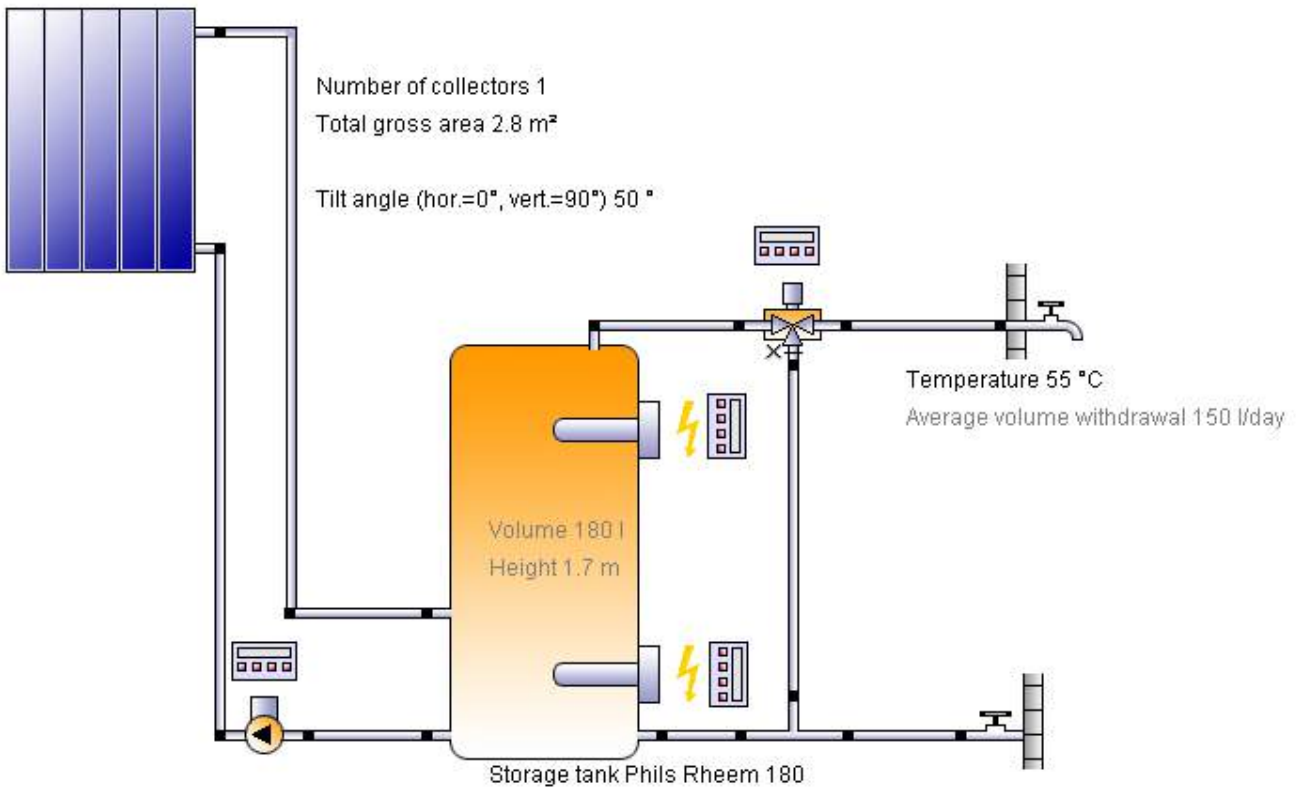


Professional Report

Phil & Lisa's Apartment

8ai: Direct forced circulation 180L relay bottom element



Location of the system

Napier South
Longitude: 176.903°
Latitude: -39.5°
Elevation: 24 m

Map section

"Current report item is not supported in this report format."

This report has been created by:

Philip Merson
1/174 Hyderabad Rd
Ahuriri 4110

Professional Report

Photograph of property



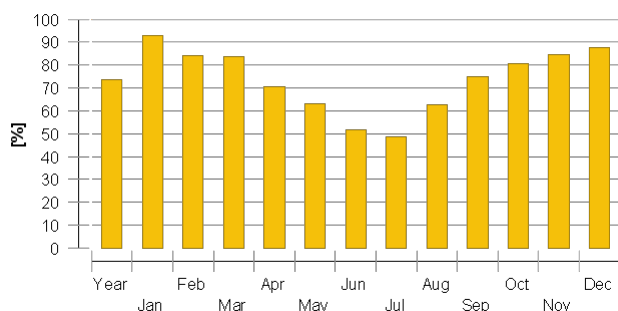
System overview (annual values)

| | |
|--|-----------------------|
| Total fuel and/or electrical energy consumption of the system [Etot] | 981.9 kWh |
| Total energy consumption [Quse] | 2,490 kWh |
| System performance (Quse / Etot) | 2.54 |
| Comfort demand | Energy demand covered |

