hour** service support for all sales and hire equipment for your complete peace of mind.

ICS Cool Energy Ltd is fully **ISO 9001, 14001 and 18001** accredited and has a wide range of chillers which are **Eurovent** accredited. ICS Cool Energy is also a member of the following accredited bodies; **BSI, BSC, Construction Line, FGas and Achillies**.

energy Ltd
control experts.



Contents

Who is ICS Cool Energy Ltd	Page 2 - 3
Process Cooling	Page 6 - 7
<i>Case Studies</i>	<i>Page 8 - 9</i>
Process Heating	Page 10 - 11
<i>Case Studies</i>	<i>Page 12 - 13</i>
HVAC	Page 16 - 17
<i>Case Studies</i>	<i>Page 18 - 19</i>
Heat Pump Solutions	Page 20 - 21
<i>Case Studies</i>	<i>Page 22 - 23</i>
Temperature Rental Specialists	Page 26 - 27
<i>Case Studies</i>	<i>Page 28 - 29</i>
Service & Maintenance	Page 30 - 31
<i>Case Studies</i>	<i>Page 32 - 33</i>
Total Solutions Provider Case Study	Page 34 - 35

The background features a 3D rendering of three blue arches on the left and two grey arrows pointing right, one above the other. A faint, stylized globe is visible in the upper right corner.

Mission Statement

“ To deliver innovative, high quality products and services across all company divisions with flexibility in our approach, to exceed customer expectations. ”

Process Cooling

- » Air Cooled Chillers
- » Air Blast Coolers
- » Cooling Towers
- » Combined Heating and Cooling Packages
- » Bespoke Manufacturing
- » Free Cooling
- » Pumps
- » Water Cooled Chillers
- » Dry Air Liquid Coolers
- » Adiabatic Coolers
- » Capacity Range 1kW - 2050kW
- » Full Turnkey Solutions
- » Heat Recovery
- » Heat Exchangers

ICS Cool Energy, the process cooling and heating sales division of ICS Cool Energy Ltd is one of the leading specialists in temperature control equipment, with a wealth of knowledge and expertise you can trust. The company provides a wide range of standard and tailored turnkey solutions across a diverse group of industry sectors including; Plastics Processing, Metal Finishing, Food and Beverage, Chemical, Medical, Engineering, Automotive and Aerospace.

Total Temperature Control Solutions

A large number of standard process cooling units are stocked in the UK to ensure quick delivery in those emergency situations. If it is a purpose-built system you are after then ICS Cool Energy has experience in managing both large and small projects, building non-standard fluid cooling and heating systems, together with a whole range of cooling components to control industrial processes.

ICS Cool Energy offer the option to purchase equipment outright or lease equipment, with payment packages available. This is becoming a more favourable option with customers who do not have capital available or for customers investing in energy efficient solutions, as these systems can result in payments being covered by energy savings made.

Design, installation, commissioning and servicing of equipment is also available, so you can rest assured your system set-up will be fully managed by an experienced contracts and service team.



Maximise efficiency, reduce your carbon emissions and save costs with the latest range of energy efficient chillers. An extensive range of chillers are available, incorporating the latest energy efficient technology such as ozone-benign refrigerants and free cooling capabilities. Many units also meet the criteria for A rated energy efficiency.

Packaged water chillers provide an efficient solution to re-circulated cooling needs with their integrally fitted pumps and tanks, incorporating all the necessary safety controls and devices. To ensure ease of set-up, monitoring and control, ICS Cool Energy's chillers only require flow and return pipework, with one electrical supply enabling quick connection for a long life and trouble free operation.

ICS Cool Energy is proud to offer a wide range of Eurovent accredited chillers. The Eurovent accreditation certifies the performance ratings of air conditioning and refrigeration products according to European and international standards.

Energy Savings

ICS Cool Energy offer a range of chillers which incorporate the latest energy efficient technology designed to reduce carbon emissions and save on costs:

Free Cooling - harness the cold external air temperatures to help cool your process. Water will be chilled solely in the free cooling coil, therefore saving on energy costs.

Heat Recovery - the collection and reuse of heat lost from a process. It can help reduce the energy of a process itself and provide heat to alternative processes, giving you direct savings on the cost of gas and electricity.





Bespoke Services and project design is also available from ICS Cool Energy:

- OEM kit - design specific equipment to control your cooling
- Full 3D CAD-assisted engineering and design
- Fully qualified refrigeration engineers
- Equipment capable of being built on-site in kit form
- Combined heating and cooling kit for process applications
- Choice of compressor including open drive components

