

Demo Version

Location of the system

Switzerland
Rapperswil (SG)
Longitude: 8.82°
Latitude: 47.23°
Elevation: 417 m

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]	828.6 kWh
Total energy consumption [Quse]	3,379.9 kWh
System performance (Quse / Etot)	4.08
Comfort demand	Energy demand covered

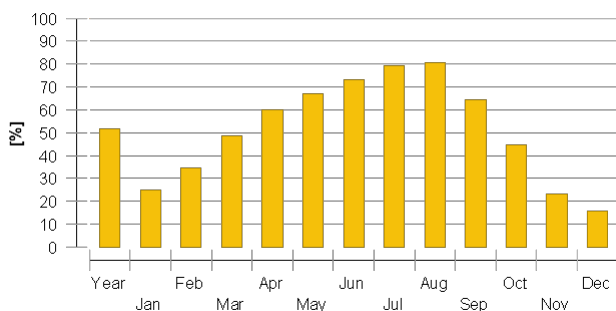
Overview solar thermal energy (annual values)

Collector area	5.2 m ²
Solar fraction total	51.5%
Solar fraction hot water [SFnHw]	0 %
Solar fraction building [SFnBd]	0 %
Total annual field yield	2,371 kWh
Collector field yield relating to gross area	455.8 kWh/m ² /Year
Collector field yield relating to aperture area	501.5 kWh/m ² /Year
Max. energy savings	2,371 kWh
Max. reduction in CO2 emissions	1,271.8 kg

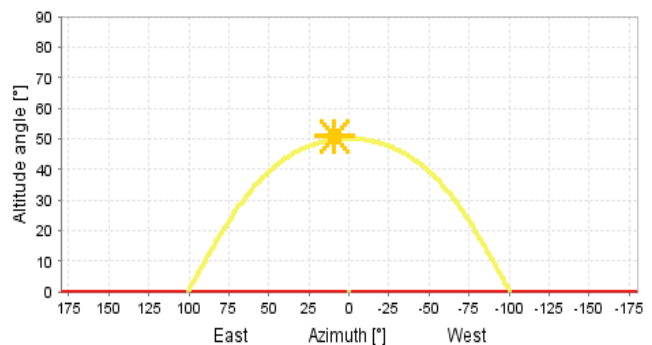
Overview heat pump (annual values)

Seasonal performance factor for air-to-water heat pump	2.8
Total electrical energy consumption when heating [Eaux]	786.6 kWh
Total energy savings	1,446.5 kWh
Total reduction in CO2 emissions	775.9 kg

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



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

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Component overview (annual values)

Collector	V26P	
Data Source		SPF
Number of collectors		2
Number of arrays		1
Total gross area	m ²	5.2
Total aperture area	m ²	4.728
Total absorber area	m ²	4.71
Tilt angle (hor.=0°, vert.=90°)	°	45
Orientation (E=+90°, S=0°, W=-90°)	°	0
Collector field yield [Qsol]	kWh	2,371
Irradiation onto collector area [Esol]	kWh	5,844.6
Collector efficiency [Qsol / Esol]	%	40.6
Direct irradiation after IAM	kWh	2,928.8
Heat pump	OLW9	
Heating power at A2/W35	kW	6.7
Electrical power at A2/W35	kW	1.9
COP at A2/W35		3.5
DeltaT at A7/W35	K	9.9
Performance factor		2.84
Energy from/to the system [Qaux]	kWh	2,233
Fuel and electrical energy consumption [Eaux]	kWh	786.6
Energy savings solar thermal	kWh	2,371
CO2 savings solar thermal	kg	1,271.8
Energy savings heat pump	kWh	1,446.5
CO2 savings heat pump	kg	775.9
Building	Single family house, low-energy building	
Heated/air-conditioned living area	m ²	1
Heating setpoint temperature	°C	5
Solar gain through windows	kWh	203.3
Total energy losses	kWh	956.5
Heating element	Floor heating	
Number of heating/cooling modules	-	1
Power per heating element under standard conditions	W	1,000
Nominal inlet temperature	°C	30
Nominal return temperature	°C	25
Net energy from/to heating/cooling modules	kWh	-0.6

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Hot water demand	Constant	
Volume withdrawal/daily consumption	l/d	202.1
Temperature setting	°C	50
Energy demand [Qdem]	kWh	3,421.2

Pump 1	Flow rate producer	
Circuit pressure drop	bar	0.014
Flow rate	l/h	70.9
Fuel and electrical energy consumption [Epar]	kWh	42

