

Location of the system

Map section

Meota

Longitude: -108.413°

Latitude: 53.041°

Elevation: 1,736 ft

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

This report has been created by:

Elliott William

303 47 Str.E

S7K 5H2 Saskatoon

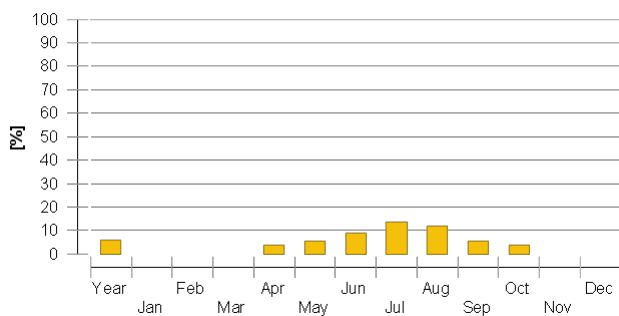
System overview (annual values)

Total fuel and/or electrical energy consumption of the system [Etot]	266,349.6 kBtu
Total energy consumption [Quse]	246,183.8 kBtu
System performance (Quse / Etot)	0.92
Comfort demand	Energy demand covered

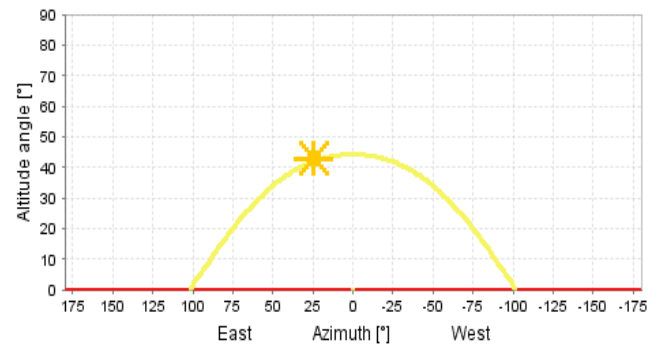
Overview solar thermal energy (annual values)

Collector area	115 ft ²
Solar fraction total	6.1%
Total annual field yield	15,163 kBtu
Collector field yield relating to gross area	132 kBtu/ft ² /Year
Collector field yield relating to aperture area	152 kBtu/ft ² /Year
Max. fuel savings	16,609 ft ³ : [Natural gas H]
Max. energy savings	16,850.2 kBtu
Max. reduction in CO2 emissions	2,521.3 pound

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



Horizon line



Meteorological data-Overview

Outdoor temperature 24h	36.3 °F
Annual global irradiance	415.4 kBtu/ft ²
Annual diffuse irradiance	154.6 kBtu/ft ²

Financial analysis - Solar thermal

Purchase costs	2,000 CAD
Life span	25 years

Financial analysis - Solar thermal

Proportional incentives	0 %
Incentives per area	0 CAD
Fixed incentives	0 CAD
Inflation	2 %
Interest	4 %
Increase of energy prices	5 %
Natural gas H	0.031 CAD/ft ³ ; 0.031 CAD/kBtu
Effective purchase cost after grants	2,000 CAD
Annual fuel cost savings	518.523 CAD
Solar energy cost per kWh	0.02 CAD
Payback period	4 years
Present value of the system	18,373.24 CAD
Net present value	16,373.24 CAD

Component overview (annual values)

Boiler	Gas boiler 50kW with internal pump	
Power	kBtu/hr	170.65
Total efficiency	%	88.9
Energy from/to the system [Qaux]	kBtu	233,415.1
Fuel and electrical energy consumption [Eaux]	kBtu	262,513.8
Energy savings solar thermal	kBtu	16,850.2
CO savings solar thermal	pound	2,521.3
Fuel savings solar thermal	ft ³	16,609

Collector North America		WSE47
Data Source		u138368
Number of collectors		5
Number of arrays		30
Total area	ft ²	115
Total aperture area	ft ²	100
Tilt angle	°	60
Orientation	°	0
Collector field yield [Qsol]	kBtu	15,163.2
Irradiance onto collector area [Esol]	kBtu	65,142.3
Collector efficiency [Qsol / Esol]	%	23.3
Direct irradiance after IAM	kBtu	48,650
Diffuse irradiance after IAM	kBtu	23,301.8

Pool Pool		Outdoor pool
Pool type		Outdoor pool
Length	ft	32
Width	ft	18
Energy from/to the system [Quse]	kBtu	246,183.8