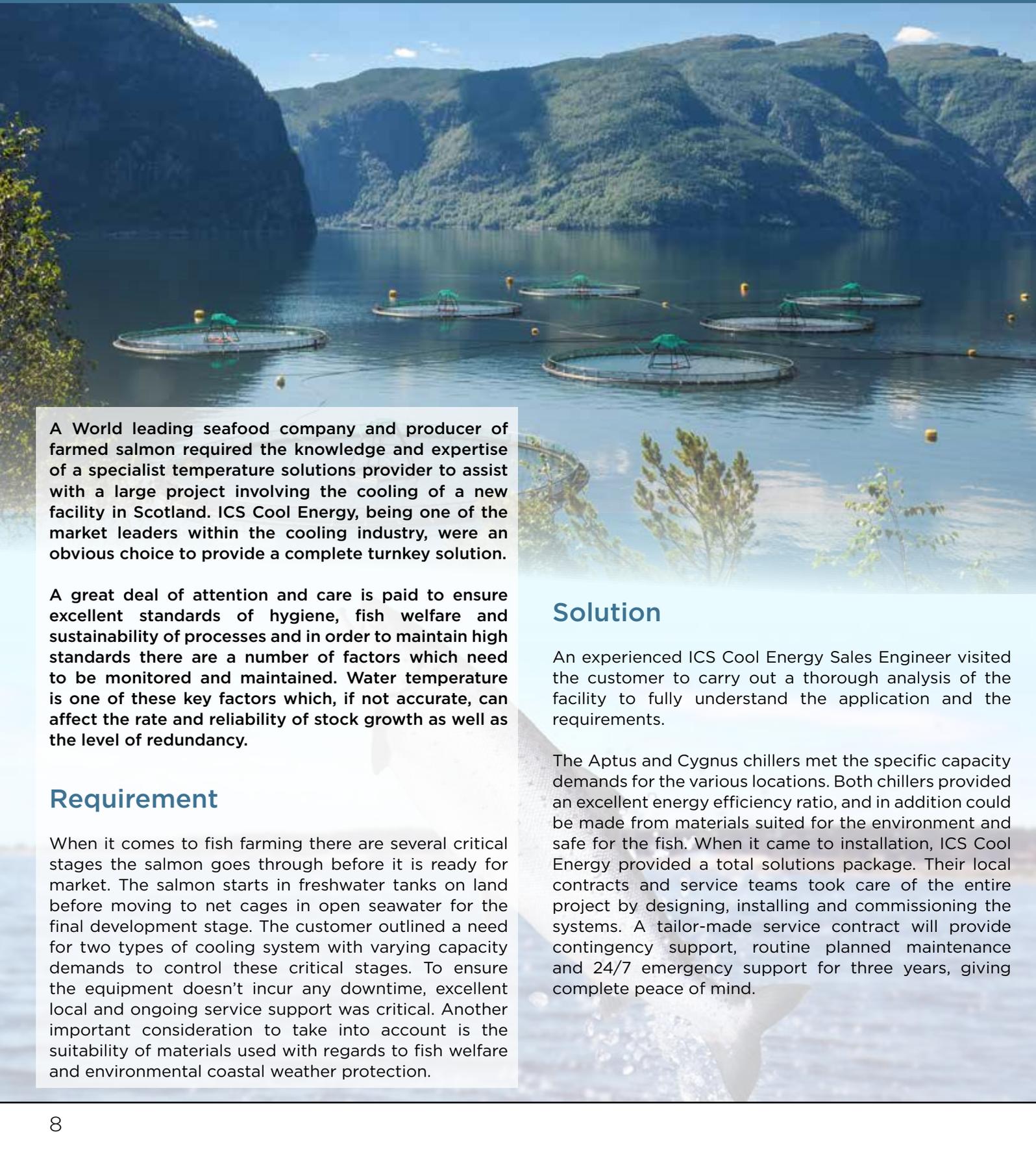
Want to know how much you could be saving?

In order for your application and requirements to be fully understood, a free no-obligation site visit is recommended. This will provide your local Engineer with the opportunity to carry out an energy analysis which will determine how much energy and money you could be saving by switching to an alternative temperature control solution.



Case Study

Energy Efficient Cooling for a Salmon Farm



A World leading seafood company and producer of farmed salmon required the knowledge and expertise of a specialist temperature solutions provider to assist with a large project involving the cooling of a new facility in Scotland. ICS Cool Energy, being one of the market leaders within the cooling industry, were an obvious choice to provide a complete turnkey solution.

A great deal of attention and care is paid to ensure excellent standards of hygiene, fish welfare and sustainability of processes and in order to maintain high standards there are a number of factors which need to be monitored and maintained. Water temperature is one of these key factors which, if not accurate, can affect the rate and reliability of stock growth as well as the level of redundancy.

Requirement

When it comes to fish farming there are several critical stages the salmon goes through before it is ready for market. The salmon starts in freshwater tanks on land before moving to net cages in open seawater for the final development stage. The customer outlined a need for two types of cooling system with varying capacity demands to control these critical stages. To ensure the equipment doesn't incur any downtime, excellent local and ongoing service support was critical. Another important consideration to take into account is the suitability of materials used with regards to fish welfare and environmental coastal weather protection.

Solution

An experienced ICS Cool Energy Sales Engineer visited the customer to carry out a thorough analysis of the facility to fully understand the application and the requirements.

The Aptus and Cygnus chillers met the specific capacity demands for the various locations. Both chillers provided an excellent energy efficiency ratio, and in addition could be made from materials suited for the environment and safe for the fish. When it came to installation, ICS Cool Energy provided a total solutions package. Their local contracts and service teams took care of the entire project by designing, installing and commissioning the systems. A tailor-made service contract will provide contingency support, routine planned maintenance and 24/7 emergency support for three years, giving complete peace of mind.

Case Study

Metal Treatment Company achieves over **45%** *in Energy Savings*

A Midlands based metal treatment company contacted ICS Cool Energy regarding a solution to replace their ageing, inefficient cooling system which provided chilled fluid at 10°C to a number of anodising tanks.

Requirement

ICS Cool Energy were pleased to be able to utilise their wealth of knowledge and experience in delivering streamlined, turnkey solutions and offer the customer a number of energy efficient options for consideration. In the first instance, an energy analysis was carried out which determined the most energy efficient solution for the application. One option considered was available in partial or full heat recovery, which is the re-utilisation of heat energy from a cooling system which would otherwise be lost.

The ICS Cool Energy's analysis estimated that by using heat recovery on a new chiller at an operating temperature of 10°C, the savings on energy costs could reach 45%. If the discharge temperature were to be 5°C warmer, the savings could significantly increase to 50%. From this savings potential the customer would be seeing a payback in approximately two years with savings on energy continuing each year after.

Savings

To explain the savings figures in cooling only mode, the existing chiller consumes 47% more power than the proposed unit when running at a full load capacity of 750kW. The two units consume 2,196,329kWh (existing) and 1,158,746kWh (proposed). When operating the chillers in heat recovery mode the existing chiller will provide 852kW of recovered heat for a total power input of 219.2kW and the proposed unit provides 801kW of recovered energy for 171kW of total power input. The existing chiller has a Global Efficiency Ratio of 6.94 versus the proposed unit having a Global Efficiency Ratio of 8.4.

Solution

A turnkey solution was provided and had little impact on the facility during installation thanks to the experienced ICS Cool Energy Project Manager. An air cooled chiller with full heat recovery using a heat exchanger was installed and the results were fantastic, as estimated.

ICS Cool Energy's Service packages come in standard and bespoke form to best meet their customers' requirements. For this project, a three year extended warranty package was chosen, giving the customer complete peace of mind that their new equipment would be maintained and that ICS Cool Energy would be available 24-hr a day to support with servicing.

