Solar Butter

HEAT PUMP ENERGY REPORT

Case study house load + PV + heat pump

Created by admin | Account: alex

UK-Gloucester | 2025-01-01 to 2025-12-31 | UTC

Workspace

Site location

UK-Gloucester (51.89, -2.19) · UTC

Heat pump Valiant

Design flow temperature (°C)	43.0
Minimum flow temperature (°C)	30.0
Weather compensation control	True
SCOP	3.77
SCOP reference temperature (°C)	45.0
Max heat pump power at design (W)	5000.0
Hysteresis (°C)	0.25

Hot water tank

Hot water volume (L)	200.0
Hot water set temperature (°C)	55.0
Hot water hysteresis (°C)	10.0
Hot water charge delta T (°C)	7.0
Hot water litres per person per day	50.0
Cold water temperature (°C)	10.0
Hot water loss (W/°C)	2.0

House

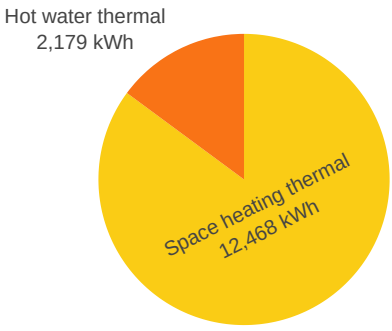
Heat loss at design temperature (W)	5000.0
Design outside air temperature (°C)	-3.0
Design inside temperature (°C)	20.5
Thermal mass (kJ/°C/m²)	160.0
Property floor area (m²)	100.0
Solar glazing g-factor	0.6
Number of occupants	2
Standby power contribution (W)	100.0

Summary

Space heating electricity	**2,862 kWh**
Hot water electricity	**772 kWh**
Total heat pump electricity	**3,633 kWh**
Space heating thermal output	**12,468 kWh**
Hot water thermal output	**2,179 kWh**
Total thermal output	**14,647 kWh**
Average COP (space heating)	**4.36**
Average COP (hot water)	**2.82**
Average COP (combined)	**4.03**

Thermal output mix

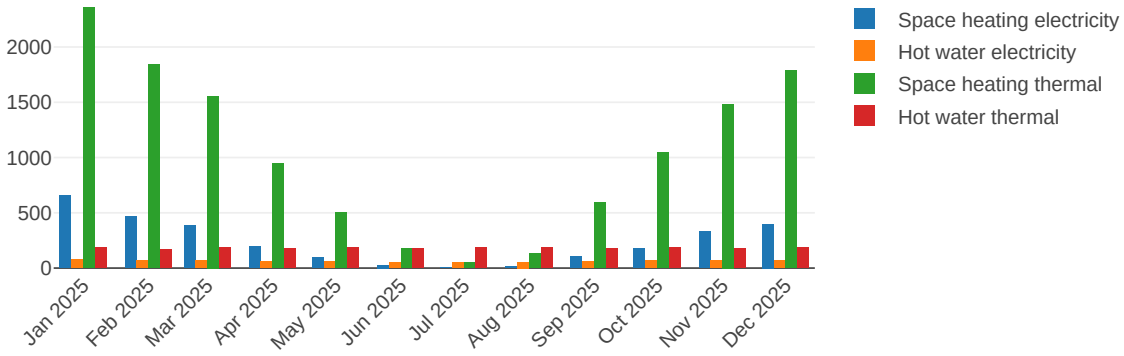
Share of thermal output between space heating and hot water.



Yearly summary

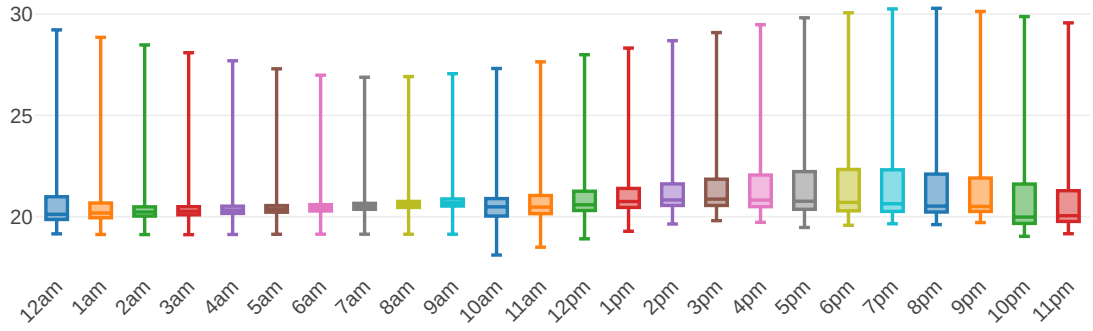
Monthly heat pump energy

Electricity and thermal output by month: space heating and hot water.