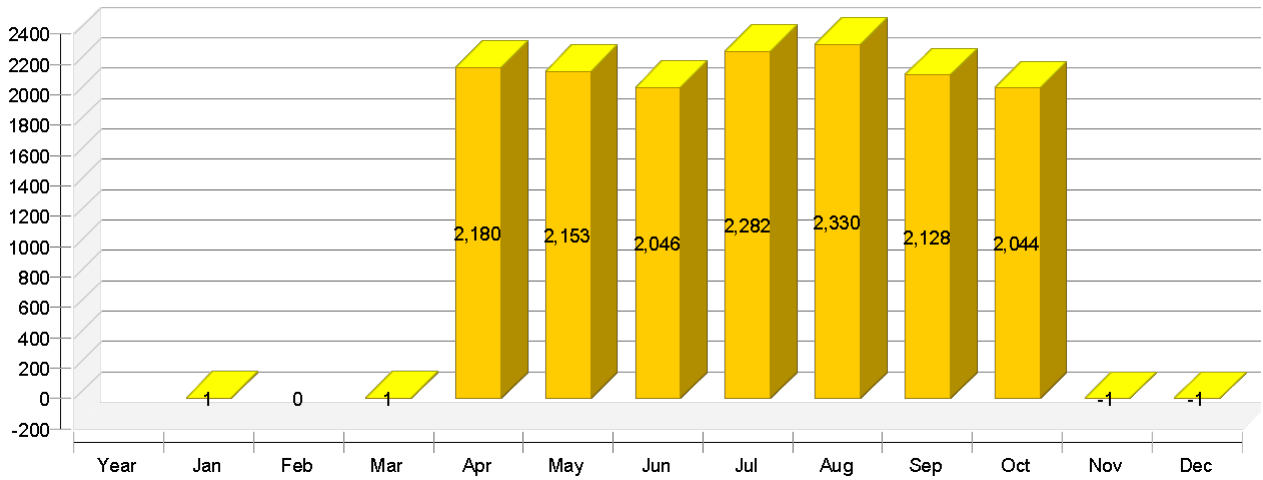
External heat exchanger Pool heat exchanger		Plate heat exchanger, small
Transfer capacity	W/K	5,000

Pump Solar loop pump		Pump, large
Circuit pressure drop	psi	0.224
Flow rate	gpm	1.6
Fuel and electrical energy consumption [Epar]	kBtu	1,945.7

Pump Pool pump		Pump, large
Circuit pressure drop	psi	28.015
Flow rate	gpm	3.9
Fuel and electrical energy consumption [Epar]	kBtu	1,890.1

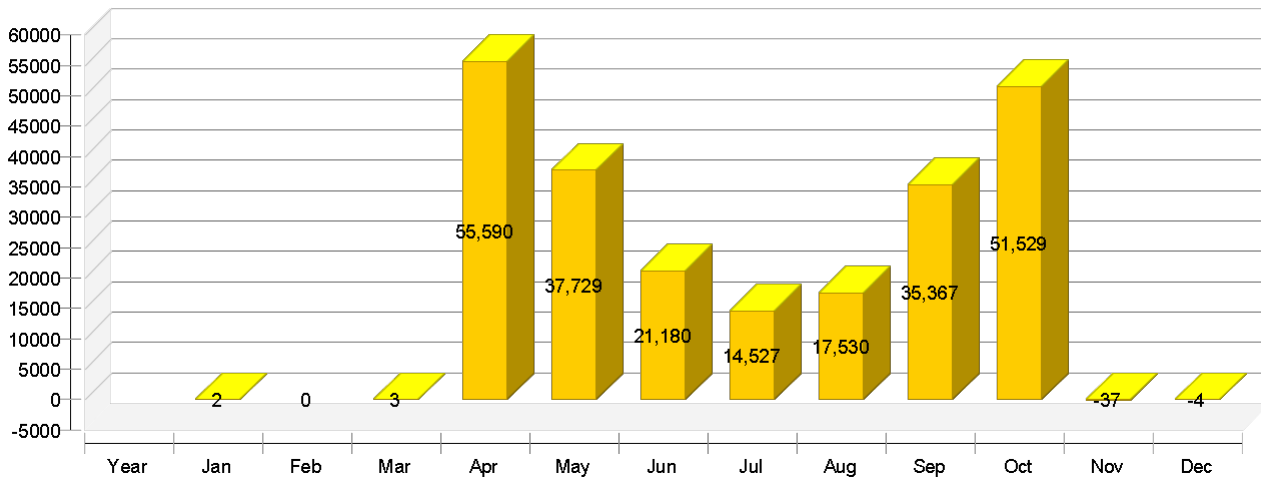
Solar thermal energy to the system [Qsol]

