

Heat recovery by Danfoss

ENGINEERING
TOMORROW



Contact Data

Company Name: Orbital Farm
Country: NL
Contact Person: Bryson
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Technical input

User of Excess heat is: External use
Type of heat recovery: HEX (separation) and HP (boost)
Agreed Heat sales price: Data center cooling (fluid)

Excess heat available capacity: 10 MW
Excess temp. supply side: 45 °C
Excess temp. return side: 33 °C

Heat demanded by user: 10 MW
Supply temp. from HP: 45 °C
Return temp. from consumer: 35 °C

Availability and demand match: See diagram Energy & Emission

Current type of heating: Gas Boiler
Cost of current type of heating: 0.08 EUR/kWh
Cost of electricity: 0.08 EUR/kWh
Agreed Heat sales price: 0.01 EUR/kWh

Disclaimer

These are calculated values for guideline purposes and as such is not guarantee. Danfoss A/S cannot be held responsible for the stated energy- or emissions saving, they are intended only for indicative purpose, before an actual project is defined.

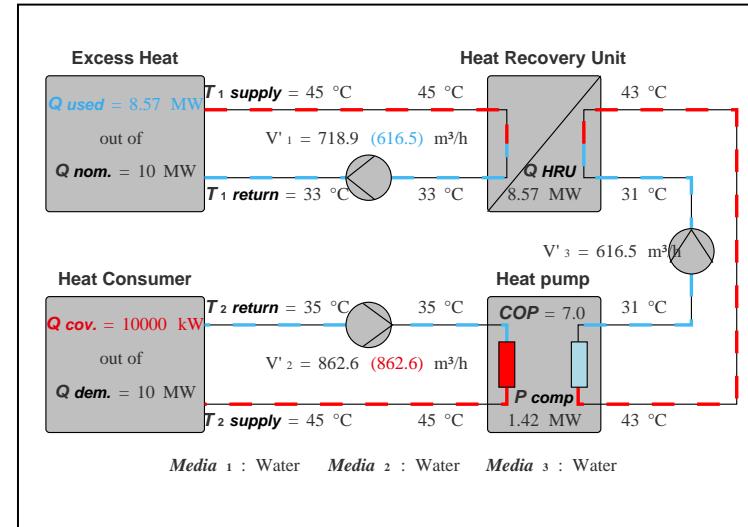
Assumptions and methodology

A simple numerical method is used, which doesn't take into account transient behaviour. Pump power calculations are based on affinity laws and typical efficiencies on pumps & motors. Heat pump performance is based on empirical knowledge from applications with medium density refrigerants and using centrifugal compressors and shell & tube evaporators. Where separation heat exchangers are used, we have assumed a 2K approach temperature. CO2 emission factor for gas, oil and electric energy is based on 2021 EIA data. For gas and oil boilers we have assumed a total efficiency of 90% based on h_i [kJ/kg without condensation]. Heatloss in distribution lines are not included in calculation. Service cost estimated as a fixed percentage of CAPEX.

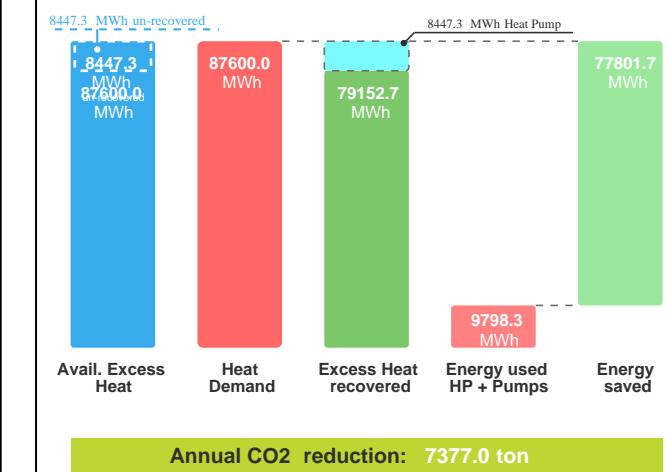
Other

SW Build: 1.1.0 Release 2025
Date of report: Tue Dec 16 2025

System Design Conditions



Annual Energy and Emission



Financial: Supplier's Perspective

CAPEX, Initial [k€]	OPEX, Annually [k€]	TCO, Cumulative [k€]	Simple payback estimate excl. depreciation [Years]
- 2033.03 Heat recovery Unit (incl. pumps)	- 18.06 Electricity for pumps	Year 1 - 4049.85	
- 2771.08 Hydronics cost estimate	- 19.2 Service cost Heat Recovery Unit	Year 2 - 3295.58	
- 4804.11 Total CAPEX	+ 791.53 Recovered energy Revenue	Year 3 - 2541.31	
	+ 754.27 Annual balance	Year 4 - 1787.04	
		Year 5 - 1032.77	
		Year 6 - 278.51	
		Year 7 + 475.76	
		Year 8 + 1230.03	
		Year 9 + 1984.30	
		Year 10 + 2738.56	

6.4

Financial: Consumer's Perspective

CAPEX, Initial [k€]	OPEX, Annually [k€]	TCO, Cumulative [k€]	Simple payback estimate excl. depreciation [Years]
- 3883.65 Heat Pump (incl. pumps)	- 90.02 Electricity for pumps	Year 1 - 4498.89	
- 6133.65 Hydronics cost estimate	- 675.78 Electricity for Heat pump	Year 2 + 1019.52	
- 10017.3 Total CAPEX	- 48 Service cost Heat Pump	Year 3 + 6537.94	
	+ 6332.22 Operating cost Savings	Year 4 + 12056.35	
	+ 5518.41 Annual balance	Year 5 + 17574.76	
		Year 6 + 23093.17	
		Year 7 + 28611.59	
		Year 8 + 34130.00	
		Year 9 + 39648.41	
		Year 10 + 45166.82	

1.8