House temperature distribution by hour

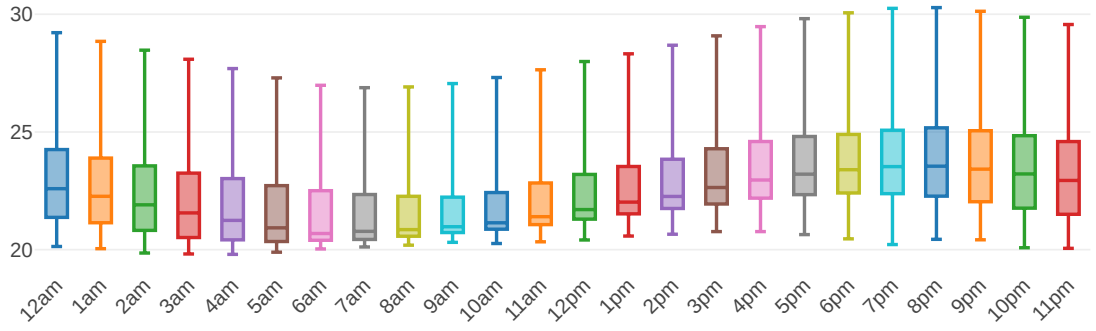
Spread of indoor air temperature by hour of day (box plot).



Summer monthly summary

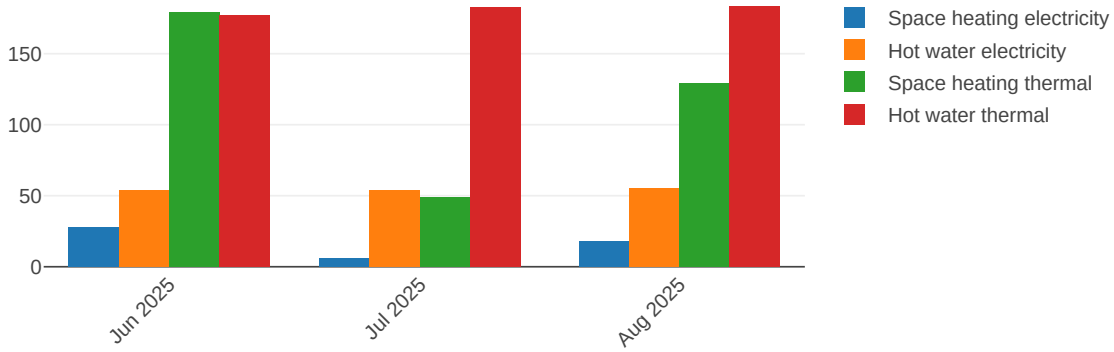
Summer house temperature by hour

June, July, August: indoor temperature distribution by hour.



Summer heat pump totals by month

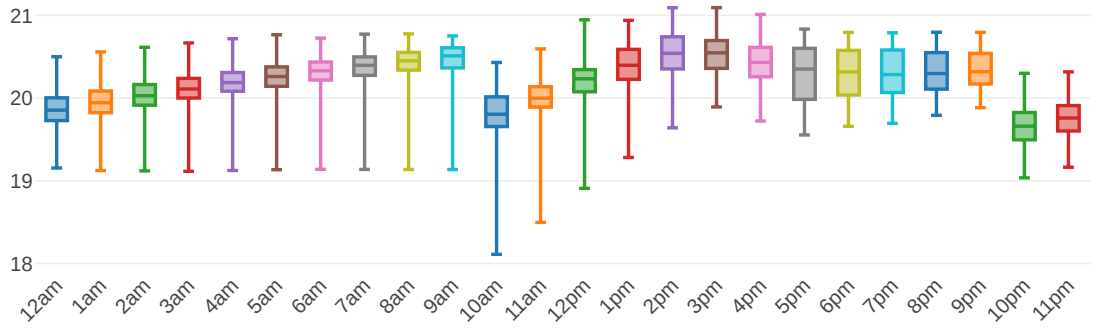
Electricity and thermal energy for June, July, August.



