DALRADA
Climate Technology

*Technology for decarbonized heating and cooling in food processing settings.*

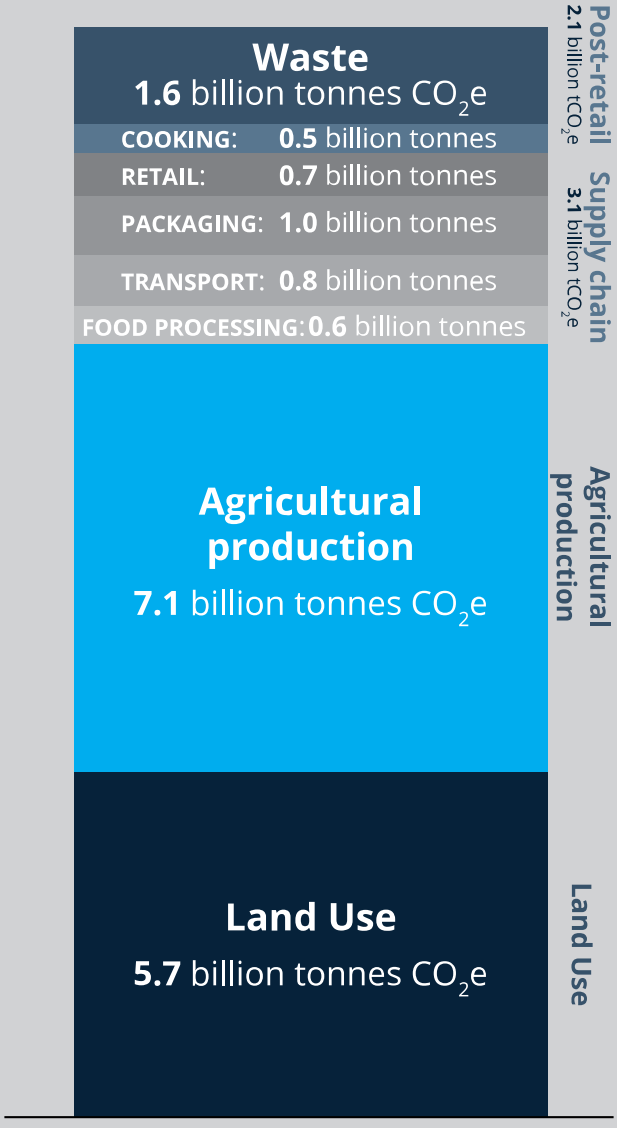
DCT One Series:

# Heat Pumps for the Food Processing Industry

## Canning/Seafood

The Food Processing industry has recognized the importance of utilizing renewable energy sources to reduce carbon emissions and cut energy costs. **Transitioning to sustainable practices is not only necessary for the environment, it's also imperative to the long-term success of any business.**

***A study by Crippa et al. (2021) revealed that the food system as a whole, is responsible for a staggering 17.9 billion tonnes of $CO_2e$, which accounts for approximately 34% of the world's total carbon emissions.***




**Crippa et al. (2021)**
**17.9** billion tonnes $CO_2e$ from food

* $CO_2e$ - carbon-dioxide equivalent
**Source: https://ourworldindata.org

# Sustainability in the Seafood Sector

## Problems:

The Seafood sector faces tremendous natural resource and energy challenges when it comes to simple operations: chilling, freezing, cleaning, packing, and transportation, for example. Managing each of these resources is crucial for ensuring safe, cost-effective, and sustainable operations.

## Solution:

Dalrada Climate Technology's (DCT) heat pump offers a promising solution to these challenges. Not only does the innovative heat pump effectively manage water temperatures, it also recycles "wasted" energy that can be utilized for many purposes.

DCT heat pumps outperform conventional boilers and chillers and they are ideal for Food Processing applications. By simply implementing this advanced technology, business owners can maintain seamless operations and optimize energy consumption, enhance business efficiency, and champion environmental responsibility.

## Did You Know?

Every DCT One Series machine installed has the potential to eliminate 250,000 kilograms of $CO_2$ equivalent.

# THE HEAT PUMP FOR FOOD PROCESSING

Dalrada Climate Technology's heat pump recycles low-energy waste, presenting significant cost-saving opportunities and increasing long-term sustainability for Seafood and Canning, and the entire Food Processing industry.

***Up to* 7X *More Efficient***

than conventional heating & cooling systems

- ***Up to 75%*** reduced energy consumption
- Uses non-toxic, non-flammable, natural refrigerants
- Hot water supply range: ***+50°C – +85°C (+122°F – +185°F)***
  Cold water supply range: ***-20°C – +15°C (-4°F – +59°F)***

## SWITCHING TO DCT HIGH-EFFICIENCY HEAT PUMPS

***Less Energy Consumption*** X ***Lower Emissions*** = ***Higher Savings***

## DALRADA CLIMATE TECHNOLOGY HEAT PUMP ADVANTAGES

- Effectively decarbonizes heat
- Combustion-free process
- Reduces global warming potential (GWP)
- Retrofittable design, modular build
- Climate agnostic, works in multiple regions
- Can be implemented into new and existing infrastructures

# DCT ONE SERIES STANDARD CAPABILITIES

## INCREASED EFFICIENCY

Up to 150 kW heating output and 105 kW output with just 43 kW of electrical input. Traditional heating and cooling systems require approximately 93.3 kW of electrical input to produce the same heating and cooling output.

## IMPROVED PERFORMANCE

For every 1 kW of electrical energy input, 4.5 kW of heating energy (kWth) are generated and 2.5 kW of cooling energy (kWth) are extracted for a combined coefficient of performance (COPhc) of 1:7. Most air conditioners have a COP of 1:2.3 to 1:3.5 while most natural gas boilers have an average COP of 1:0.9.

## LESS DOWNTIME

The closed system ensures minimal machine maintenance and zero wasted energy during the transcritical refrigeration cycle with supercritical $CO_2$ as the working fluid. Less maintenance means fewer problems and less downtime.

## UPGRADED SOLUTION

An excellent option for both heating and cooling. The unique design allows for the production of hot water while extracting energy for cooling and cold water needs — ideal for seafood and canning purposes and the entire the food processing industry.

***Reduce environmental impact.***
***Save money on heating and cooling.***
*Dalrada Climate Technology:*
*a true Food Processing solution.*

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**www.DalradaClimateTech.com**

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