

COPELAND HEATING SOLUTIONS

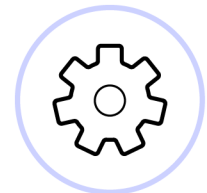
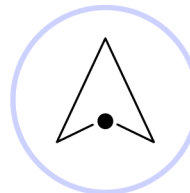
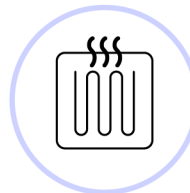
Unlocking Energy Savings with Innovative Heat Pump Technology

Cutting-edge water heating technologies enable a major auto parts manufacturer to halve its energy bill and bolster sustainability outcomes

Established heat pump provider, Advanced Thermo Solution is helping Thai manufacturers to accelerate their industrial transformation plans. Their hot water heat pumps - installed with state-of-the-art compressor technology - have enabled a major auto parts manufacturer to halve its annual energy bill. This outcome and other efficiency and sustainability gains are helping Advanced Thermo Solution to grow business with current customers, and generate leads from previously untapped sectors.



Founded in 2000, Advance Thermo Solution (ATS) Co., Ltd specializes in the design, research & development, production, assembly, sale, and servicing of heat transfer solutions. From its Samut Prakan base, ATS produces heat pumps and chillers under its ABSOLUTE brand for a diverse customer base including auto parts, electronics, steel, leather processing factories hotels and hospitals across Thailand.



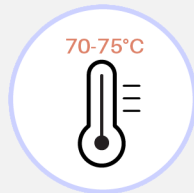
The challenge - accelerating transformation

While Thailand's industrial sector is well developed, e.g. auto, electronics, and petrochemicals, government and business leaders are seeking more opportunities in mid and high-tech sectors such as electric vehicles, healthcare, and smart devices to attract new investors.

Unlocking value added opportunities, however, will require infrastructure modernization. New or upgraded heat pump technology is a current focus for many industries because demand for high-temperature hot water (70-75°C) is on the rise.

For example, many hospitals require 70-75°C heated water for laundry and medical device sterilization purposes. This is in addition to high volumes of medium-temperature hot water (60-65°C) needed to support their bathing, running kitchens, and cleaning needs.

Other high-profile industries needing a reliable supply of high-temperature water include auto parts manufacturing to remove grease from machinery and parts; food processing to sanitize lines and eliminate bacteria; and construction to remove surface stains, graffiti, and debris from old buildings.



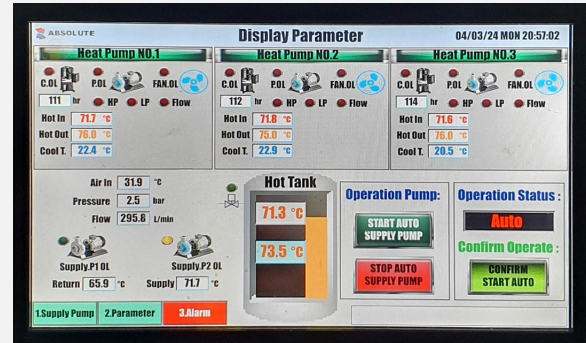
The conventional way to produce high temperature 70-75°C hot water involved the use of LPG boilers or electric heaters because previous heat pumps could only produce water to a maximum of 60-65°C. Using boilers and heaters, however, is more expensive in terms of energy consumption and less environmentally friendly.

To meet the need for 70-75°C water, some companies employed "workaround" solutions such as creating and using steam to raise the temperature of water produced by traditional heat pumps. As creating steam added an extra step to the water heating process, it was a time and resource consuming method.

ATS also advised several customers to store water (warmed by a heat pump) in a tank before using an LPG boiler or electric heater to raise the temperature to 70-80°C. While this method was effective, customers found it inconvenient. Rather than simply using a heat pump to warm water and use it, the storing water in a tank to heat further became a "pain point" due to the additional processes involved, and the need to bring in new equipment and manage added complexity.



HOT WATER HEAT PUMP PLC CONTROL



Breakthrough solution

ATS turned to new technology, implementing the range of Copeland ZW KB heat pump compressors in its products, to overcome the sustainability, operational, and cost hurdles faced by customers. The ZW KB compressor is the first component of its kind - launched in Thailand - with the capacity to heat water to 80°C.

As the “vital cog” of a high-temperature heat pump, ZW KB compressors boost system efficiency and reliability to optimize processing, quality, sustainability, and cost-saving benefits for users.

Key features of the ZW KB range of compressors include a high-volume efficiency valve to improve and seal, while its motor is designed to improve efficiencies in all processing areas.

Performance-wise, users can utilize precise temperature control, and simple and reliable digitally modulated control systems to optimize processing efficiencies, energy use, and the ability to withstand harsh operating conditions such as Thailand’s hot and humid climate. Although ZW KB is a fixed capacity compressor, customers can opt for a ZWD KB compressor that offers 10-100% capacity modulation.

Making an impact in Thailand

While the ZW KB range of compressors is relatively new in Thailand, they have been very well received. Currently, 20% of ATS customers use ZW KB heat pump compressors and more are considering it in the future.

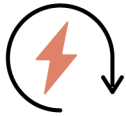
The early adopters have enjoyed enhanced reliability and efficiency benefits.

ZW KB compressors use less energy than a conventional electric heater, while also reducing fire risks associated with electric heaters. They also use environmentally friendlier zero ODP refrigerants, and in combination with high-efficiency technology solutions, significantly reduce CO2 emissions. In terms of installation, ZW KB compressors can be fitted with minimal adjustment or re-engineering.

Case study

Client

ATS supports a major auto parts manufacturer in Chachoengsao province. Their production process requires a consistent, reliable supply of 72-73°C water. Before using heat pumps, installed with a ZW KB compressor, the company used LPG boilers to heat water. Since upgrading its heat pump technologies, the factory has enjoyed significant benefits including:



Energy saving

Using a heat pump to raise the temperature of water produces cold air as a by-product of the process and this "re-purposed" air is used to cool the company's chemical storage room to save air conditioning energy costs.

Replacing LPG boilers with heat pumps also saves the company 2.8 million baht (USD 75K) per year - this was the annual bill for LPG. Since switching to the upgraded heat pump the company now:

- Spends 1.1 million baht (USD 30K) on electricity per year to heat water
- Enjoys a reduced air-conditioning power bill by utilizing cold air by-products-it saves 330,000 baht (USD 9K) per year

The two changes have enabled the company to halve its previous energy bill to 1.4 million baht (USD 39K) per annum today. The total cost of the installation (heat pump, piping, ducting, electrical work) was five million baht (USD 136K).



Improved safety

Compared to LPG boilers (which often raise boiler pressure), the heat pump is safer and cheaper to run because less engineers are needed to monitor the boiler.

Benefits to ATS



Increased revenue

Heat pumps installed with the ZW KB compressors have attracted new business, resulting in an additional income of 10 million baht (USD 280K) for the company over the past year.



New business prospects and opportunities

As well as helping existing customers transform their water heating processes and outcomes, ATS is also pursuing new business with companies who need high-temperature hot water above 70°C.

ATS teams have reached out to factory owners who still use LPG boilers and electric heaters to heat water. In addition to manufacturing companies, ATS is talking with business owners in the agricultural, food processing, and construction sectors who want to enjoy the efficiency, sustainability, and cost-saving benefits offered by ZW KB heat pump compressors.