Winter monthly summary

Winter house temperature by hour

December, January, February: indoor temperature by hour.



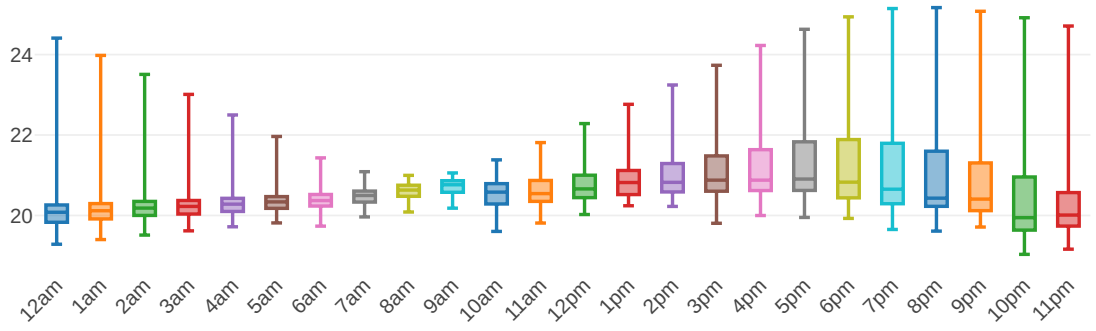
Winter heat pump totals by month

Electricity and thermal energy for December, January, February.

Spring monthly summary

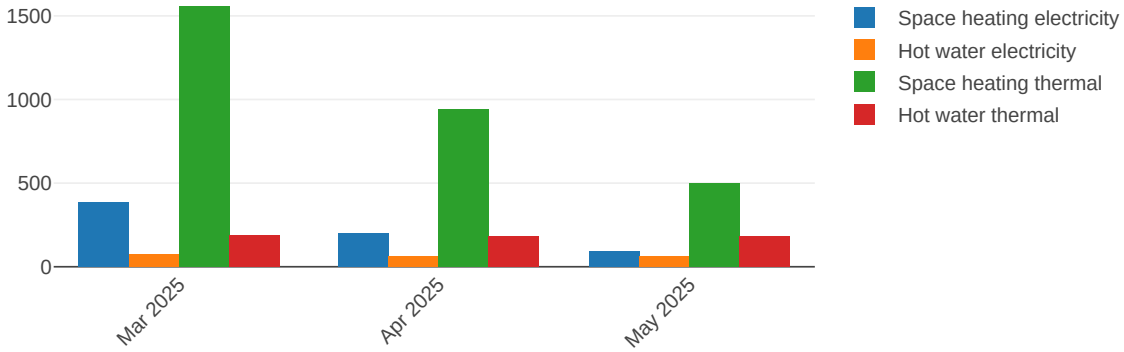
Spring house temperature by hour

March, April, May: indoor temperature by hour.



Spring heat pump totals by month

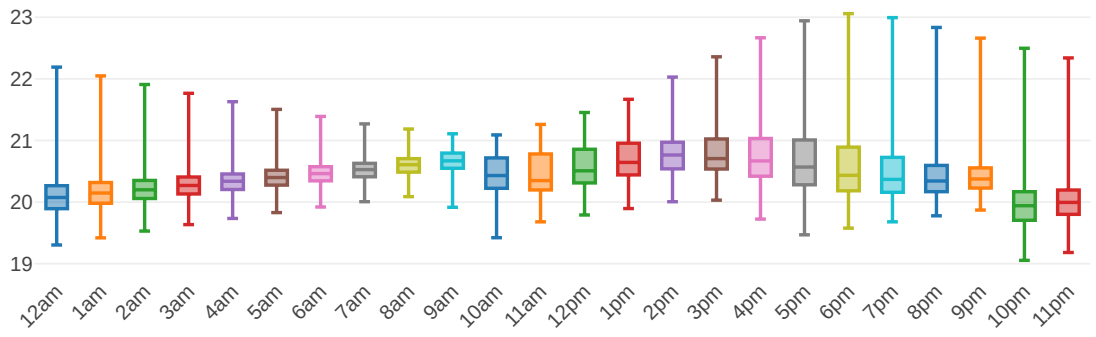
Electricity and thermal energy for March, April, May.



Autumn monthly summary

Autumn house temperature by hour

September, October, November: indoor temperature by hour.



Autumn heat pump totals by month

Electricity and thermal energy for September, October, November.