

aquaeco₂ application in dairy farms

Hot Water.
Naturally!

ENERGY EFFICIENT HOT WATER PRODUCTION WITH SANDEN CO₂ TECHNOLOGY

USE AQUAECO₂ MAX TO PRODUCE HOT WATER AND CUT YOUR OPERATING ENERGY COSTS

Dairy farming requires large amount of hot water for cleaning milking equipment. One Aquaeco₂ Max Heat Pump unit provides efficiently up to 1,000L at 65°C per day with top-of-the-class energy efficiency.



Examples of Aquaeco₂ Installations in Dairy Farms (Nantes, France)

Attention: Each installation should be sized by confirming the real DHW needs of the farm.

42 dairy cows | 360,000L milk produced/yr

- 325L of 65°C hot water needed daily
- **1 Aquaeco₂ Max unit + 200 tank installed**
- Heating operation: 5h30 per day
- Thermostat regulation

➤ **Only 2,673 kWh electric energy consumed per year (Vs 7,575 kWh with electric boiler)**

84 dairy cows | 730,000L milk produced/yr

- 590L of 65°C hot water needed daily
- **1 Aquaeco₂ Max unit + 300L tank installed**
- Heating operation: 7h30 per day
- Thermostat regulation

➤ **Only 4,693 kWh electric energy consumed per year (Vs 13,752 kWh with electric boiler)**

126 dairy cows | 1,095,000L milk produced/yr

- 875L of 65°C hot water needed daily
- **2 Aquaeco₂ Max units + 300L tank installed**
- Heating operation: 6h30 per day
- Thermostat regulation

➤ **Only 6,665 kWh electric energy consumed per year (Vs 20,395 kWh with electric boiler)**

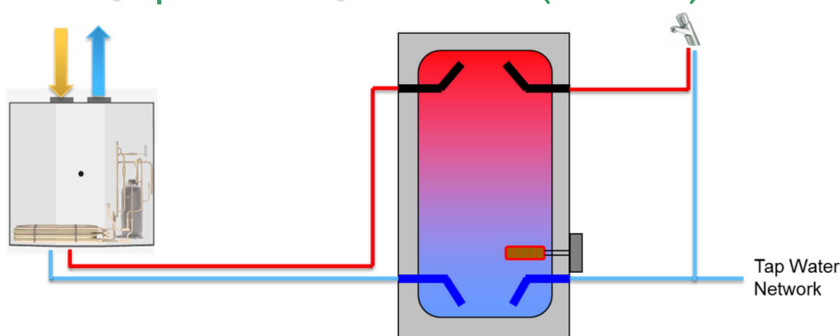
Dairy farm key facts - Did you know it?

- Water heating accounts for 25% to 35% of overall energy demand of dairy farming.
- Hot water temperature for following usage:
 - Use 65°C hot water for milking equipment cleaning
 - 35°C warm water for household use purpose
 - lukewarm water (combination of storage tank water mixed with cold water, 15°C to 35°C) as drinking water for cows and calves during winter time and in milk powder preparation for calf feeding.
- Most dairy farms use an electric water heater, though it is one of the most costly ways to produce hot water.

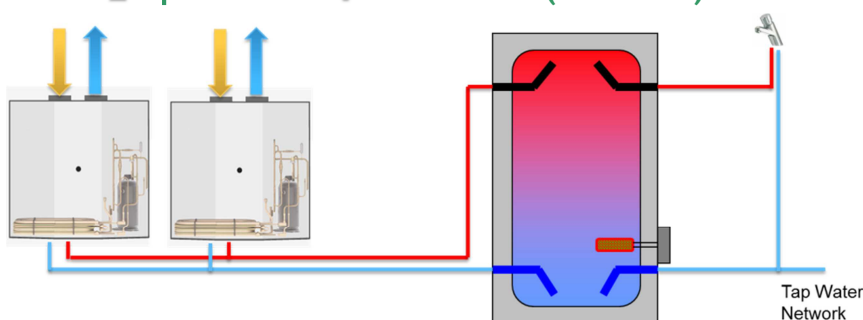
Recommendations to size Aquaeco₂ system properly

- ♻️ If the milking equipment or parlour washing system requires hot water above 65°C, use Aquaeco₂ for pre-heating cleaning hot water.
- ♻️ To enhance energy savings, a heat recovery system can be connected to Aquaeco₂ to recover the heat from milk cooling process to warm up air inlet of Aquaeco₂ Heat Pump and/or to recover the cold from Aquaeco₂ Heat Pump outlet to cool down the milk reservoir tank.

Pattern 1: **1 Aquaeco₂ Max + 1 hot water tank (300 to 750L)**



Pattern 2: **2 Aquaeco₂ Max + 1 hot water tank (300 to 750L)**



SMART INVESTMENT FOR DAIRY FARMERS

- **ENERGY-SAVINGS ALL YEAR LONG, EVEN DURING WINTER COLD DAYS**
- **EXTRA-SAVINGS POSSIBILITY:**
 - ♻️ OPERATION DURING OFF-PEAK ELECTRICITY TARIFFS ONLY
 - ♻️ HEAT RECOVERY CONNECTION TO COLD MILK STORAGE TANK
- **HOT WATER PRODUCED AND STORED AT 65°C: NO RISK FOR LEGIONELLA**
- **LOWER COSTS OF MAINTENANCE**
- **REDUCTION OF CARBON FOOTPRINT COMPARED TO TRADITIONAL HEAT PUMPS**
- **Use of Natural, Non-Toxic & Non-Flammable CO₂ Refrigerant**