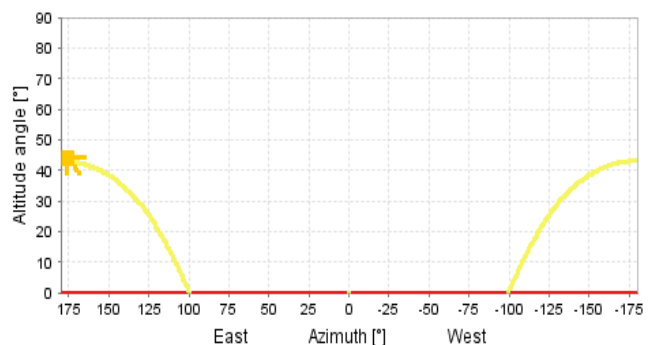
Overview solar thermal energy (annual values)

| | |
|---|--------------------------------|
| Collector area | 2.8 m ² |
| Solar fraction total | 73.6% |
| Total annual field yield | 2,351 kWh |
| Collector field yield relating to gross area | 839.7 kWh/m ² /Year |
| Collector field yield relating to aperture area | 918.4 kWh/m ² /Year |
| Max. energy savings | 2,474.8 kWh |
| Max. reduction in CO ₂ emissions | 1,327.5 kg |

Solar fraction: fraction of solar energy to system [SF_n]



Horizon line



Professional Report

Meteorological data-Overview

| | |
|---------------------------------|----------------------------|
| Average outdoor temperature | 14.5 °C |
| Global irradiation, annual sum | 1,493.9 kWh/m ² |
| Diffuse irradiation, annual sum | 613.5 kWh/m ² |

User-defined weather data

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------------------------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|-------|
| Global irradiation [Gh] | | | | | | | | | | | | |
| kWh/m ² | 197.2 | 150.9 | 136.1 | 92.5 | 68 | 53.3 | 58.5 | 85.3 | 116.7 | 159.3 | 180.8 | 196.3 |
| Outdoor temperature [Tamb24] | | | | | | | | | | | | |
| °C | 19.5 | 19.4 | 17.4 | 15 | 12.4 | 10.4 | 9.4 | 10.3 | 12.3 | 14.3 | 16.1 | 18.4 |
| Wind speed [Vwnd] | | | | | | | | | | | | |
| m/s | 2.9 | 2.8 | 2.6 | 2.2 | 2.4 | 2.5 | 2.4 | 2.8 | 2.9 | 3.3 | 3.4 | 3.3 |

Component overview (annual values)