kBtu



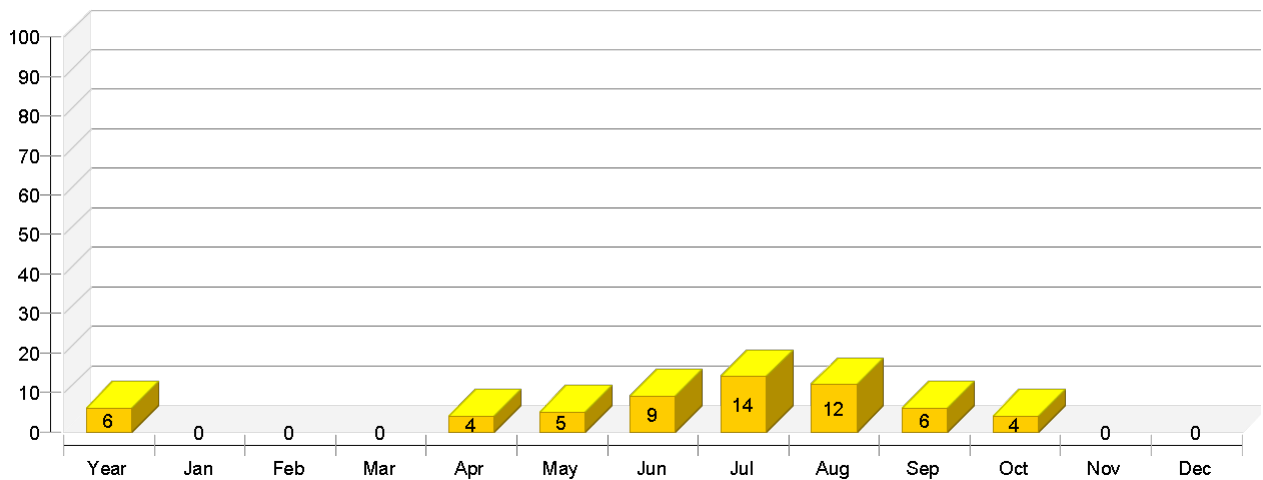
Heat generator energy to the system (solar thermal energy not included) [Qaux]

kBtu



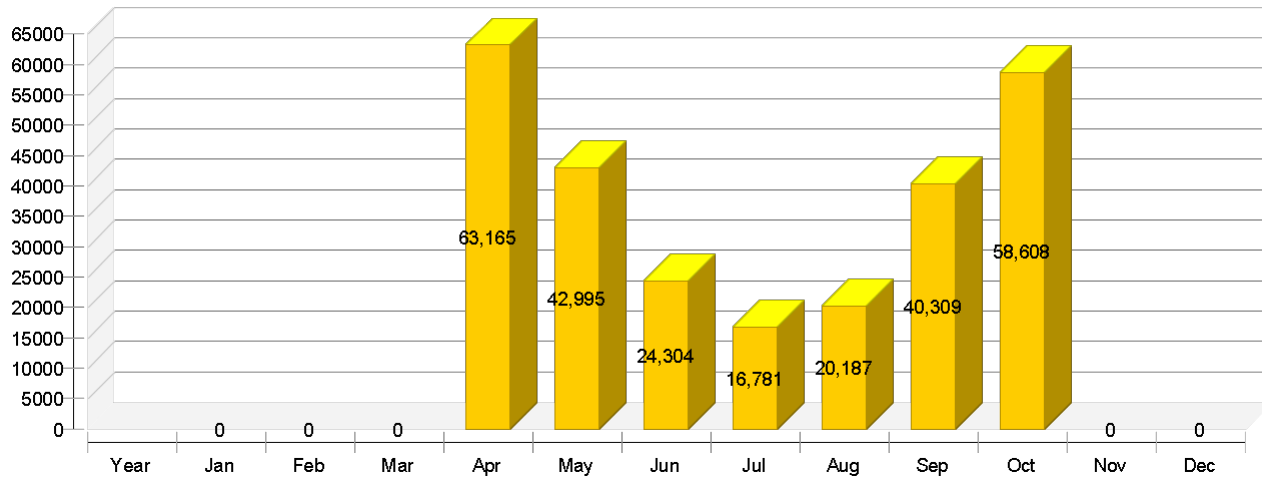
Solar fraction: fraction of solar energy to system [SFn]

