Scandic Flesland Airport

Performance study and life-cycle analysis

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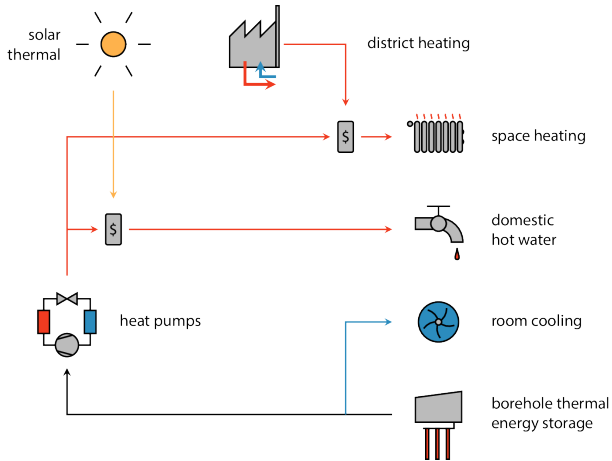
Scandic Flesland Airport

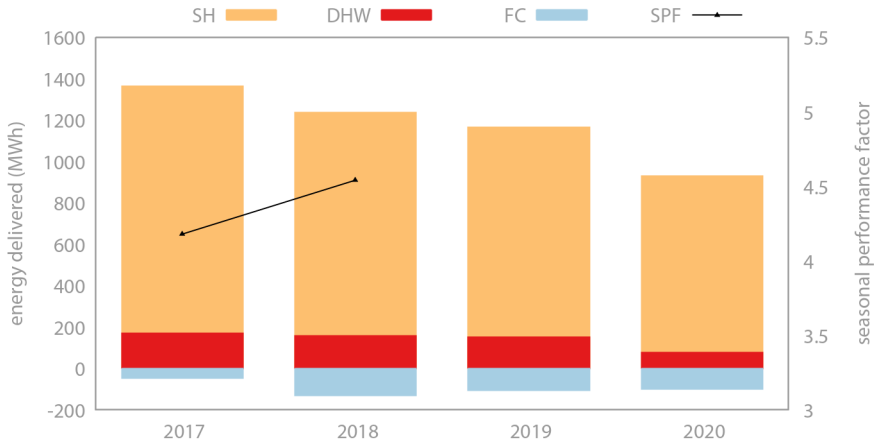
- Conference hotel at Flesland
- Opened in 2017
- Total floorspace of 23,650 m² distributed over 6 floors
- Two conference halls with space for 900 and 400 persons
- 25 meeting rooms and 300 guest rooms