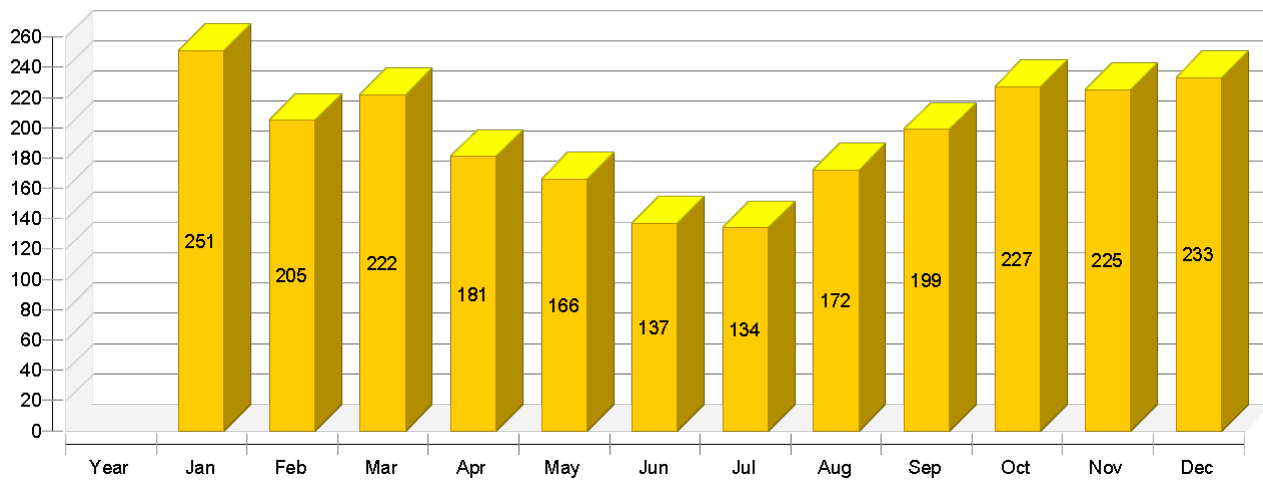
| | | |
|---|--------------------------|---------|
| Collector North America | CR-120-P | |
| Data Source | | SRCC |
| Number of collectors | | 1 |
| Number of arrays | | 1 |
| Total gross area | m ² | 2.8 |
| Total aperture area | m ² | 2.56 |
| Total absorber area | m ² | 2.56 |
| Tilt angle (hor.=0°, vert.=90°) | ° | 50 |
| Orientation (E=+90°, S=0°, W=-90°) | ° | 180 |
| Collector field yield [Qsol] | kWh | 2,351 |
| Irradiation onto collector area [Esol] | kWh | 6,286.4 |
| Collector efficiency [Qsol / Esol] | % | 37.4 |
| Direct irradiation after IAM | kWh | 4,253.5 |
| Hot water demand | Constant | |
| Volume withdrawal/daily consumption | l/d | 151 |
| Temperature setting | °C | 55 |
| Energy demand [Qdem] | kWh | 2,561.3 |
| Pump Solar loop pump | WILO Star-RS 20/6 | |
| Circuit pressure drop | bar | 0.005 |
| Flow rate | l/h | 102.4 |
| Fuel and electrical energy consumption [Epar] | kWh | 95.1 |

Professional Report

| Storage tank Potable water tank | Phils Rheem 180 | |
|---------------------------------|-----------------|----------------|
| Volume | l | 180 |
| Height | m | 1.7 |
| Material | | Enameled steel |
| Insulation | | Rigid PU foam |
| Thickness of insulation | mm | 50 |
| Heat loss | kWh | 369.4 |
| Connection losses | kWh | 159.1 |

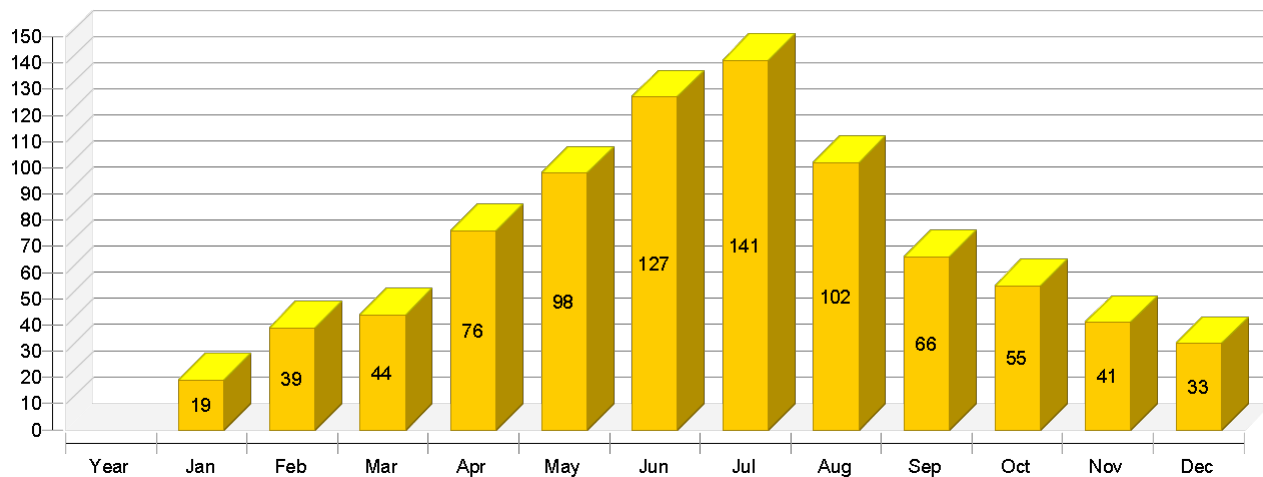
Solar thermal energy to the system [Qsol]

kWh



Heat generator energy to the system (solar thermal energy not included) [Qaux]

