

Heat recovery by Danfoss

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)
Agreed Heat sales price: Data center cooling (fluid)

Excess heat available capacity: 10 MW
Excess temp. supply side: 60 °C
Excess temp. return side: 48 °C

Heat demanded by user: 10 MW
Supply temp. from HP: 58 °C
Return temp. from consumer: 46 °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.

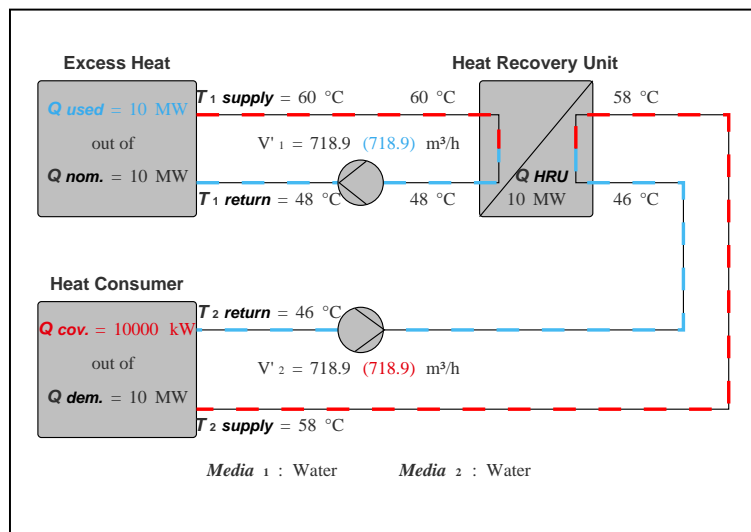
Assumptions and methodology

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: Thu Dec 18 2025

System Design Conditions



Financial: Supplier's Perspective

CAPEX, Initial [k€]

- 2051.15 Heat recovery Unit (incl. pumps)
- 1025.57 Hydronics cost estimate
- 3076.72 Total CAPEX

OPEX, Annually [k€]

- 19.72 Electricity for pumps
- 19.2 Service cost Heat Recovery Unit
+ 876 Recovered energy Revenue
+ 837.08 Annual balance

TCO, Cumulative [k€]

Year 1 - 2239.64
Year 2 - 1402.56
Year 3 - 565.48
Year 4 + 271.60
Year 5 + 1108.68
Year 6 + 1945.76
Year 7 + 2782.84
Year 8 + 3619.92
Year 9 + 4457.00
Year 10 + 5294.08

Simple payback estimate excl. depreciation [Years]

3.7

Financial: Consumer's Perspective

CAPEX, Initial [k€]

- 1025.57 Hydronics cost estimate
- 1025.57 Total CAPEX

OPEX, Annually [k€]

- 59.15 Electricity for pumps
+ 7027.2 Operating cost Savings
+ 6968.05 Annual balance

TCO, Cumulative [k€]

Year 1 + 5942.48
Year 2 + 12910.52
Year 3 + 19878.57
Year 4 + 26846.62
Year 5 + 33814.66
Year 6 + 40782.71
Year 7 + 47750.76
Year 8 + 54718.80
Year 9 + 61686.85
Year 10 + 68654.90

Simple payback estimate excl. depreciation [Years]

0.1

Annual Energy and Emission

ENGINEERING
TOMORROW

