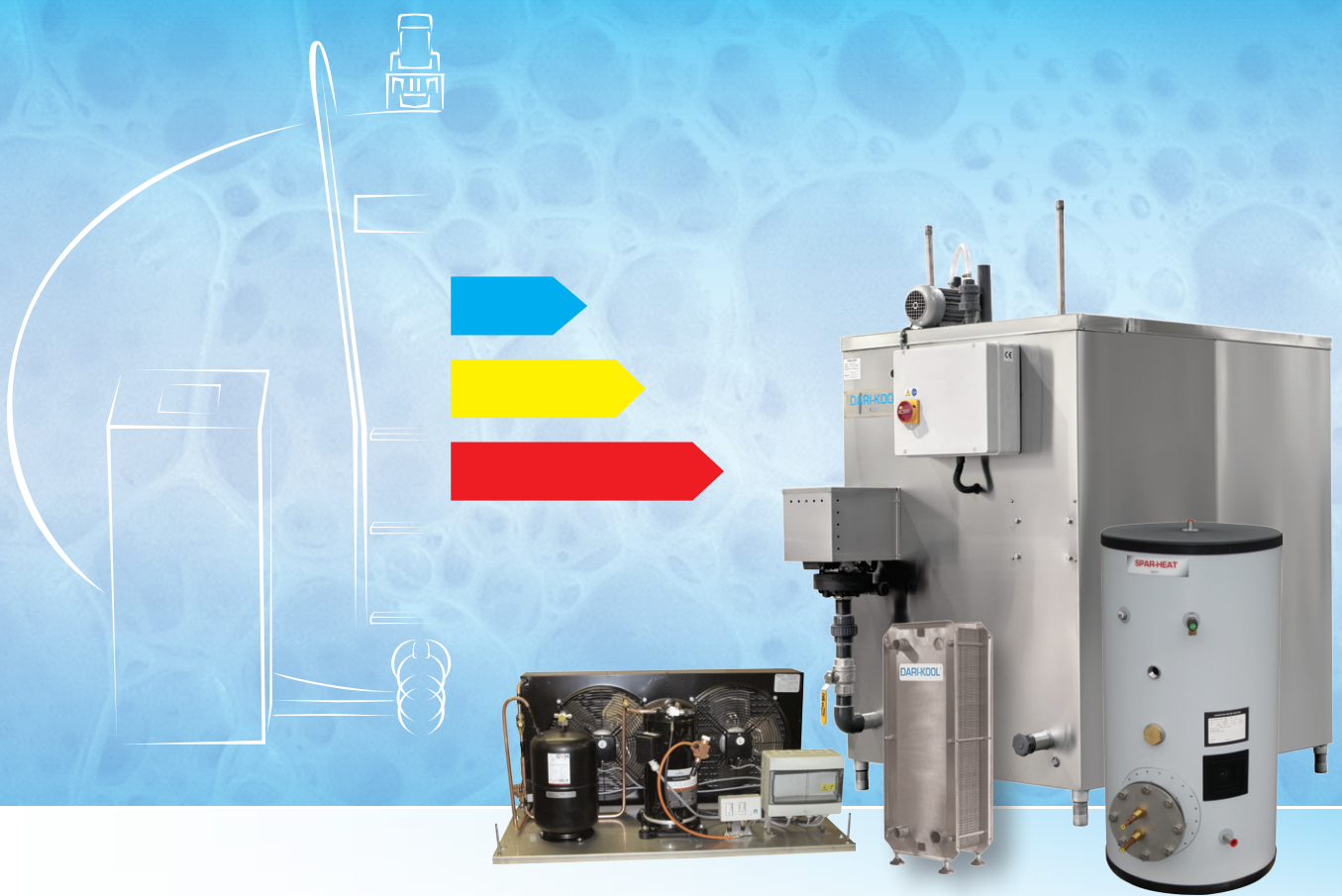


DARI-KOOL®

Energy-saving Guide

Uniting energy efficiency with milk quality



Milk cooling systems



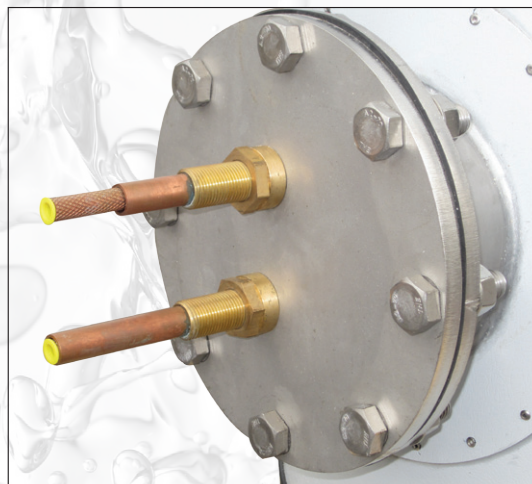
Heat Recovery Systems

Did you know an efficient way of heating water is to recover the heat used in the refrigeration process? All you need is a reliable heat recovery product.