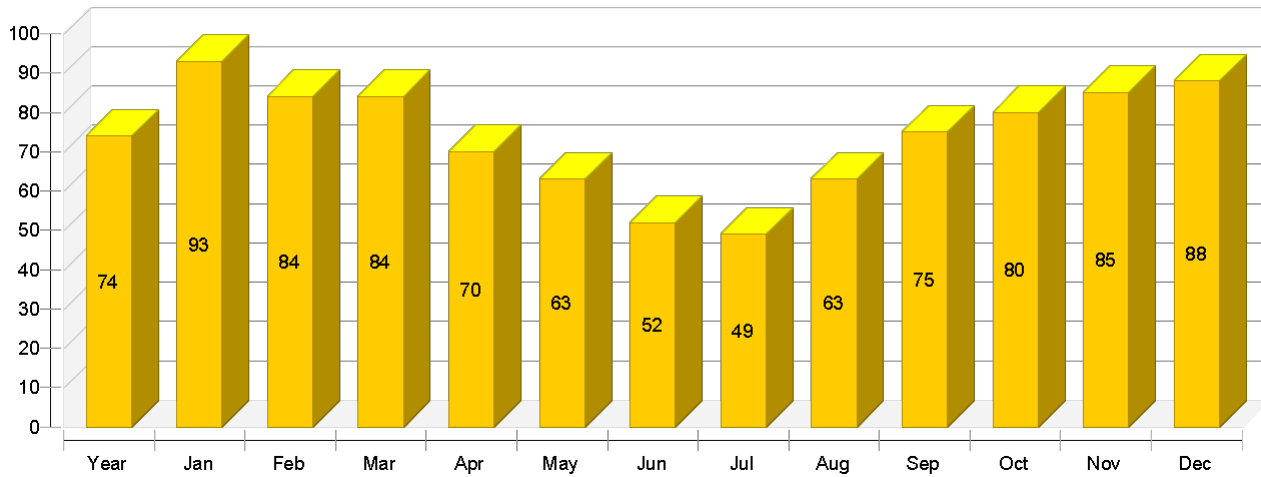
kWh



Professional Report

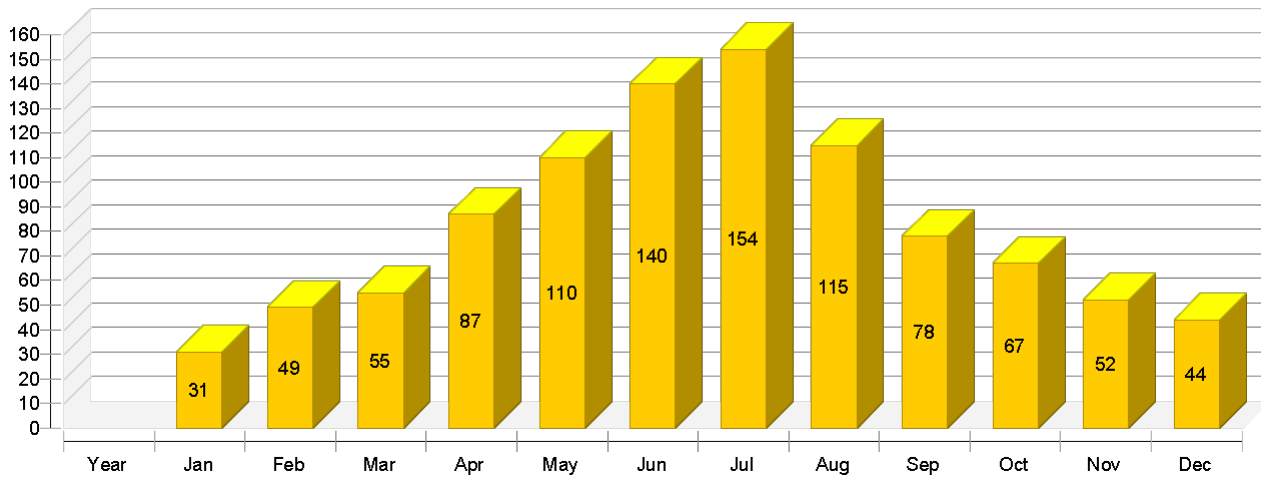
Solar fraction: fraction of solar energy to system [SFn]

