Advanced **Heat Pump** Technology

Dalrada TECHNOLOGY GROUP

DCT ONE SERIES CRITICAL ADVANTAGES

- **Efficiently** decarbonizes heat
- **Combustion-free** process
- **Reduces** global warming potential (GWP)
- **Uses carbon dioxide (CO_2)** as refrigerant in transcritical refrigeration cycle
- **Retrofittable design**, modular build
- **Climate agnostic**, works in multiple regions
- **Easily implemented** into new and existing building infrastructures
- **Buy American Act (BAA)** and **Trade Agreements Act (TAA)** compliant
- **Real-time performance data** enabled with advanced control module

Up to* 7X *More Efficient

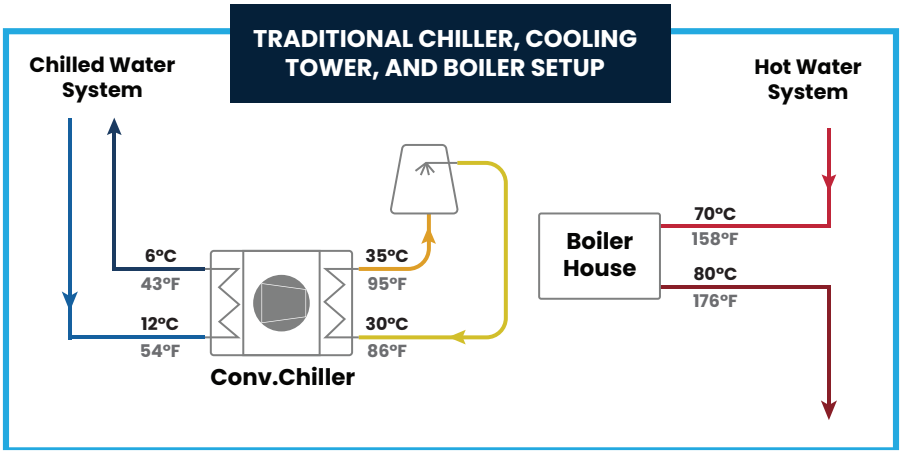
than conventional heating & cooling systems

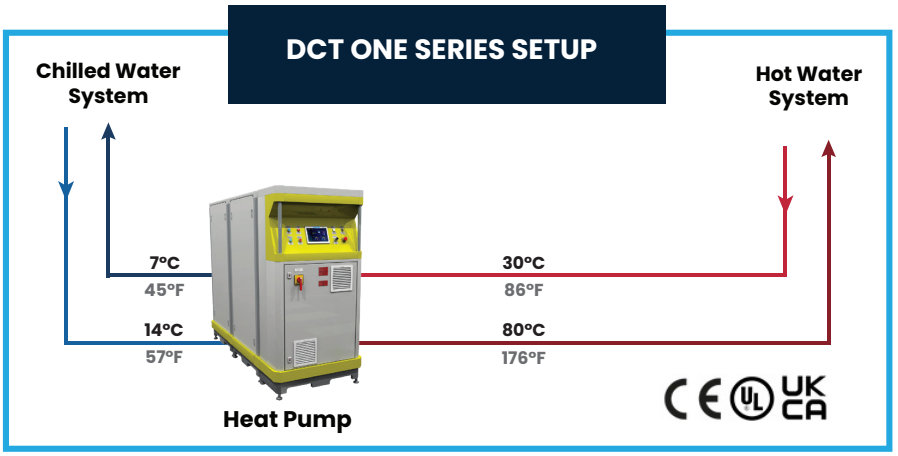
INDUSTRIES & APPLICATIONS

- Hotels, Gyms & Spas
- Commercial Buildings
- Data Centers
- Hospitals & Medical Facilities
- Schools & Universities
- Food Production & Processing

Decarbonizing Solution

Dalrada's DCT ONE Series heat pumps replace traditional water heaters, steam boilers, cooling towers, or chillers and provide simultaneous heating and cooling.





HOT & COLD COUPLING

01

Innovative technology for use in applications that link to local heat networks, where hot and cold coupling is a necessity (IT, server cooling, district heating, and more).

COST & ENERGY EFFICIENT

02

Exponential cost savings and reduced carbon emissions — immediately and over time. Up to 75% increased energy efficiency plus eligibility for tax credits and incentives.

F-GAS EXEMPT REFRIGERANT

03

Non-toxic, non-flammable, and eco-friendly R744 Carbon Dioxide (CO_2). This natural refrigerant is CFC and HFC free with an ODP of 0 and GWP of 1.

