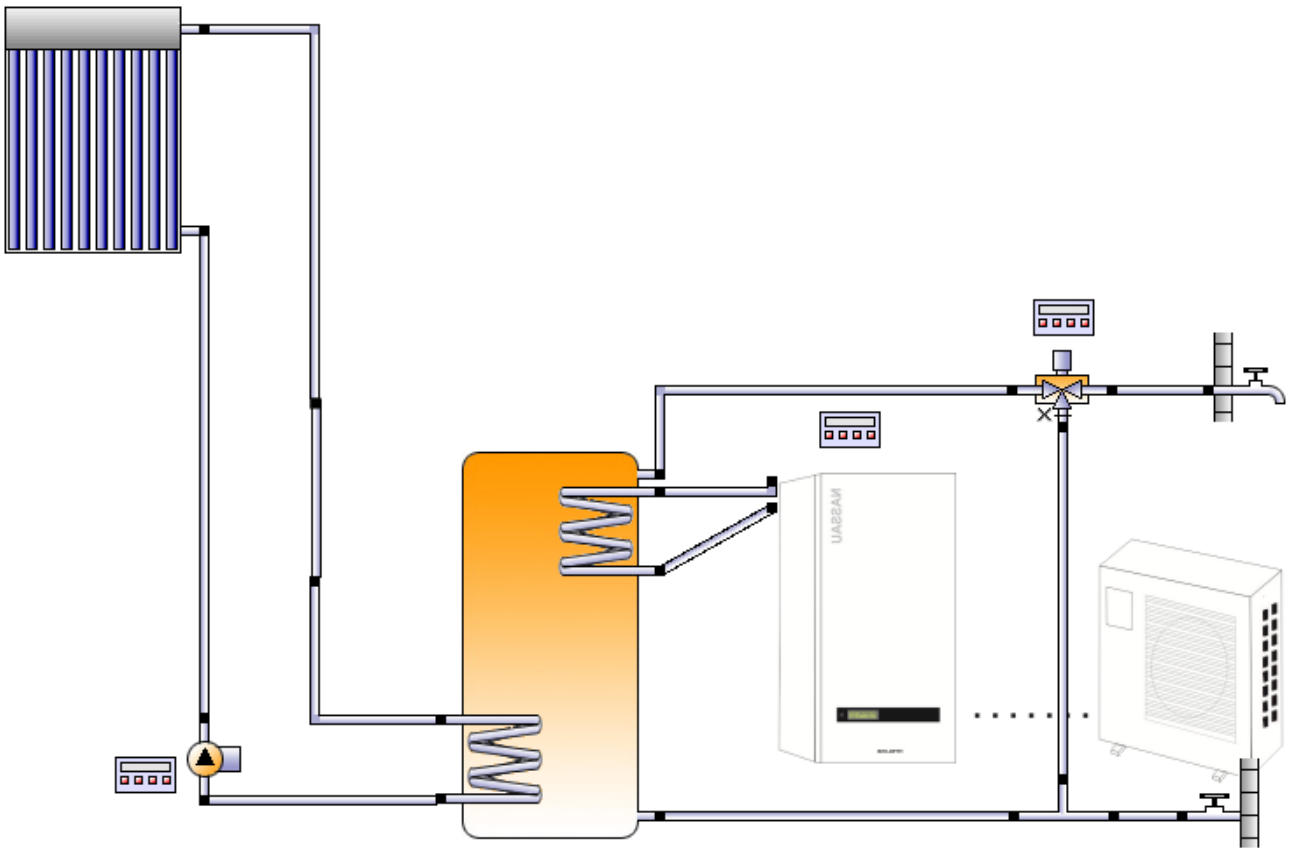


Professional Report

Project

Hot water 4 - 160 persons



Location of the system

Rapperswil SG
Longitude: 8.82°
Latitude: 47.23°
Elevation: 417 m

Map section

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

This report has been created by:

Vela Solaris AG

Professional Report

System overview (annual values)