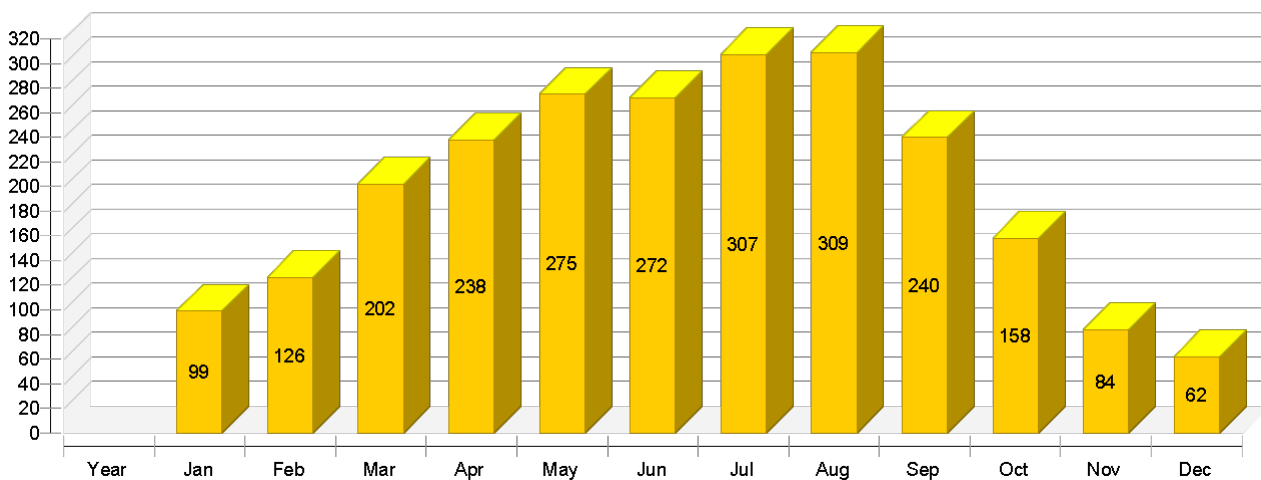
Storage tank	HybridCube 544/19/0 (HU mit el. Heizstab)	
Volume	l	544
Height	m	1.3
Material		Polypropylene
Insulation		Rigid PU foam
Thickness of insulation	mm	80
Heat loss	kWh	366.8
Connection losses	kWh	417.7

Loop

Solar loop		
Fluid mixture		Propylene mixture
Fluid concentration	%	33.3
Fluid domains volume	l	550.5
Pressure on top of the circuit	bar	4

Solar thermal energy to the system [Qsol]