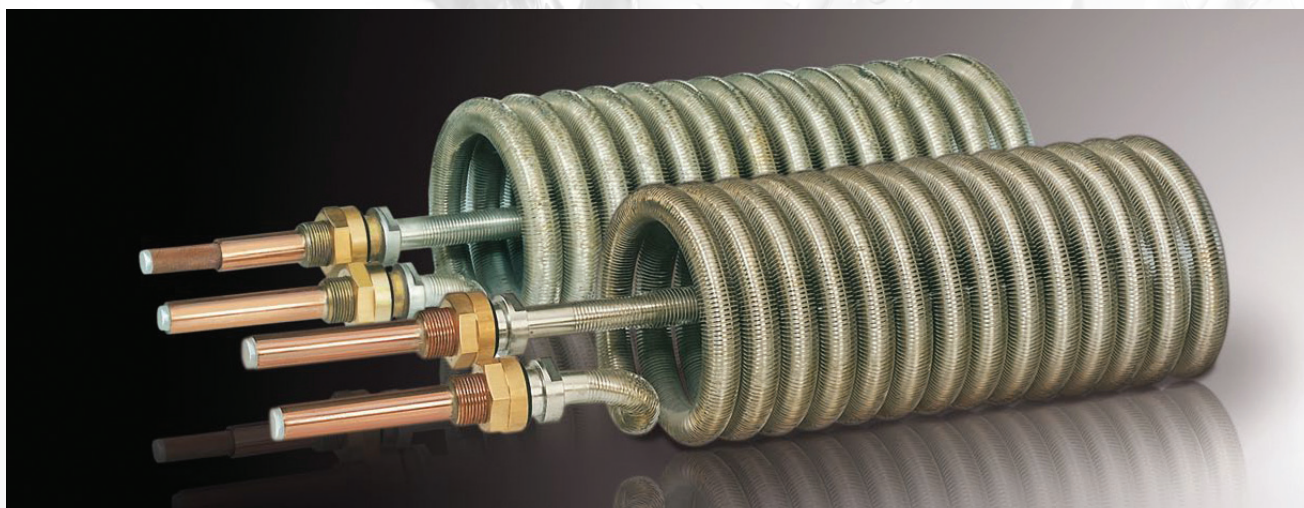
On an average dairy farm, each milking point requires 18 litres of water at a temperature of 85°C for circulation cleaning. This is normally heated using an electric immersion heater.

However, hot air is effectively wasted during the milk cooling process when the refrigerant leaving the compressor can be 70-80°C.

With a heat recovery system water can be pre-heated to 55°C at no cost.



SPAR-HEAT Plus - with coil heat exchange



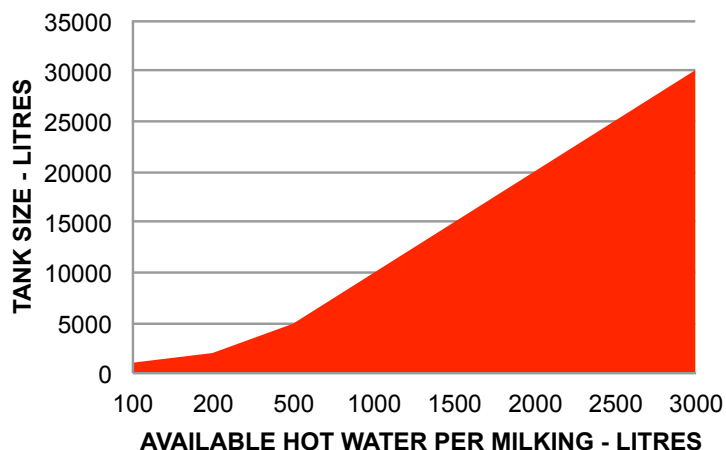
The heat exchanger on SPAR-HEAT Plus

The heat exchanger consists of two tubes: an outer (water side) tin-plated tube with a medium-high finned tube and an inner (refrigerant side) copper tube with a pyramid-shaped structure on the outside. The double-walled structure prevents drinking water from mixing with refrigerant and the refrigerant pipes are connected outside the heat exchange area.