Total fuel and/or electrical energy consumption of the system [Etot]	183.3 kWh
Total energy consumption [Quse]	3,047 kWh
System performance (Quse / Etot)	16.62
Comfort demand	Energy demand covered

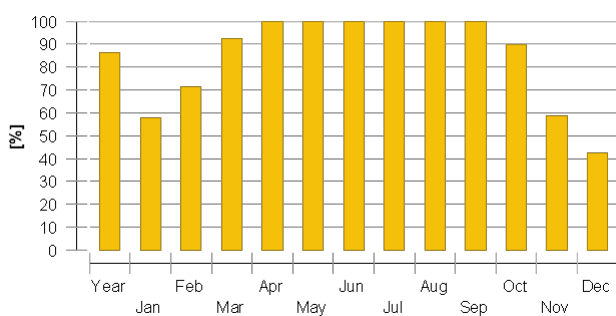
Overview solar thermal energy (annual values)

Collector area	8.5 m ²
Solar fraction total	86.3%
Total annual field yield	4,210.1 kWh
Collector field yield relating to gross area	494.1 kWh/m ² /Year
Collector field yield relating to aperture area	653.7 kWh/m ² /Year
Max. energy savings	4,210.1 kWh
Max. reduction in CO2 emissions	2,258.3 kg

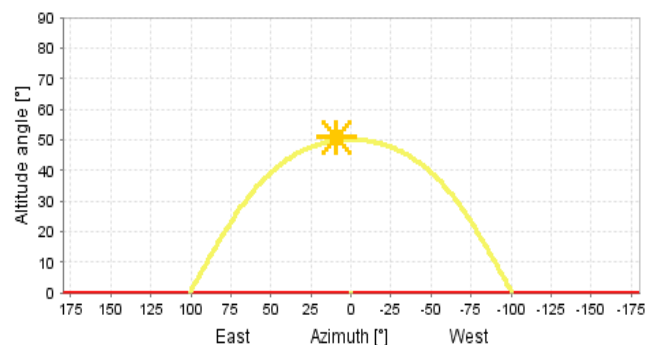
Overview heat pump (annual values)

Seasonal performance factor for air-to-water heat pump	3.9
Total electrical energy consumption when heating [Eaux]	171.9 kWh
Total energy savings	494.6 kWh
Total reduction in CO2 emissions	265.3 kg

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



Horizon line



Meteorological data-Overview

Average outdoor temperature	10.1 °C
Global irradiation, annual sum	1,103.5 kWh/m ²
Diffuse irradiation, annual sum	578 kWh/m ²

Professional Report

Component overview (annual values)

Collector Collector field	Solar Plus HP 30	
Data Source		TÜV
Number of collectors		2
Number of arrays		1
Total gross area	m ²	8.52
Total aperture area	m ²	6.44
Total absorber area	m ²	6.44
Tilt angle (hor.=0°, vert.=90°)	°	45
Orientation (E=+90°, S=0°, W=-90°)	°	0
Collector field yield [Qsol]	kWh	4,210.1
Irradiation onto collector area [Esol]	kWh	7,960.9
Collector efficiency [Qsol / Esol]	%	52.9
Direct irradiation after IAM	kWh	4,081.5
Heat pump 1	APSILONE NASSAU HYBRIDE 140 MONOPHASE	
Heating power at A2/W35	kW	14.62
Electrical power at A2/W35	kW	3.99
COP at A2/W35		3.7
DeltaT at A7/W35	K	10
Performance factor		3.88
Energy from/to the system [Qaux]	kWh	666.5
Fuel and electrical energy consumption [Eaux]	kWh	171.9
Energy savings solar thermal	kWh	4,210.1
CO2 savings solar thermal	kg	2,258.3
Energy savings heat pump	kWh	494.6
CO2 savings heat pump	kg	265.3
Hot water demand	Constant	
Volume withdrawal/daily consumption	l/d	202.1
Temperature setting	°C	45
Energy demand [Qdem]	kWh	2,994.6
Pump Solar pump	Eco, small	
Circuit pressure drop	bar	1.321
Flow rate	l/h	257.6
Fuel and electrical energy consumption [Epar]	kWh	11.4