DALRADA
Climate Technology

Decarbonizing Energy Solution

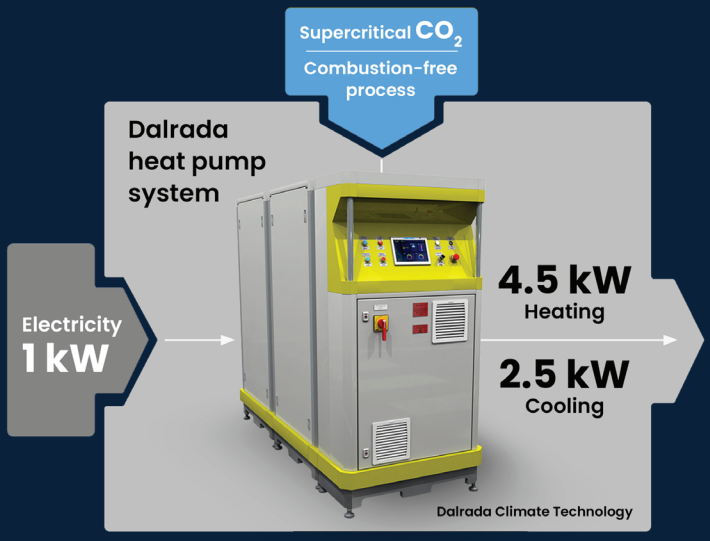
Up to 75%
reduction in energy consumption

TECHNOLOGY OVERVIEW

Dalrada's combustion-free heat pumps increase heating and cooling efficiency by capturing and reusing thermal energy, ultimately reducing global warming potential (GWP) through the use of carbon dioxide (CO_2) as the refrigerant.

Climate technology helps support the global initiative of transitioning to Net Zero through renewable and sustainable energy technology and innovation, minimizing carbon emissions and improving energy efficiency.

Dalrada's heat pumps replaces traditional combustion boilers and can eliminate carbon emissions at a local level when the system is scaled accordingly and when "cleaner" electricity sources are used.



BY THE NUMBERS

- Up to **7 times** more efficient than traditional boilers and chiller systems
- **1 kW (3,412 BTU/hr)** of electrical energy produces **4.5 kW (15,354 BTU/hr)** of heating and extracts **2.5 kW (8,530 BTU/hr)** of cooling energy from the waste heat source
- Hot water supply range: **+50°C – +85°C (+122°F – +185°F)**
  Cold water supply range: **0°C – +15°C (32°F – +59°F)**

Advanced Heat Pump Technology

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DCT One Series

Dalrada Climate Technology is a wholly-owned subsidiary of Dalrada Technology Group, Inc.

DCT ONE SERIES TECHNICAL SPECIFICATIONS

Unit Name	Unit Type	Net Cooling Capacity (ton)	Net Heating Capacity (MBH)	Power Supply Volts-Ph-Hz	Refrigerant Type
DCT-1	M2002	29	511	480-3-60	R744

Cooling Circuit			Heating Circuit			CO_2 Circuit	
	Min	Max		Min	Max		
Return Temp (°F)	32	72	Return Temp (°F)	40	100	Mass of Gas (kg)	16-22
Flow Temp (°F)	32	50	Flow Temp (°F)	109	185	Mass Flow Rate (kg/s)	2252
Typical ΔTemp (°F)	10-18		Typical ΔTemp (°F)	80-110		Max discharge Temp (°F)	284
Design Flow (gpm)	26	63	Design Flow (gpm)	2	34	Max Op. Pressure (psi)	1450
Supply Press. (psi)	21	72	Supply Press. (psi)	14	72		
Fluid	Water/Glycol		Fluid	Water			

Oil Circuit	
Type	PAG 68
Volume (US Gallon)	2

Electrical Data	
Nominal Absorb Power (kW)	46
Max Apparent Power (kVA)	51
Rated Current (A)	60
Short Circuit Current Rating (kA)	10

Physical Data	
H (in)	79 ”
D (in)	99 ”
W (in)	40 ”
Weight (lbs)	3285
IP Rating	54

Connection	Description	Standard	Type	Sizes
N1	Hot Water Flow	ANSI B16.5	Class 300	1”
N2	Hot Water Return	ANSI B16.5	Class 300	1”
N3	Cold Water Return	ANSI B16.5	Class 300	1,1/2”
N4	Cold Water Flow	ANSI B16.5	Class 300	1,1/2”

DCT ONE SERIES PERFORMANCE DATA

Hot Water Inlet: Outlet(ºF)	Cold Water Inlet: Outlet(ºF)*	Specifications	Hot Water Circuit	Cold Water Circuit
68/140	54/45	Thermal power (Btu/hr)	440,170	307,090
		Combined COP	5.78	
		Flow rate (GPM)	12.4	64.4
		Absorbed power (kW)	37.87	
68/140	63/54	Thermal power (Btu/hr)	474,290	337,800
		Combined COP	6.18	
		Flow rate (GPM)	10.4	64.1
		Absorbed power (kW)	38.4	
68/158	54/45	Thermal power (Btu/hr)	433,340	303,680
		Combined COP	5.17	
		Flow rate (GPM)	9.1	64
		Absorbed power (kW)	42.04	

***All tests performed with the absence of glycol. The data contained in this informational brochure may be subject to updates or modifications based upon any product improvements or revisions.**