Where this system is used

This type of system is used with a single cooling circuit where the run-time is relatively low. Immersion heaters boost the temperature as required. The concept is to provide hot water to the customer at up to 85°C at around a third of the traditional water heating costs associated with a standard boiler.

Heat Recovery Systems



SPAR-HEAT Plus - main features

- For use with immersions (1½" or 2¼" BSP)
- Polyurethane CFC-free insulation
- Scratch-resistant Plastisol coating
- Factory fitted with 7bar/90°C pressure & temperature relief valve
- Maximum operating pressure: 6 bar
- Maximum operating temperature: 85°C
- Indirect heat exchange meeting DIN standard EN12897 and PD5500

These findings show that for every 1000 litres of milk cooled you can on average recover up to 100 litres of hot water. This is based on 2 milkings a day, using pre-cooled ice water, cooling from 22°C to 4°C.

- 1/3 of heating costs associated with standard boilers
- Hot water, made from waste heat
- No moving parts maintenance free
- High quality stainless steel cylinder
- produces 1 litre of hot water for every 10 liters of milk cooled
- Regular grant funding available*

*Subject to conditions, typical of UK dairy farms

**FOR EVERY
LITRE
YOU SAVE
£2/YR**

Example savings for SPAR-HEAT Plus 1000L

Energy required for heating from 10°C to 55°C = 52.4KW

Saving using recovered heat = £2581 annually (day tariff 13.5p)

Saving using recovered heat = £1434 annually (night tariff 7.5p)

Pre-Cooling with Plate Cooler

Plate coolers ensure milk is cooled quickly for storage. They are by far the biggest energy saver in dairy farming and provide an inexpensive way to pre-cool milk from about 35°C to 18-20°C.

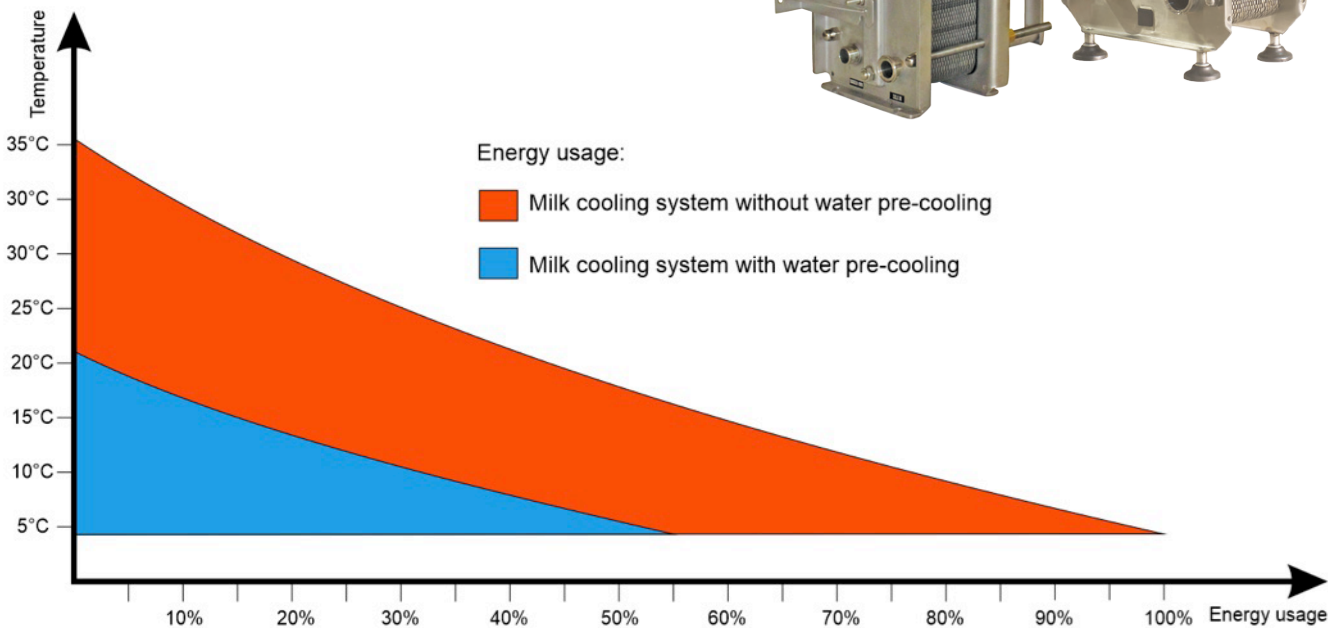
Fabdec plate coolers are manufactured from high quality stainless steel with food-grade rubber gaskets, easy to dismantle for inspection and maintenance.