Performance study

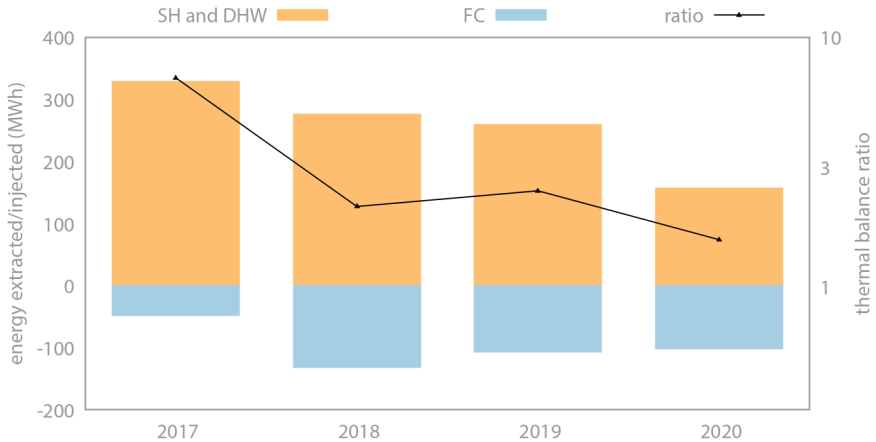
Energy system



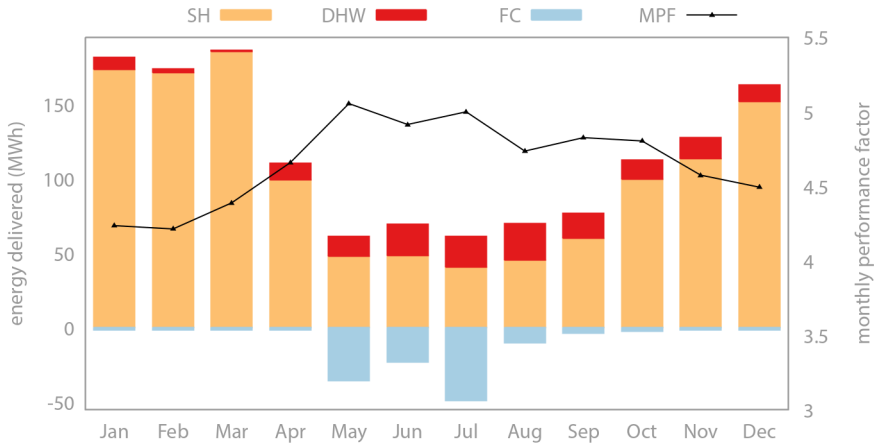
Energy consumption



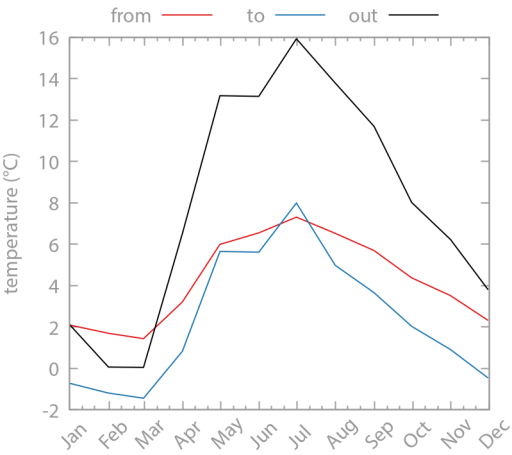
Thermal balance

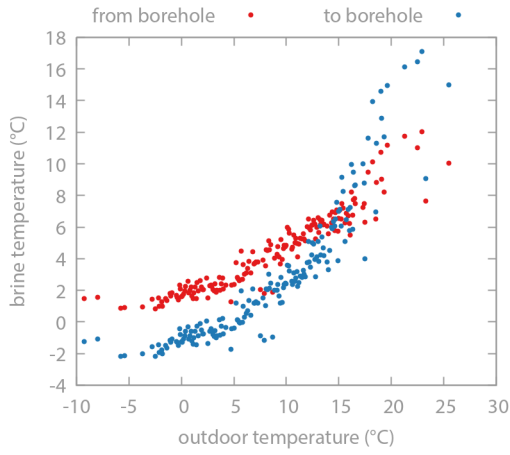


Monthly energy consumption 2018

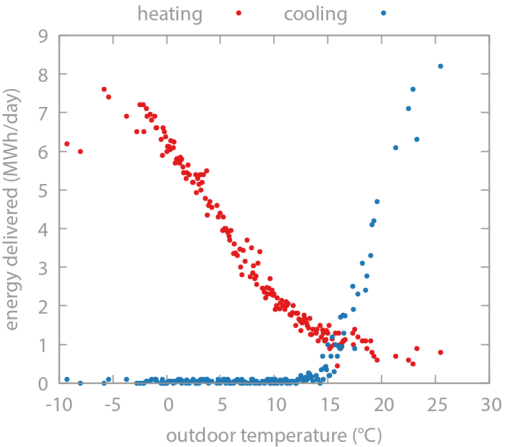


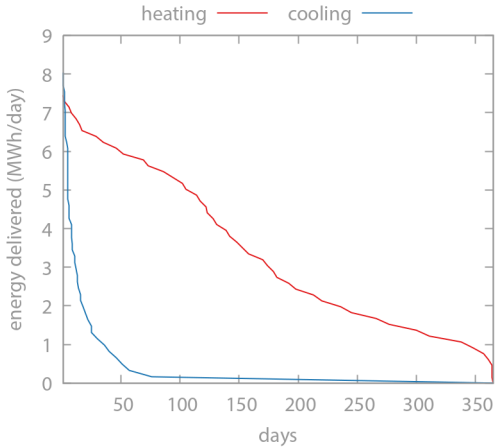
Borehole temperatures 2018





Energy signature and duration 2018

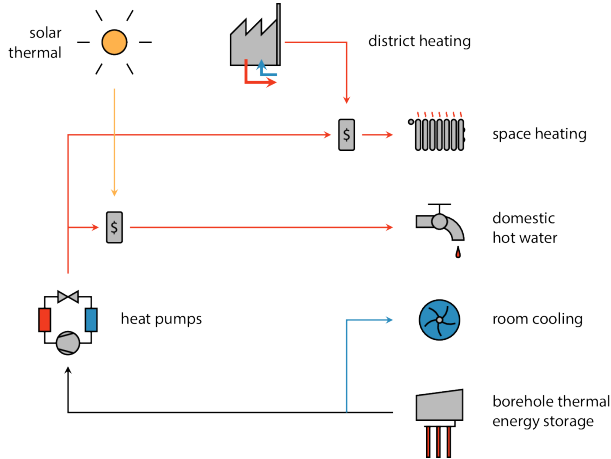




Life-cycle costs

Alternative 1

- Existing system



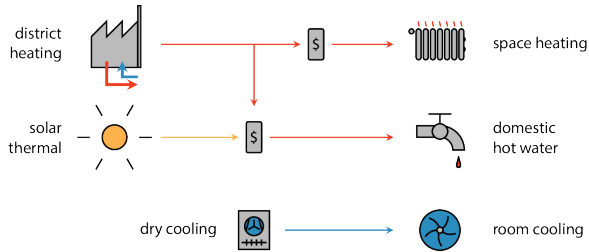
Alternative 2

Remove

- BTES
- GSHP
- Adiabatic cooler

Replace with

- District heating
- Dry coolers



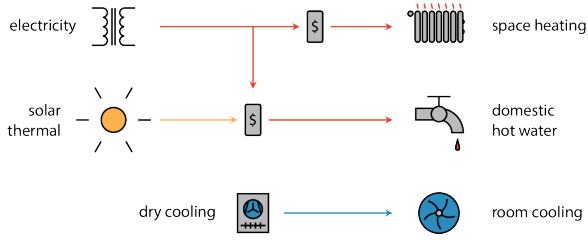