Process Heating

- » Water Heaters up to 90°C
- » Advanced C8 Controllers
- » Pressurised Water Heaters up to 200°C
- » Tailor-Made Solutions
- » Oil Heaters to 350°C

ICS Cool Energy Ltd manufacture and supply a wide range of heating equipment in the UK and across the globe. Having manufactured to ISO 9001 standards for over 25 years, ICS Cool Energy has built their reputation on this. ICS Cool Energy has worked on a plethora of previous projects across a variety of industry sectors such as Pharmaceutical and Chemical, Plastics and Food. This diverse experience has been utilised across a range of applications including injection moulding, extrusion, cabling, thermoforming, jacket mixers and vessels to name but a few.

Manufacturing and stocking a range of products on-site, with capabilities ranging from 9kW - 72kW, and temperatures of up to 200°C for water and 350°C for thermal oil, the temperature control equipment offers complete flexibility where the control and consistency of temperature is essential to provide the perfect end product. In addition, ICS Cool Energy is able to offer bespoke options up to and including 360kW.

Precision Engineering

Temperature Control Units (TCU's) launched last year include the 90°C Water Heater, 350°C Oil Heater and 200°C Pressurised Water Heater. A key feature of many units is the C8 Advanced Controller which provides innovative technological temperature analysis.

Key features of the C8 Advanced controller include:

- Touch screen display
- Recipe control
- Temperature, flow monitoring
- Trending
- Easy navigation to ensure every aspect of the temperature control is working to maximum productivity



For processes which require something a little different, a tailor-made solution can be created with keen price/performance ratio. With a team of experienced designers and engineers, units can be customised to cater for specific requirements. Systems can also be designed to communicate with higher level machines or line controls via a wide range of different electronic interfaces.





First Class Quality Testing

ICS Cool Energy carry out thorough quality testing whereby each product is individually tested using the technically advanced test rig. ICS Cool Energy offer visits to our facility in Totton where witness testing takes place for customers interested in finding out more about the company and the manufacturing process.

Case Study

Reliable Heating for Plastics Manufacturer

A worldwide plastics manufacturer specialising in injection moulding, extrusion and vertical insert moulding, working within the electronics, medical and renewable energy industries contacted ICS Cool Energy to replace their ageing heaters.

The customer required temperature control equipment for the manufacturing process of plastic components in which raw plastic materials are heated. The plastics require high temperatures between **80°C** and **85°C** in order for it to melt down into a molten compound which is then injected into a mould where it cools and sets.

The production area produces a vast amount of dust and needs continual ventilation, therefore heating units which can withstand dusty environments without continual maintenance checks were essential in order to maintain optimum productivity. **12 x ci 90t** heating units were designed with capacities of **9kW-18kW** and the ability to reach temperatures of up to **95°C**. These units cater for the customer's exact needs, thanks to their diagnostic controller which alerts any faults and reduces maintenance time, a leakstopper which enables continuous productivity, direct acting self cleaning solenoid valves which reduce the need for manual cleaning and non-ferrous parts used throughout for a longer life.



As well as saving on maintenance checks and costs, these machines are built using solid state relays which are extremely energy efficient due to pulsing every 0.3 seconds (unlike contactors which pulse every 16 seconds). This provides increased accuracy and with no moving parts; wear and tear is eliminated. The units are easy to set-up and trouble free to use. They are standard, small units with flexible pipe work; allowing for a quick and simple installation.

Case Study

Industrial Temperature Control for Tyres

ICS Cool Energy was approached by a large high performance tyre manufacturer in the UK to provide a solution for their complex extrusion processes, where different - yet highly accurate - temperatures were needed throughout their varied tyre production activities.

The organisation has many extruders on-site which require separate temperature controlled zones for the barrel, screw, hopper and head sections. Their extruding processes have been evolving over the years and with the type of rubber compounds they now use, the heat generated within some of the extruder zones can be very high and on occasions fluctuate extensively. They were also after a solution that was highly reliable with some redundancy built in, so production lines would not be impacted should a fault arise. Another key requirement was a system that was easy to use and consistent for their operators to manage.

On working with the customer and understanding both their current processes and how things are looking to evolve, a number of **wi 100 6kW** heating units were provided. These units gave a wide range of temperature control for their extrusion processes - from **30°C** up to a maximum of **160°C**.



The units are very easy to set-up and adjust and due to their small size and consistent controls, the units are easily transferable if a fault occurs on one of them.



Quality All of the systems supplied by ICS Cool Energy Ltd meet the requirements of stringent EU specifications and all products are manufactured to meet CE approvals under ISO 9001 quality control certification.





Experience ICS Cool Energy Ltd is a pan European organisation with a reputation for excellent product build quality, reliability of design and exceptional customer service, all of which is supported by a 24-hour on call service organisation.

HVAC Systems

- » Air & Water Cooled Chillers
- » Air Handlers & Fan Coils
- » Precise Air Conditioning
- » Bespoke Manufacturing
- » Condenserless & Reverse Cycle Chillers
- » Capacities from 4kW - 1949kW

ICS Cool Energy Ltd has over 25 years experience supplying reliable temperature control equipment for HVAC and air conditioning requirements. Through its extensive knowledge of the HVAC industry, ICS Cool Energy has been able to apply simple, efficient and cost effective cooling solutions to a variety of applications within the UK market including:

- Data Centres and Server Rooms
- Factory and Facility
- Hotels and Leisure
- Hospitals and Pharmaceuticals
- Clean Rooms and Laboratories

For many years, ICS Cool Energy has provided a trustworthy and successful service to its large customer base across the UK and Ireland. With its continual growth and expansion, ICS Cool Energy is always developing ideas in order to expand and improve their product ranges and maintain exceptional customer satisfaction.

Complete Cooling Solutions

ICS Cool Energy's HVAC division specialising in UK HVAC systems offers a wide selection of temperature control systems to manage a process, building or site to ensure particular areas are controlled at a comfortable temperature. The collection of HVAC industrial chillers incorporates air and water cooled units with cooling, heating and a variety of energy efficient functions and noise options. Units feature the latest in scroll, screw and Turbocor compressor technologies working with ozone friendly refrigerants which help to significantly improve energy efficiency and reduce carbon footprint.