Professional Report

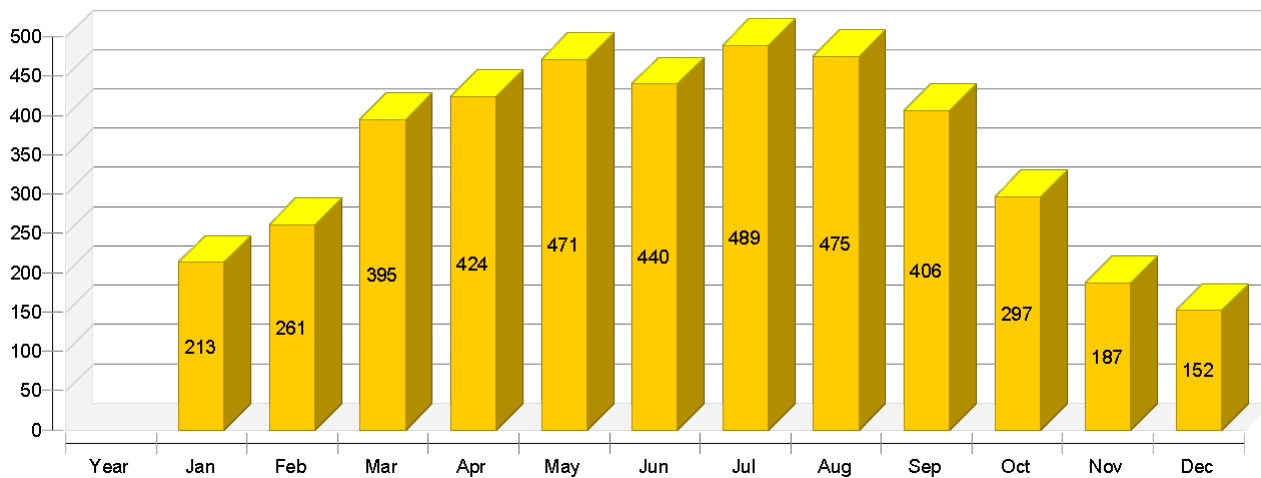
Storage tank Domestic hot water tank	Solar tank 1500, 2 he	
Volume	l	1,500
Height	m	2
Material		Stainless steel
Insulation		Rigid PU foam
Thickness of insulation	mm	80
Heat loss	kWh	797.4
Connection losses	kWh	465.2

Loop

Solar loop		
Fluid mixture		Propylene mixture
Fluid concentration	%	40
Fluid domains volume	l	40.4
Pressure on top of the circuit	bar	1

Solar thermal energy to the system [Qsol]