Both our QUANTUS and MAGNUS models can be used in a double circuit with ice water.

QUANTUS	Wall-mounted, with option of floor-mounting kit, for up to 10,740 litres of milk per hour
MAGNUS	Floor-mounted, for cooling up to 18,750 litres of milk per hour

Main features

- All stainless steel construction
- Clip-on gaskets for easy replacement
- Large high performance plates
- Single or double stage (for use with ice water)
- Extended warranty for peace of mind
- Up to 50% savings in cooling costs
- Recognised as market leader



* data above is dependant on water flow and temperature

Pre-Cooling with Ice Builder

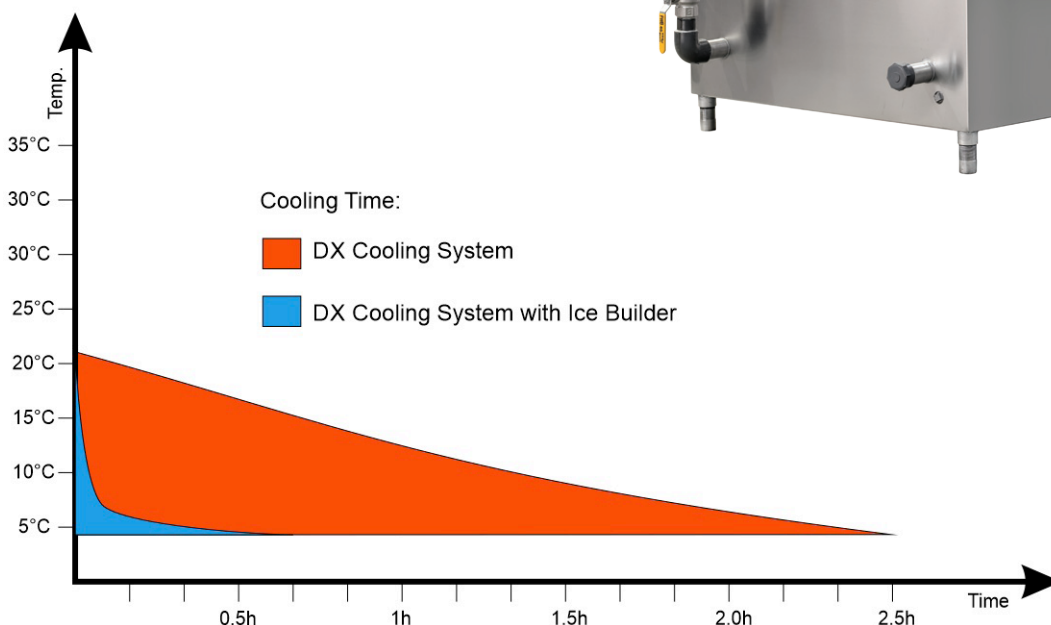
Ice builders are a simple technology that can easily double the milk cooling capacity on farms using the existing condensing units. They generate ice using night rate electricity or by using solar energy.

The milk flow first passes through a double stage plate cooler using bore hole or mains water in the first stage. The second stage uses ice water generated by the ice builder, which will drop the milk temperature almost instantly before it reaches the milk tank.

Fabdec's range of ice builders are available for all applications, with sizes from 20kW to 300kW.

Main features

- Economical milk cooling system using off-peak rate electricity
- Reduces the load on milk tank
- Twin pump models available
- Sizes from 20kW to 300kW
- Ice storage ensures cooling success before milking begins



CHILL-PAK

Copeland Scroll Condensing Units

With 70% fewer moving parts and a simple internal suction and discharge method Scroll condensing units offer superior reliability and energy-efficiency.

What is more, the compact and lightweight design means they can be integrated where space is limited.

Copeland Scroll compressors for medium temperature refrigeration are designed to provide seasonal efficiencies 15% higher than traditional semi-hermetic compressors.



Main features

- Stainless steel base plate with adjustable legs
- Factory built to the highest build standards
- 15% more efficient than standard unit with fewer moving parts
- can be used with different refrigerants
- Terminal box installed with contactor, motor circuit switch, high and low pressure switches
- Scroll type compressors prevent damage to the condensing unit when low levels of milk are being cooled

VARI-SPEED

Variable speed milk pump controller



To optimise the effectiveness of the plate cooler, we recommend a variable frequency control unit. Reducing the milk flow in cooling mode ensures optimum cooling efficiency and helps to preserve the milk quality. When used with a plate cooler VARI-SPEED can reduce cooling costs by a further 30%.