Units offer capacities ranging from 4kW-1949kW providing maximum flexibility for any size application. The smaller chillers including the ICS Cool Energy's i-Chiller units are ideal for process HVAC applications whereas the larger chiller range, including units such as the Imperium, Aptus and Magnus provide the perfect cooling solution for more industrial requirements.



For accurate cooling requirements within data centres and server rooms, ICS Cool Energy offer the Ipsum collection of precise air conditioning units, specifically designed for close control cooling. The range features inverter, direct expansion and chilled water units with a selection of various airflow options and rack cooling; catering for a wide variety of project needs. For complete precise air conditioning solutions, see the ICS Cool Energy HVAC dedicated website: www.icsdatacentrecooling.co.uk

ICS Cool Energy can provide standard or turnkey solutions and manage complete installations to maintain complete peace of mind for the customer.

Significant Energy Savings

High quality components feature throughout the ICS Cool Energy chiller ranges which provide maximum productivity for a smoother process and reduced downtime. ICS Cool Energy offer a range of energy efficient options to reduce consumption costs including:

Free Cooling - to maximise on cold external air temperatures in winter operation. This allows the water to be completely chilled in a free cooling coil, thus conserving electricity and saving significant costs.

Heat Recovery - is the collection or reuse of lost heat within a process or application. COPs (coefficient of performance) of up to 7.1 can be seen when using this.

Turbocor Compressor Technology - uses magnetic levitation and digital rotor speed control which allows extremely high partial load efficiency levels to be achieved.

EC Fans - can save an average of 45% energy consumption compared to traditional AC technology, using backward curved fans with electronic commutation.





CPD Training

CPD (continual professional development) is available on topics such as energy efficient cooling technologies and can be presented at a convenient location to you by ICS Cool Energy's experienced HVAC Sales Engineers. Please call **0800 774 7425** to find out more and to book an appointment.

Bespoke HVAC Solutions

ICS Cool Energy's HVAC engineers can offer bespoke build services for specialist requirements, manufacturing to suit any size of cooling or dual heating and cooling application. Experience shows that managing large and small purpose-built systems for customers has helped ICS Cool Energy to build many non-standard fluid cooling and heating projects, together with a whole

range of cooling components capable of controlling process and HVAC systems.

These projects include low profile systems, low noise and low temperature units. Size limitations can also be overcome with a bespoke unit.

Case Study

Free Cooling saves €'s for Irish Data Centre

When a privately owned data centre based in Southern Ireland required a reliable, robust and energy saving cooling system, they contacted ICS Cool Energy for a free site survey.

The 20,000 sqft² site contained 7,000 sqft² of technical floor, holding approximately 240 customer data racks and 20 infrastructure racks. With a large number of telecommunications operators, homes and businesses relying heavily on the service provider; a dependable and protective cooling system was essential.

As with any other data centre, the site required four essential services to protect its data:

- Cooling
- Connectivity
- Power
- Security and Fire Protection

Out of these four services, cooling is arguably the most important as it probably requires the most amount of thought with regards to system design and operation, as there are so many variables that need to be considered. If the racks were to lose their cooling, the computer equipment would need to be shut down within minutes. Furthermore, computer room cooling can generate high energy costs for a site, due to its 24/7 requirement.

With Ireland's relatively low average ambient air temperature of approximately 11°C, ICS Cool Energy suggested their highly energy efficient **free cooling system**, working within their **Aptus range** of chillers to be installed on the roof of the building. The Aptus - FC units are some of the most efficient water chillers available and achieve excellent EER's (Energy Efficiency Ratios) at both full and part-load conditions.

The benefit of using a free cooling system means the site could utilise the low external air temperatures to cool the internal racks and just use pumps to push warm water up into the roof and leave it to cool naturally.

Inside the data centre, CRAC units (computer room air conditioner), are supplied with chilled water from the free cooling chillers to manage the temperature control. To ensure consistent temperatures, the data centre controlled the cooling using hot and cold aisle containment. By keeping temperatures separated, it allows racks to stay at consistent temperatures and not fluctuate.

The high temperatures from the data centre coupled with the low ambient air temperatures means that the compressors run for a minimal number of hours every year; providing the site with a significant cost saving allowing it to achieve a PUE (power usage effectiveness) of approximately 1.15.

"We needed a cooling vendor to supply us with a durable system with a good support contact and a dependable 24/7 service support. ICS Cool Energy provides us with all these capabilities and we are very happy to work with them."

Case Study

Greener Cooling for a Greener Data Centre

A large out of town data centre provider, housing in excess of 2,000 racks, supplies housing and hosting for over 10 million customers throughout the UK. The site was looking to work with a leading edge data cooling provider which could deliver the latest technology, efficiencies, space optimisation as well as a good track record of performance, delivery and maintenance. Having previously worked with ICS Cool Energy, the service provider requested a free site survey and quotation.

ICS Cool Energy assisted them with an in-depth specification of duty and performance. The service provider's large site required a close control under floor computer room air conditioning system to be cooled by water in order to maintain their designated temperature of 21°C.

The data centre required large capacity units to supply precise cooling 24-hours a day, 7 days a week, therefore the chiller design requirements had to be accumulated to 7.5MW of the cooling capacity at 2N infrastructure. The chilled water delivery temperature was required at 6.0°C with an ever changing return temperature due to the ramp up stages of the facility and IT modulating heat load.

ICS Cool Energy recommended and supplied eight external **Magnus Turbocor chillers** and four **Ipsium precise air conditioning** chilled water units providing a cooling capacity of 138kW each. The innovative Turbocor compressors ensure the highest level of energy efficiency on the market, thanks to the use of magnetic bearings and digital rotor speed control which allows for extremely high partial load levels to be achieved.

"The ICS Cool Energy Turbocor range was an obvious choice with its variable high efficient compressors which are able to operate at a minimum 10% capacity whilst maintaining efficiency." Mechanical Design Engineer

The chilled water precise air conditioning units exert a smaller external heat rejection which reduces their carbon footprint; saving energy costs for the data centre or server room which is being cooled.