kWh

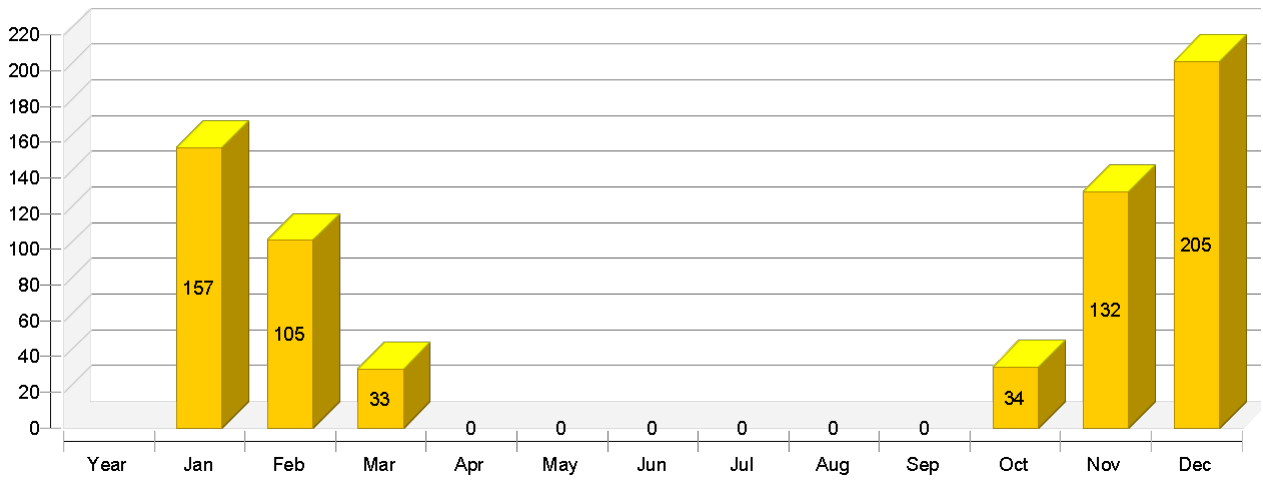


Professional Report

Demo Version

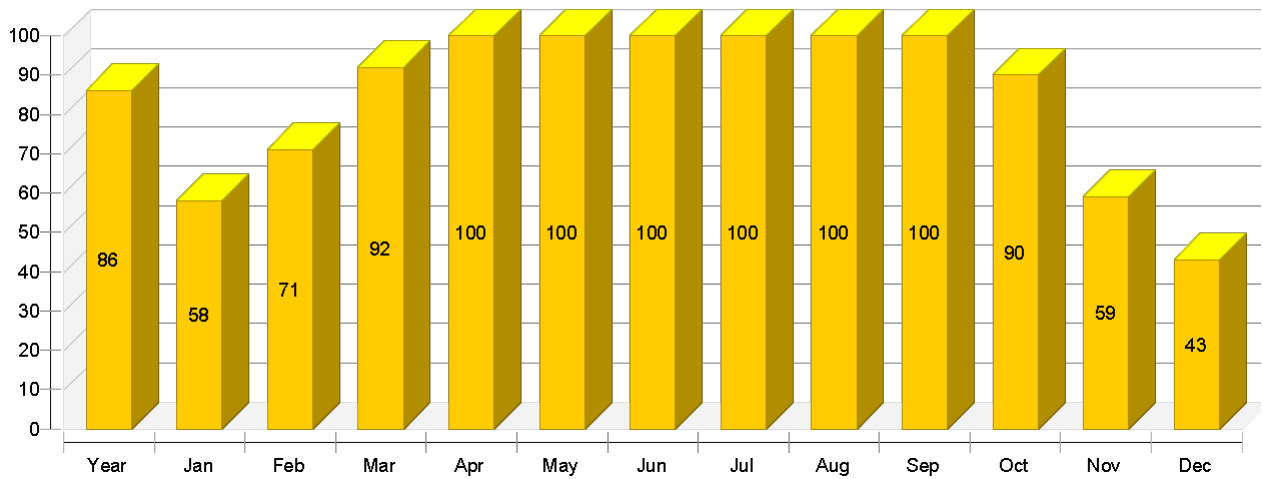
Heat generator energy to the system (solar thermal energy not included) [Qaux]