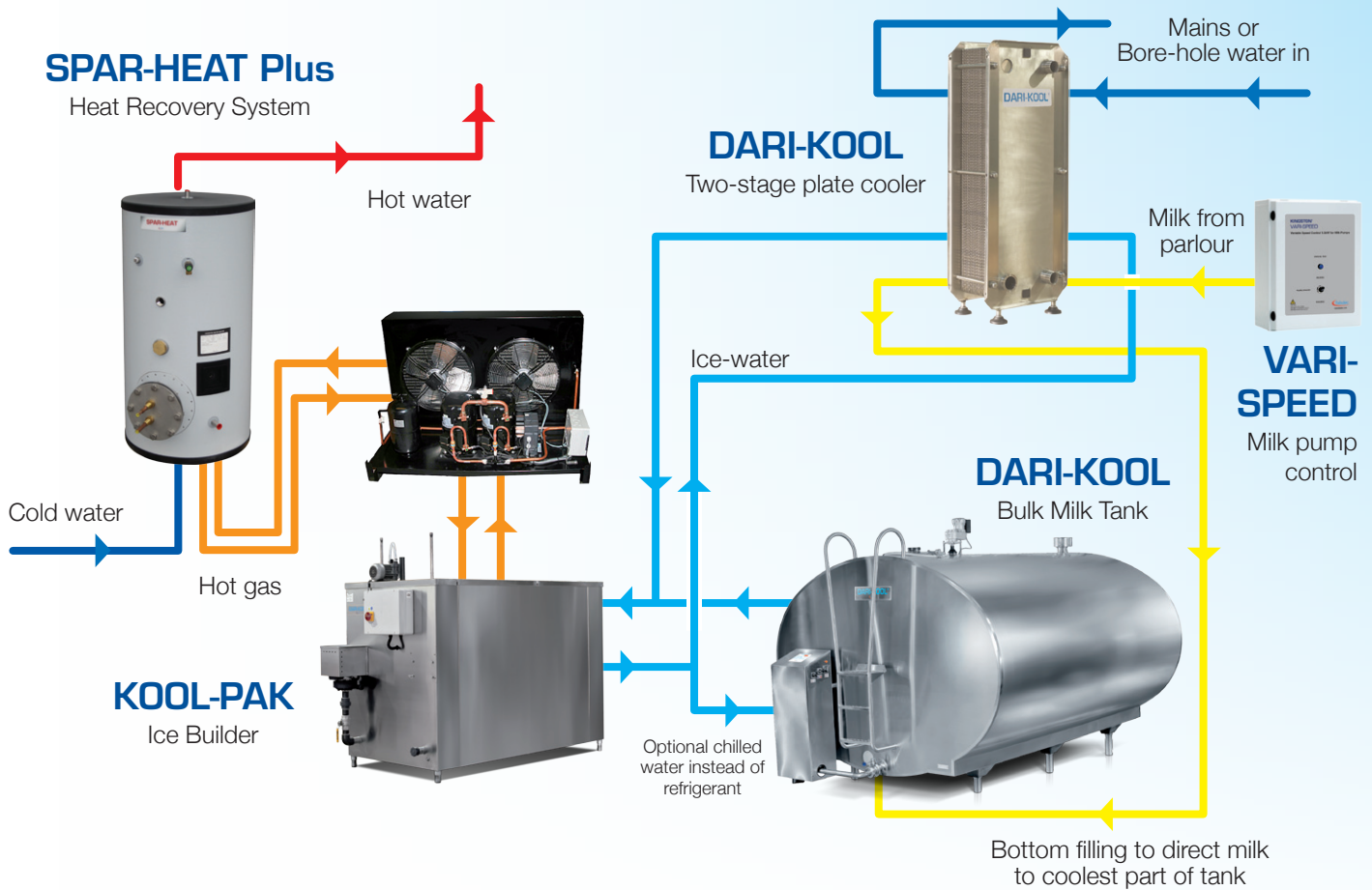
This unit regulates the amount sent to the tank by the milk pump. When the volume of milk in the receiver unit is small, the pump runs with a lower milk flow rate. While the volume of water remains the same, the cooling performance improves.

Available in 1.5 or 2.2kW (1/3 ph) versions.

Main features

- Milk cools faster due to a constant flow rate through the plate cooler
- Faster milk cooling inhibits growth of bacteria, preserving milk quality & flavour
- Shorter compressor run times means lower electricity bills
- Integrated phase converters variable speed drives are available for single phase application

Energy Saving Solutions



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Milk cooling systems