kWh

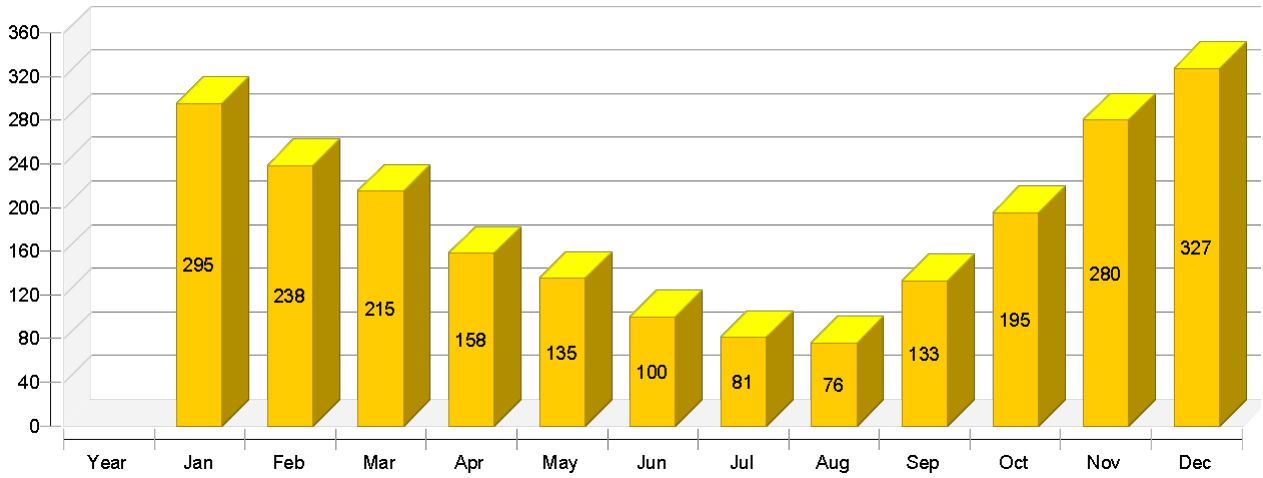


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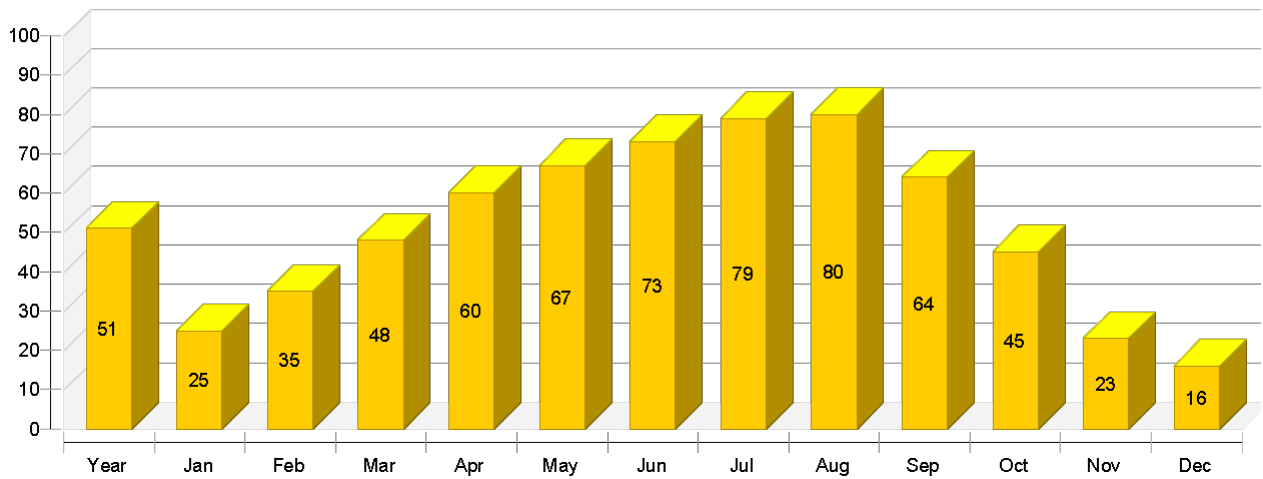
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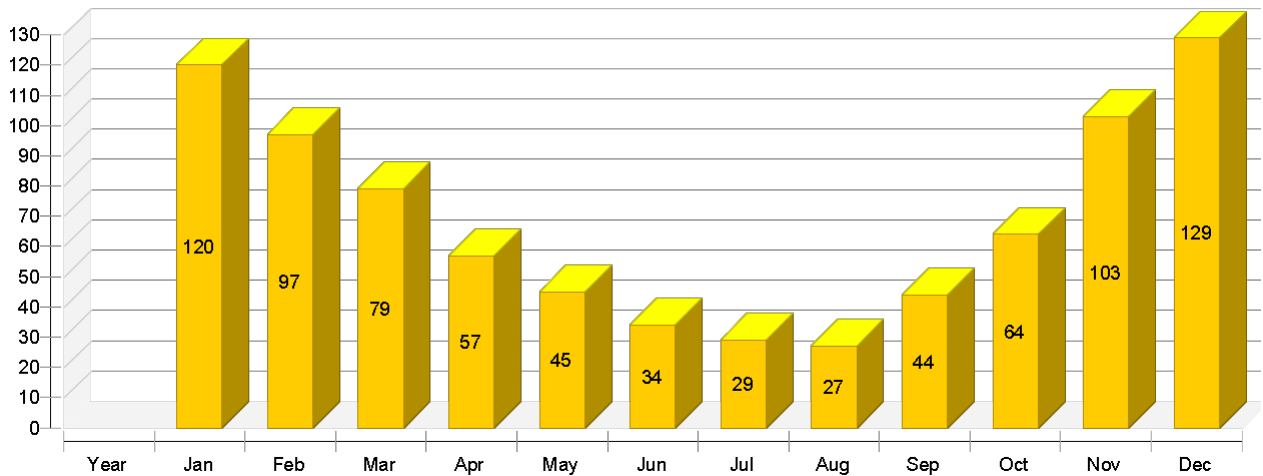
Heat generator energy to the system (solar thermal energy not included) [Qaux] kWh



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



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



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	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Solar thermal energy to the system [Qsol]													
kWh	2371	99	126	202	238	275	272	307	309	240	158	84	62
Heat generator energy to the system (solar thermal energy not included) [Qaux]													
kWh	2233	295	238	215	158	135	100	81	76	133	195	280	327
Heat generator fuel and electrical energy consumption [Eaux]													
kWh	787	118	95	75	53	41	29	23	22	40	61	102	128
Solar fraction: fraction of solar energy to system [SFn]													
%	51.5	25	34.6	48.5	60.1	67.1	73.2	79.1	80.3	64.2	44.7	23	15.9
Total fuel and/or electrical energy consumption of the system [Etot]													
kWh	829	120	97	79	57	45	34	29	27	44	64	103	129
Irradiation onto collector area [Esol]													
kWh	5845	269	341	525	598	662	645	708	690	563	403	243	196
Electrical energy consumption of pumps [Epar]													
kWh	42	2	2	4	4	5	5	6	5	4	3	1	1
Total energy consumption [Quse]													
kWh	3380	305	281	312	296	294	272	269	263	255	270	271	293
Heat loss to indoor room (including heat generator losses) [Qint]													
kWh	1265	95	85	101	109	115	116	123	125	111	104	90	90

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Collector Daily maximum temperature [°C]