kWh



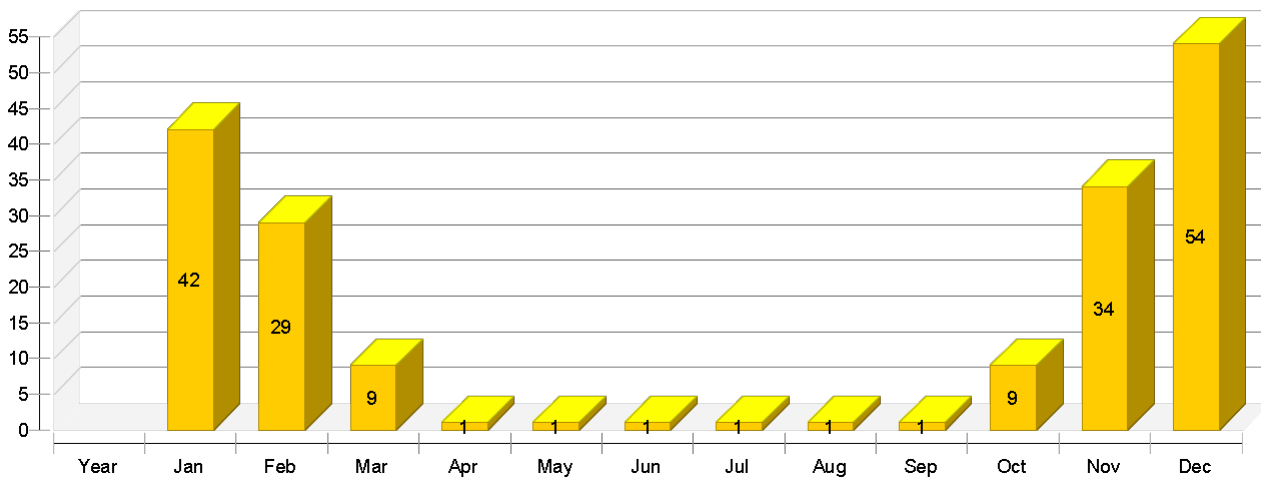
Solar fraction: fraction of solar energy to system [SFn]

%



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

kWh

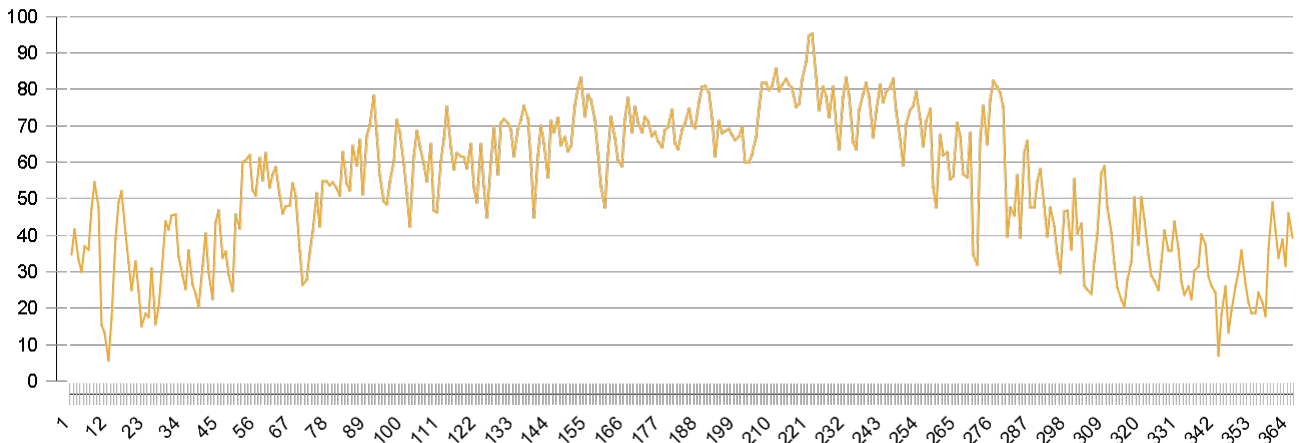


Professional Report

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Solar thermal energy to the system [Qsol]													
kWh	4210	213	261	395	424	471	440	489	475	406	297	187	152
Heat generator energy to the system (solar thermal energy not included) [Qaux]													
kWh	667	157	105	33	0	0	0	0	0	34	132	205	
Heat generator fuel and electrical energy consumption [Eaux]													
kWh	172	41	28	8	0	0	0	0	0	8	33	54	
Solar fraction: fraction of solar energy to system [SFn]													
%	86.3	57.6	71.3	92.2	100	100	100	100	100	89.7	58.6	42.5	
Total fuel and/or electrical energy consumption of the system [Etot]													
kWh	183	42	29	9	1	1	1	1	1	9	34	54	
Irradiation onto collector area [Esol]													
kWh	7961	367	464	715	814	902	879	965	940	767	549	331	267
Electrical energy consumption of pumps [Epar]													
kWh	11	1	1	1	1	1	1	1	1	1	1	1	
Total energy consumption [Quse]													
kWh	3047	278	258	285	270	266	243	239	231	226	241	244	265
Heat loss to indoor room (including heat generator losses) [Qint]													
kWh	1840	82	92	131	166	188	206	227	255	192	142	85	73