%



Total fuel and/or electrical energy consumption of the system [Etot]

kWh



| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Solar thermal energy to the system [Qsol]

| | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| kWh | 2351 | 251 | 205 | 222 | 181 | 166 | 137 | 134 | 172 | 199 | 227 | 225 | 233 |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Heat generator energy to the system (solar thermal energy not included) [Qaux]

| | | | | | | | | | | | | | |
|-----|-----|----|----|----|----|----|-----|-----|-----|----|----|----|----|
| kWh | 843 | 19 | 39 | 44 | 76 | 98 | 127 | 141 | 102 | 66 | 55 | 41 | 33 |
|-----|-----|----|----|----|----|----|-----|-----|-----|----|----|----|----|

Heat generator fuel and electrical energy consumption [Eaux]

| | | | | | | | | | | | | | |
|-----|-----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|
| kWh | 887 | 20 | 41 | 46 | 80 | 103 | 134 | 148 | 108 | 70 | 58 | 43 | 35 |
|-----|-----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|

Solar fraction: fraction of solar energy to system [SFn]

| | | | | | | | | | | | | | |
|---|------|------|----|------|------|----|------|------|------|----|------|------|------|
| % | 73.6 | 92.8 | 84 | 83.6 | 70.4 | 63 | 51.8 | 48.6 | 62.7 | 75 | 80.4 | 84.7 | 87.6 |
|---|------|------|----|------|------|----|------|------|------|----|------|------|------|

Total fuel and/or electrical energy consumption of the system [Etot]

| | | | | | | | | | | | | | |
|-----|-----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|
| kWh | 982 | 31 | 49 | 55 | 87 | 110 | 140 | 154 | 115 | 78 | 67 | 52 | 44 |
|-----|-----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|

Irradiation onto collector area [Esol]

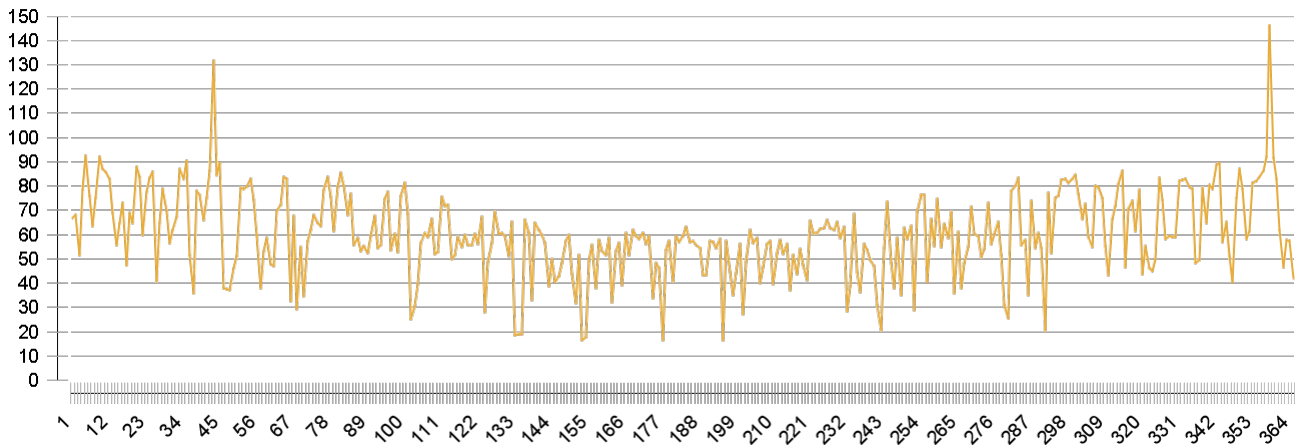
| | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| kWh | 6286 | 705 | 580 | 572 | 447 | 392 | 329 | 339 | 425 | 504 | 630 | 650 | 712 |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Professional Report

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Electrical energy consumption of pumps [Epar] | | | | | | | | | | | | |
| kWh | 95 | 10 | 8 | 9 | 7 | 7 | 6 | 6 | 7 | 8 | 9 | 9 |
| Heat loss to indoor room (including heat generator losses) [Qint] | | | | | | | | | | | | |
| kWh | 779 | 78 | 70 | 71 | 63 | 58 | 55 | 56 | 56 | 69 | 67 | 79 |
| Heat loss to surroundings (without collector losses) [Qext] | | | | | | | | | | | | |
| kWh | 64 | 8 | 6 | 6 | 4 | 4 | 3 | 3 | 4 | 5 | 7 | 8 |
| Total energy consumption [Quse] | | | | | | | | | | | | |
| kWh | 2490 | 195 | 177 | 201 | 202 | 216 | 217 | 228 | 228 | 216 | 217 | 198 |

Collector North America

Daily maximum temperature [°C]



Professional Report

Energy flow diagram