"ICS Cool Energy offered a high efficiency, 2.5 metre case, close control unit which deliver our sensible cooling requirements ranging from 125kW to 180kW per unit with no compromise to quality." Mechanical Design Engineer



Heat Pump Solutions

- » Commercial Heat Pumps
- » Heat Recovery
- » Air Source
- » Medium Temperature 55°C
- » Ground Source
- » High Temperature 90°C
- » Geothermal

A Complete Package

ICS Cool Energy Ltd is proud to provide a complete service from system design, specification, supply, installation and after sales service for Air Source Heat Pumps, Ground Source Heat Pumps and Geothermal Heat Pumps.

ICS Cool Energy Heat Pump Technology, the division specialising in UK Heat Pump sales is able to provide a complete turnkey service and equipment package which includes:

- Heat pump and ancillary equipment selection
- System design
- Installation and commissioning
- Complete after sales service
- A national network over 250 local approved partner/installers

Products and Services

ICS Cool Energy Heat Pump Technology provide DeLonghi-Climaveneta Heat Pumps on an exclusive basis throughout the UK and Ireland. DeLonghi-Climaveneta is now Europe's largest refrigeration based temperature control equipment manufacturer and maintains an impressive European manufacturing capability.

Extensive research and development capacity, rigorous quality systems and stringent manufacturing procedures ensure that all of the DeLonghi-Climaveneta products achieve a high level of production quality along with continuous product improvement and development.

In addition a further range of equipment and services were also provided which compliment the Heat Pump system whilst enabling ICS Cool Energy Heat Pump Technology to provide a complete turnkey approach to renewable energy projects.



- DeLonghi-Climaveneta Ground Source Heat Pumps
- DeLonghi-Climaveneta Air Source Heat Pumps
- HPT - Thermacell Exhaust Air Heat Pumps
- Thermahub - Thermal Stores and Unvented Cylinders Geothermal Piping Systems full range of Fan Coils and Air Handlers
- Renewable Energy Project Consultancy and Management High Temperature Heat Pumps

Largest Commercial Heat Pump Range

ICS Cool Energy Heat Pump Technology offers an extensive range of air source and ground source heat pumps, tanks and ancillary equipment:

- 9 air source and four ground source ranges
- 8 MCS accredited ranges
- 2 heat recovery ranges
- Heat Pump optimised tanks and ancillary equipment to provide the complete package
- RHI eligible equipment ranges
- 10kW to 200kW high temperature 65°C fully packaged units





Efficient System Design

ICS Cool Energy Heat Pump Technology's design service is provided to the highest industry standards. Systems are designed to not only support the application requirements for today but also for tomorrow, providing a complete installation and service package:

- A system designed to suit the particular heat pump specified and the ground source or air source application
- A system designed to provide renewable energy in the form of heating and domestic hot water along with complete home climate control if required
- A system design that is sound, in terms of the correct type of unit being applied and its suitability for use on the particular application
- Remote monitoring and preventative maintenance coverage
- Provide relevant references and case studies to you where possible
- Supply equipment with CE marking which is fully tested prior to dispatch



Case Study

Retrofit for Ambulance Station

A 1970's ambulance station required a low carbon, cost effective, heating and hot water solution, which would operate using an efficient control system. The site needed to take into consideration the varied occupancy levels during the day and night with minimal user input. ICS Cool Energy Heat Pump Technology were contacted for a free site survey.

The site's existing heating system operated throughout the building using electric storage heaters, with overnight economy and seven electricity supplies which were only available to the accommodation area. Due to the rise in electricity costs, heating bills were very high and the varied occupancy levels meant that the existing heating system was also very inefficient.

ICS Cool Energy Heat Pump Technology provided a packaged system, including the high temperature 65°C DeLonghi-Climaveneta HT, designed to match the heat loss and high temperature requirement of this particular building, whilst also benefiting from minimal modifications to the existing system. A bespoke high specification control panel was also designed and installed enabling the building to be split into two heating zones; garage and accommodation. Hot water is also supplied from the 200 litre multi-fuel cylinder with a set point of 55°C.

When a demand for hot water is detected, a three port valve was fitted to divert water to the top of the cylinder to heat the internal hot water cylinder. The specifier also wanted to combine a solar solution that would provide additional hot water input during the sunny periods and negate for the heat pump to provide hot water during these periods, thus creating a very efficient system.

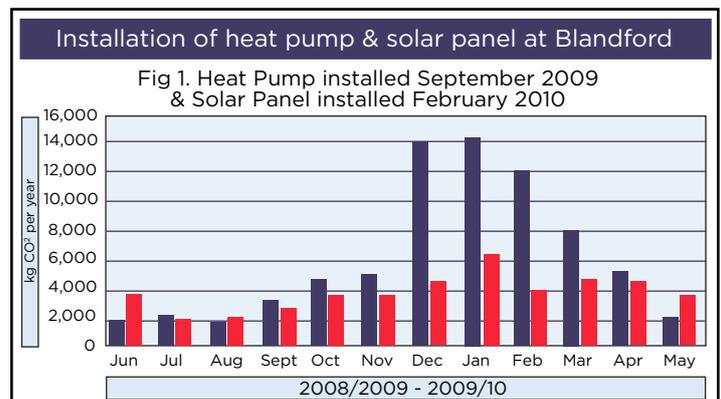
The outcome was a highly energy efficient heating and hot water system providing automated controlled heating to different parts of the building as and when required. It is a modern practical solution combining the style and efficiency of a De-Longhi-Climaveneta high temperature unit with solar power and an intelligent control system.

The high level of control, with a basic interface enabled the system to operate very efficiently with limited user input and removed any potential operator error. Significant savings were also achieved.

Source Fig 1 - Based on installers/end users

Energy Calculations

1. The installation of the heat pump gave a carbon use reduction of 25tons, compared with what the system would have used if the electric storage heater had not been removed.
2. With a project cost of £18,000.00, this installation will provide a pay back, based on this year's ambient temperatures of 4.5 years.
3. From the data graph shown (Fig 1) it can be seen that the electrical energy used since the installation has been reduced by 12000kWh or 6.5tons of carbon use.



Case Study

Commercial Superstore Heating Project

Located in the highlands of Scotland in the small town of Tain where ambient air temperatures are at extremes, a new supermarket was built. The large project required a high performing and versatile heat pump system which could meet demanding specifications.