Collector Collector field

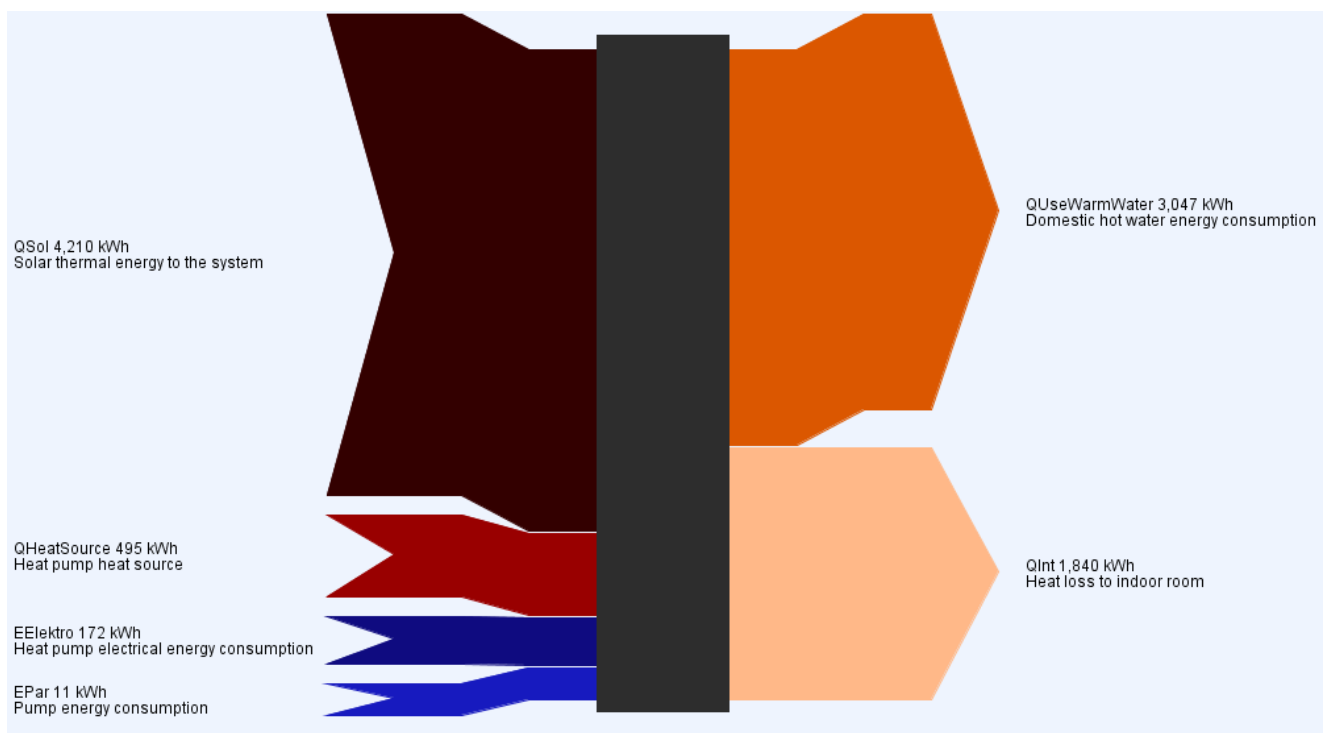
Daily maximum temperature [°C]



Demo Version

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Energy flow diagram (annual balance)



Demo Version