

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: 30 °C
 Excess temp. return side: 18 °C

Heat demanded by user: 10 MW
 Supply temp. from HP: 91 °C
 Return temp. from consumer: 32 °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.

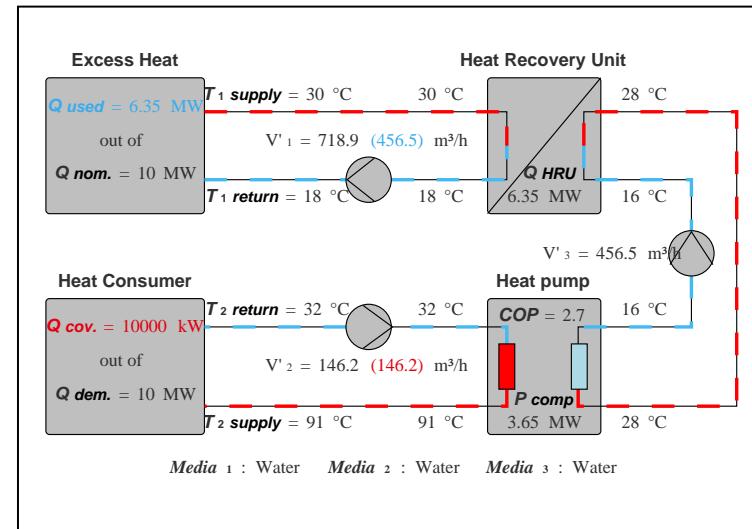
Assumptions and methodology

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 hi [kJ/kg without condensation]. Heatloss in distribution lines are not included in calculation. Service cost estimated as a fixed percentage of CAPEX.

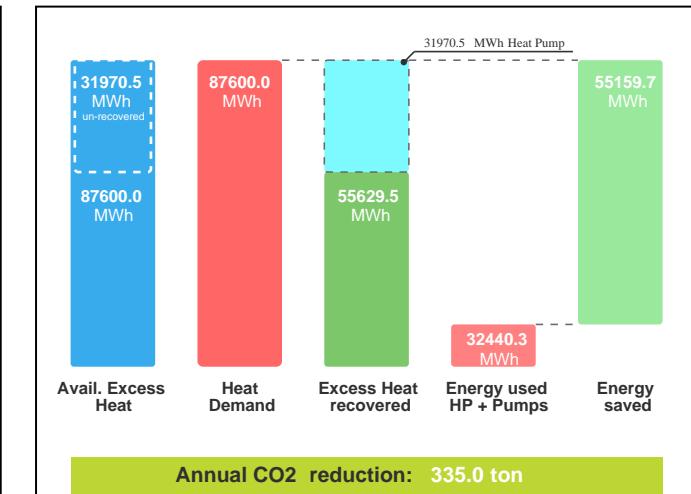
Other

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] |
|--|--|----------------------|--|
| - 1428.83 Heat recovery Unit (incl. pumps) | - 12.69 Electricity for pumps | Year 1 - 2851.97 | |
| - 1947.54 Hydronics cost estimate | - 19.2 Service cost Heat Recovery Unit | Year 2 - 2327.57 | |
| - 3376.38 Total CAPEX | + 556.29 Recovered energy Revenue | Year 3 - 1803.16 | |
| | + 524.4 Annual balance | Year 4 - 1278.76 | |
| | | Year 5 - 754.36 | |
| | | Year 6 - 229.95 | |
| | | Year 7 + 294.45 | |
| | | Year 8 + 818.85 | |
| | | Year 9 + 1343.26 | |
| | | Year 10 + 1867.66 | |

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) | - 24.89 Electricity for pumps | Year 1 - 8197.47 | |
| - 6133.65 Hydronics cost estimate | - 2557.64 Electricity for Heat pump | Year 2 - 6377.64 | |
| - 10017.3 Total CAPEX | - 48 Service cost Heat Pump | Year 3 - 4557.82 | |
| | + 4450.36 Operating cost Savings | Year 4 - 2737.99 | |
| | + 1819.83 Annual balance | Year 5 - 918.16 | |
| | | Year 6 + 901.67 | |
| | | Year 7 + 2721.50 | |
| | | Year 8 + 4541.33 | |
| | | Year 9 + 6361.15 | |
| | | Year 10 + 8180.98 | |

5.5