The specifier required a modular heat pump system that would operate efficiently with a high level of load management capability and an appropriate level of contingency to reflect the potentially low ambient conditions that could be expected at this location.

The heat pump system comprised of eight DeLonghi Climaveneta MICS-N 0182 air source units (nominal 400kW capacity) which were connected to two large buffer tanks in order to provide system volume and a level of thermal stability to further enhance the system. The heating load was conveyed and distributed throughout the store via air handling units supplying a localised blown air ducted system. The unique modular characteristics of the MICS-N heat pump range provided excellent performance and impressive efficiency, even in the harshest of environments due to its twin compressor configuration and load management capability.

Through the expert specification of the Lead Mechanical Contractor, the units were reported to be achieving excellent efficiency levels and have endured the harshest of winters with continuous operation in ambient temperatures of -10°C and below.

ICS Cool Energy Heat Pump Technology commissioned the project ready for the opening of the store and it was reported that the units were running without fault regardless of the record extreme temperatures endured.

The high profile nature of this project and excellent feedback from all parties demonstrates how the multiple MICS-N commercial heat pump package excels within its class; illustrating that a modular heat pump approach to larger projects proves beneficial in all areas of operation.





ICS Cool Energy Ltd's Aim...

To continue to improve upon their levels of product quality and customer satisfaction to maintain their position as market leader for the supply of temperature control products.



Temperature Rental Specialists

- » Packaged Rental Chillers » Heaters and Boilers
- » Air Handlers and Fan Coils » Cold Storage Units
- » Air Blast Coolers » Long Term Packages
- » Portable Air Conditioning » Contingency and Disaster Support

Renowned as a leading specialist temperature rental provider, ICS Cool Energy offer complete solutions for short and long-term rental projects across the UK and throughout Europe.

As a dedicated temperature solutions provider, ICS Cool Energy provides a 'Class A' energy efficient range of Eurovent accredited chillers from **0.3kW-1,000kW** single units. These systems are ideally suited to provide process and HVAC cooling packages for breakdowns, planned maintenance and long-term rental, supplying cooling to process applications from food production and packing lines to plastics moulding and buildings including factories, pharmaceutical and commercial buildings and local cooling from one room to an entire building. ICS Cool Energy also provides climate control and temporary ice rinks for city centres, film production and private parties completing in excess of 90 projects each season.

ICS Cool Energy's fleet encompasses air handlers and fan coils (5kW-350kW), air blast coolers (25kW-1,000kW), thermoregulators (9kW-48kW), portable cold storage, generators as well as portable air conditioning and heater units. To support their rental fleet, ICS Cool Energy also supply ancillary products including buffer tanks, pump arrangements, centrifugal fans, an extensive supply of pipework, valves and fixings as well as attenuation units to minimise sound levels.

The Complete Package

ICS Cool Energy work in partnership with their customers to fully understand their requirements ensuring the most energy efficient and cost effective solution is recommended for every project.

In many cases customers are working to very tight deadlines; to meet this demand a vast selection of rental units are kept in stock at all times, many available for same day delivery to respond to emergency breakdowns.

Technical rental engineers are located throughout the UK and Europe with engineers available 24/7 at short notice to manage urgent requirements as well as planned projects.

ICS Cool Energy offers a truly European service with offices in the UK and Ireland, six locations in Germany, Switzerland, Austria, Poland, Italy, France and the Netherlands.

All of ICS Cool Energy's rental contracts come inclusive of 24/7 service support offering their customers complete peace of mind.



Contingency and Disaster Support

Contingency planning is an essential tool for companies running critical processes. ICS Cool Energy has developed many site specific plans to help maintain processes and manage cooling/heating shortfalls ensuring production is maintained and downtime is minimised.

ICS Cool Energy can tailor a contingency plan to help cover your cooling plant, air quality, dehumidification, heating and power supply.

To manage emergency requirements ICS Cool Energy offer:

- A same or next day site survey by an experienced local Engineer to qualify your engineering, process and commercial requirements
- The largest dedicated rental refrigeration installation and commissioning team in the UK, with 24-hour operations
- Remote monitoring and preventative maintenance coverage
- Equipment with CE markings all fully tested prior to dispatch



Long-Term Rental

ICS Cool Energy's long-term rental packages have been designed to meet the requirement of customers who have limited funds for products, but need equipment to fulfil their plans.

New and ex-demo units are available for monthly, annual and longer term hire with the option to choose from the latest **Class A** energy saving equipment to meet your application.

Many customers have found long-term rental to be an ideal solution to accurately forecast, manage equipment upgrades and manage equipment on shorter term building leases. As a tax efficient alternative to purchasing, renting with ICS Cool Energy can reduce your tax and corporation tax liabilities. With maintenance included in each rental package, ICS Cool Energy assist their customers to accurately manage their cash flow.

Case Study

Major Airport Emergency

Site security is of primary importance for many buildings and companies. For some, this can mean 24/7 site restrictions, as was the case for an emergency project at one of the UK's major airports. An existing central HVAC chiller had failed prompting an urgent response as the site had been sealed with restrictions in place preventing any windows from being opened.

The site's 1 off **120kW** air cooled chiller had fallen beyond economic repair and an urgent temporary package was needed. ICS Cool Energy recommended and installed 1 off **166kW** heat pump chiller, which could use the sites existing ducting and HVAC infrastructure to mimic the site's standard HVAC system. Within a few hours the unit had been commissioned on site, providing much needed air conditioning.

Adjusting the requirement

Several weeks later the temperatures dropped and the customer wanted to trial the heat pump chiller in heat mode comparing the energy benefits against their existing boiler. The trial showed a substantial increase in efficiency prompting the site to purchase their rental unit as a permanent replacement for their redundant chiller and costly boiler.

The Site Manager commented on the project, *"the installation was carried out professionally and we were all impressed by the responsiveness of the ICS Cool Energy team."*

Additional requirements

ICS Cool Energy were approached by the customer later in the year for a second project in the airport grounds.

An aircraft hanger was in need of heating in mid-November. Upon assessment the hanger was too large to attempt to heat fully as it was regularly open to the elements. To overcome this ICS Cool Energy identified areas of most use for both machinery and personnel recommending a series of localised heating solutions; **12 off 42kW** mobile industrial fan heaters and a further **4 off 25kW** portable heaters, meeting the heating shortfall during the cooler climates.