Alternative 3

Remove

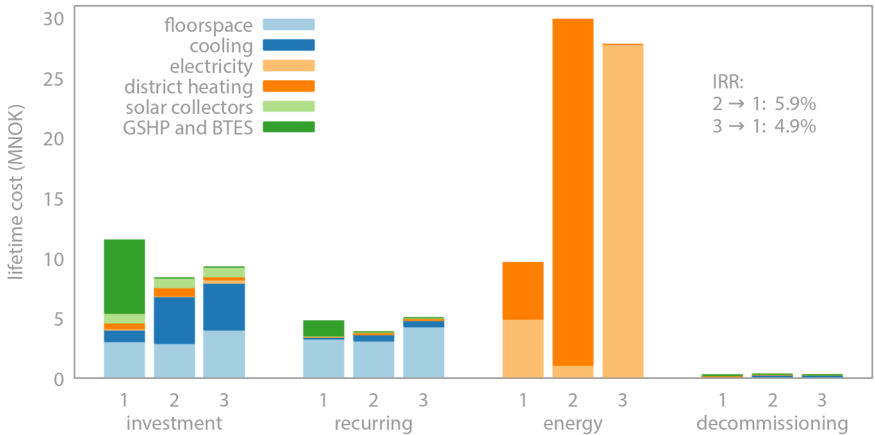
- BTES
- GSHP
- Adiabatic cooler
- District heating

Replace with

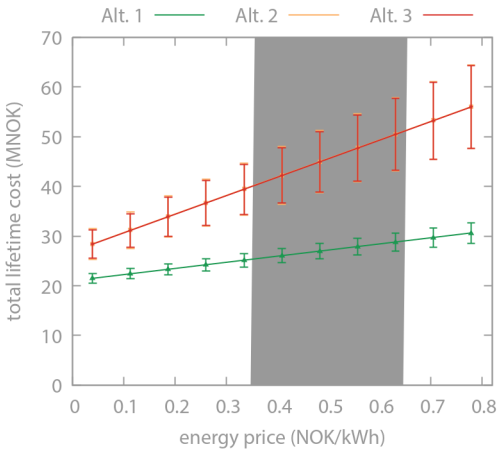
- Electric heating
- Dry coolers

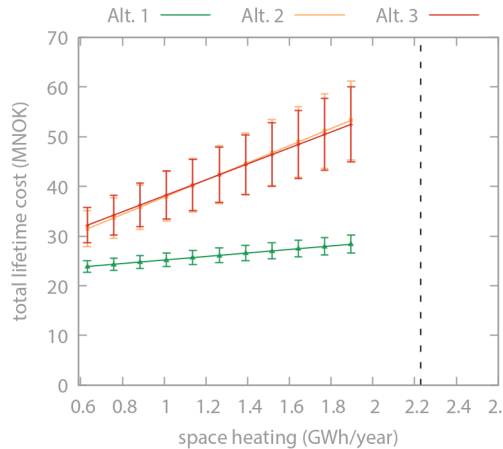


Life-cycle costs



Sensitivity





Conclusions

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- Existing system operates at an SPF of 4.5
- It has more fail-safes than alternatives
- Life-cycle cost is considerably less due to energy extracted from ground
- Internal rate of return is 5–6% depending on alternative
- Solar thermal collectors operate at a loss
- Results hold up for reduced energy costs
- Results are valid throughout much of Europe