Case Study

Specialised Cooling for Gas Works

Working with volatile elements and compounds requires close attention to health and safety to ensure best practice is maintained at all times. Margin for error with industrial processes is minimal and great care has to be taken at all times to limit any risk.

This was especially so when working with fossil fuels at a major gas refinery in the UK. The gas works refine and condense gas from off-shore locations before distributing the fuel to the National Grid. As an energy conscious organisation, the site utilises three large ammonia chillers, which cool a shell and tube heat exchanger to facilitate the central condensing process.



During standard operation, the site uses two of their chillers for general operation, with the third required during the summer months to ease pressure during higher ambient conditions. Since experiencing a failure with one of their chillers, the customer had struggled to cope in the warmer summer months and considered temporary solutions to ease the pressure on the process.

When looking for a supplier the customer had a defined criteria to meet, as their site spokesman explained: *"We needed a reliable supplier, one that would meet the project requirements, provide ongoing support and reliable, quality equipment."*

As an ISO accredited company, ICS Cool Energy were able to fulfil the customers criteria to a high standard with quality checks at each stage.

ICS Cool Energy recommended and supplied **2 off 780kW** screw compressor process chillers that fitted on the customer's pre-existing concrete base; from here pipework was laid over a pipe bridge to protect the site's live gas lines. Both chillers supplied cooling to an existing heat exchanger measuring 12m with a 1.5m diameter.

"The ICS Cool Energy team paid close attention to safety on-site especially when working around our live gas lines, their technical know-how has provided us with the reliable and efficient supplementary cooling we needed." Site spokesman continued.

Service and Maintenance

- » 24/7 Emergency Breakdown
- » Planned, Routine Maintenance
- » Commissioning
- » Technical Support
- » Water Analysis
- » Parts Direct
- » Glycol
- » Service Contracts and Extended Warranty

ICS Cool Energy Ltd plays an integral part when it comes to supporting the wide network of ICS Cool Energy customers Nationwide. ICS Cool Energy Service continues to be the benchmark within the HVAC and process cooling market for quality service and customer support for all types of air conditioning, refrigeration, process cooling and temperature regulating equipment, throughout the UK and Ireland.

Emergency Breakdown

With its 24-hour a day, 365 days a year fully manned customer service desk and its extensive field service engineering resource, ICS Cool Energy Service offers a solution to all your temperature control equipment service and maintenance needs. ICS Cool Energy Service provides support to over 2,000 customers across a wide variety of different industrial sectors. All engineers work is allocated and dealt with promptly and efficiently via centralised software which, when a job is identified, sends a detailed job sheet via PDA or laptop and the site location is transferred to the GPS.

Customer satisfaction is imperative and ICS Cool Energy Service is committed to offering the highest level of support. By listening to customers and understanding their business requirements, ICS Cool Energy can create tailored Service Level Agreements (SLA).

Planned Preventative Maintenance

Routine planned preventative maintenance of equipment is cost effective and a proven way of limiting production downtime and is absolutely essential where manufacturing is dependent upon continuous operation. Regular maintenance will ensure that high energy costs are reduced and your equipment is running efficiently.



Service Contracts and Extended Warranty

ICS Cool Energy Service offers a range of maintenance packages which are second to none. All businesses have their specific requirements. ICS Cool Energy Service thrives on fulfilling those requirements by providing tailor-made contracts to meet their customers' needs.

Whatever the product or application ICS Cool Energy Service can help with:

- Reducing your risk of process downtime
- Increasing your productivity
- Safeguarding your profits
- Pro-active not reactive
- Maintaining your equipment at optimum efficiency

Additional contract benefits include:

- Discounted spare parts
- Reduced labour and emergency call out rates
- Guaranteed response times
- Preventative maintenance visit
- 24/7 engineer availability
- Access to technical support desk

ICS Cool Energy look after over 3,000 units and provide a range of Service Level Packages for all types of air conditioning, refrigeration, process cooling and temperature regulating equipment, throughout the UK and Ireland.



Commissioning and Water Treatment

ICS Cool Energy Service has developed FlowCool glycol and water treatment products for air conditioning and process cooling installations. These products have been specially formulated to protect the heart of all chilled water systems from ice formation, corrosion and due to recent developments, microbiological growths.

Parts Direct

ICS Cool Energy Service stocks a comprehensive range of spare parts in the UK. All routine service components and specific critical items are available for immediate dispatch anywhere in the UK or overseas. Non-standard items can be sourced swiftly through a comprehensive network of component suppliers.

Remote Monitoring

Industry cannot afford downtime and where standby systems cannot be installed, ICS Cool Energy can provide a technology based monitoring system, X-WEB to dial into your chiller controller using a web browser.

“
Keeping industry cool through innovation 24-hours a day.
”

Case Study

Critical Monitoring for Hospital Scanners

A leading medical research facility called on ICS Cool Energy Service to provide 24/7 monitoring support. The site has MRI scanners, which serve as a vital medical resource serving a large number of patients. The site was provided with an 88kW iC530 i-Chiller to deliver chilled water to the cryo head of the scanner. Magnetic resonance imaging (MRI) uses a magnetic coil to generate strong magnetic fields which produce the crucial images. Helium gas then cools the magnetic coil to 100°K (-173.15°C) allowing the coil to become a superconductor. It is this cool cryo head that is critical on a scanner; the chilled water prevents the helium from quenching which in turn prevents the scanner from operating.

Given the critical environment, a high level of support was required to prevent faults and minimise downtime. ICS Cool Energy Service recommended a gold service level agreement (SLA), which provided the site with extensive fault preventive maintenance and remote monitoring to the scanners' chiller. Remote X control provides remote monitoring via the Remote X based telemetry. All parameters, set points and alarm history is monitored whilst data can provide regulation graphs monitoring chilled water flow and return temperatures, pump operation and compressor switching in real time.

The automatic data logging can be accessed both on and off site to check systems are functioning as normal. Furthermore in the unfortunate event of a chiller diagnostics alarm, an email would be sent to the ICS Cool Energy Service support team where engineers can dial into the unit checking real time reports and recent activity. From here, systems can be re-set or adjusted to maintain chiller operation. In instances where further corrective action is required, engineers can attend site; helping them to get straight to the source of the problem and ultimately minimising downtime.

Case Study

Dual Safety Pressure Relief Valves on Refrigeration Systems

A leading IT and Telecommunications company contacted ICS Cool Energy regarding the servicing and maintenance of their air conditioning system which also supplied their server rooms. Unhappy with their incumbent service provider, and with concerns over minimising downtime, ICS Cool Energy (who work with over 3,000 customers across the United Kingdom) were chosen.

Requirement

As part of the IT and Telecommunications company's insurance requirements, the safety relief valve was required to be fully serviced and checked every five years. In order to complete this aspect of the service, it was necessary to remove the liquid refrigerant to access and then test and replace the relief valves. At over **1000kW** per unit, these large capacity chillers have a minimum of one pressure relief device per circuit, mounted on or in proximity of the pressure vessel or the part of the system which the device is there to protect.

The relief valve is a unique and essential component of any medium to large refrigeration system. Insurance companies are increasingly insisting on periodic testing of relief valves to ensure circuits retain system safety requirements and will function when required.

As the refrigerant needs to be removed to replace or test a relief valve, systems can be put at risk as standby capability is removed for the duration of the work. For large systems this could involve upward of 24-hours. This jeopardises system integrity and possibly production when operations involve manufacturing processes.

Solutions Provider

ICS Cool Energy Service recommended and fitted a Dual Port Relief Valve system (DPRV) to replace the existing single valve, ensuring future testing would not require refrigerant removal.

The installation of the DPRV has had a major impact on the servicing and maintenance of the IT and Telecommunication company's refrigeration equipment, enabling a significant reduction in downtime on future five year checks, reducing costs whilst maintaining system integrity and safety.

ICS Cool Energy Service has successfully completed a number of DPRV retrofits across a wide range of industries, allowing customers to adhere to their insurance requirements and maintain critical production schedules.



The Total Temperature Control Solutions Provider

Recognised for their quality and clinical excellence, a leading private healthcare provider required an experienced total temperature solution for a complex project involving the replacement of cooling systems for their estate of over 60 hospitals throughout the UK.

Requirement

The hospitals carry out both minor and major operations within their many operating theatres. The operating theatres themselves require extremely accurate, reliable and efficient cooling and temperature control. In order to maintain the highest levels of patient care the hospitals could not afford to have their theatres out of service. The hospitals' existing cooling systems were becoming beyond economic repair and with many of the systems running on the ozone depleting refrigerant R22, an alternative cooling solution was necessary. As a leading solutions specialist, offering purchase, rental and installations as well as full service and maintenance packages.



Solution

ICS Cool Energy carried out site surveys to assess the cooling system arrangement, energy analysis also allowed for a full evaluation of the available options for the multiple sites, with complete estimated energy and cost savings potential.

Upon review, many of the existing cooling systems were in need of replacement. The available options were to install more efficient systems, incorporating free cooling which would utilise the UK's low external ambient temperature, and heat recovery which would utilise heat from a process, normally wasted and released into the atmosphere.



ider

Options

After reviewing the options available and giving consideration to the savings estimations ICS Cool Energy, in conjunction with the Head of Engineering decided to fit out each of the sites with a highly efficient fluid based cooling solution.

The new chillers would be installed to allow easy access for servicing and would run partly using chilled water and partly using refrigerant. This small and concentrated use of refrigerant achieves a better carbon footprint and also meets the F-Gas requirements by lowering the potential of refrigerant which can be lost into the atmosphere.

Installation

Each of the hospital locations varied by building type as some were also listed buildings. This is where the ICS Cool Energy installation team played a vital part in the project. They evaluated each of the sites for chiller access points and chiller sizes, developing an installation plan which wouldn't incur any downtime. In order to remove the existing chillers and install the new units, rental chillers were temporarily installed by ICS Cool Energy to keep the hospitals up and running throughout the installation.

Prior to removal, the existing chillers were decommissioned by the ICS Cool Energy Service team, who also carried out the full commissioning on completion of the project. This fully customised turnkey solution provided by ICS Cool Energy Ltd meant there was little input required by the hospital. Everything was replaced and set-up, ready for the hospital to start using the equipment.

Working in partnership, ICS Cool Energy Ltd provided rental, sales and service temperature solutions ensuring minimal downtime and a comfortable environment for the healthcare providers' patients, visitors and personnel.

Contact Us

Group Companies

Head Office - Southampton

Totton SO40 3SA
Sales Freephone: 0800 169 3861
Hire Freephone: 0800 840 4210
T +44 (0)23 8052 7300
F +44 (0)23 8042 8366

South East

Essex CM13 3FR
T +44 (0)1277 725197

Midlands

Birmingham B46 1HT
T +44 (0)1675 432270
F +44 (0)1675 432299

North

Bradford BD1 5EP
T +44 (0)1274 740877
F +44 (0)1274 391708

Scotland

Glasgow ML4 3PR
T +44 (0)1698 744540
F +44 (0)1698 744541

Ireland

Kells, Co Meath
T +353 (0)46 92 52934
M+353 (0)87 27 92024

Hamburg - Germany

22869 Schenefeld
T +49 40 609457 37
F +49 231 567704 11

Hannover - Germany

37077 Göttingen
T +49 551 6337488 13
F +49 231 567704 11

Dortmund - Germany

44141 Dortmund
T +49 231 567704 13
F +49 231 567704 11

Stuttgart - Germany

74374 Zaberfeld
T +49 7046 88087 0
F +49 231 567704 11

Munich - Germany

86316 Friedberg
T +49 821 599863 0
F +49 231 567704 11

Switzerland

8808 Pfäffikon
T +41 (0)800 002 678
F +41 (0)55 415 91 09

Austria

1030 Wien
T 00800 0116 0117
F +43 (0)1 941 57 97

Netherlands

5271 WX St. Michielsgestel
T +31 (0)88 258 258 0
F +31 (0)88 258 258 8

France

67880 Innenheim
T +33 (0)6 30 11 13 16
F +33 (0)3 88 95 79 51

www.icscoolenergy.com