%



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

kBtu



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

Solar thermal energy to the system [Qsol]

kBtu	15163	1	0	1	2180	2153	2046	2282	2330	2128	2044	-1	-1
------	-------	---	---	---	------	------	------	------	------	------	------	----	----

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

kBtu	233415	2	0	3	55590	37729	21180	14527	17530	35367	51529	-37	-4
------	--------	---	---	---	-------	-------	-------	-------	-------	-------	-------	-----	----

Heat generator fuel and electrical energy consumption [Eaux]

kBtu	262514	0	0	0	62458	42408	23838	16355	19741	39752	57960	0	0
------	--------	---	---	---	-------	-------	-------	-------	-------	-------	-------	---	---

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

%	6.1	0	0	0	3.8	5.4	8.8	13.6	11.7	5.7	3.8	0	0
---	-----	---	---	---	-----	-----	-----	------	------	-----	-----	---	---

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

kBtu	266350	0	0	0	63165	42995	24304	16781	20187	40309	58608	0	0
------	--------	---	---	---	-------	-------	-------	-------	-------	-------	-------	---	---

Irradiance onto collector area [Esol]

kBtu	65142	4548	5607	6748	6003	5892	5535	6133	6109	5548	5350	4012	3656
------	-------	------	------	------	------	------	------	------	------	------	------	------	------

Electrical energy consumption of pumps [Epar]

kBtu	3836	0	0	0	707	587	466	426	445	557	647	0	0
------	------	---	---	---	-----	-----	-----	-----	-----	-----	-----	---	---

Heat loss to indoor room (including heat generator losses) [Qint]

kBtu	3220	0	0	0	584	495	391	350	372	473	553	1	0
------	------	---	---	---	-----	-----	-----	-----	-----	-----	-----	---	---

Heat loss to surroundings (without collector losses) [Qext]

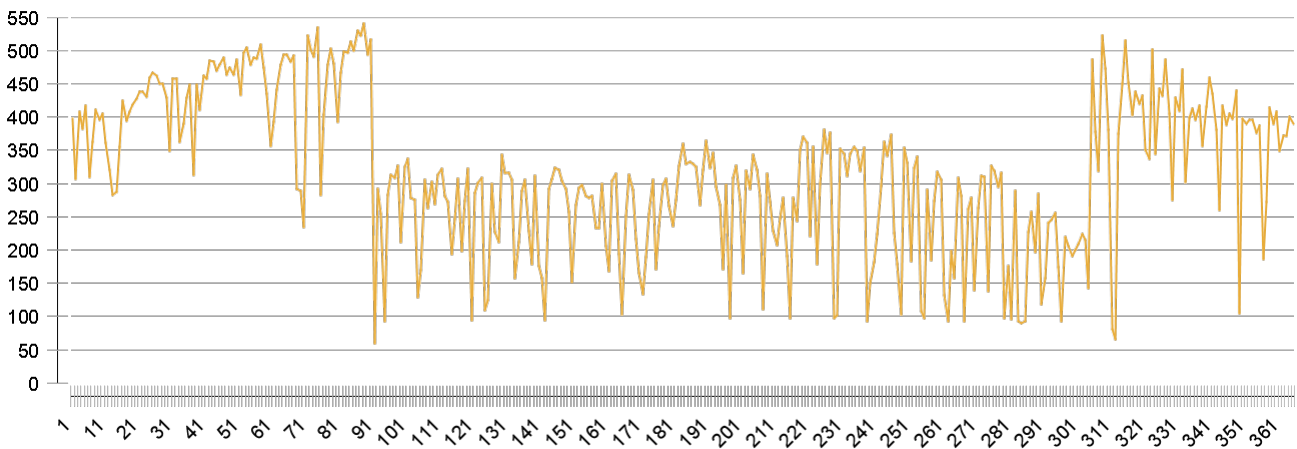
kBtu	32109	-3	0	-5	7499	5140	2966	2060	2472	4822	7083	65	9
------	-------	----	---	----	------	------	------	------	------	------	------	----	---

Total energy consumption [Quse]

kBtu	246184	0	0	0	57196	39509	23001	16644	19674	37142	53018	0	0
------	--------	---	---	---	-------	-------	-------	-------	-------	-------	-------	---	---

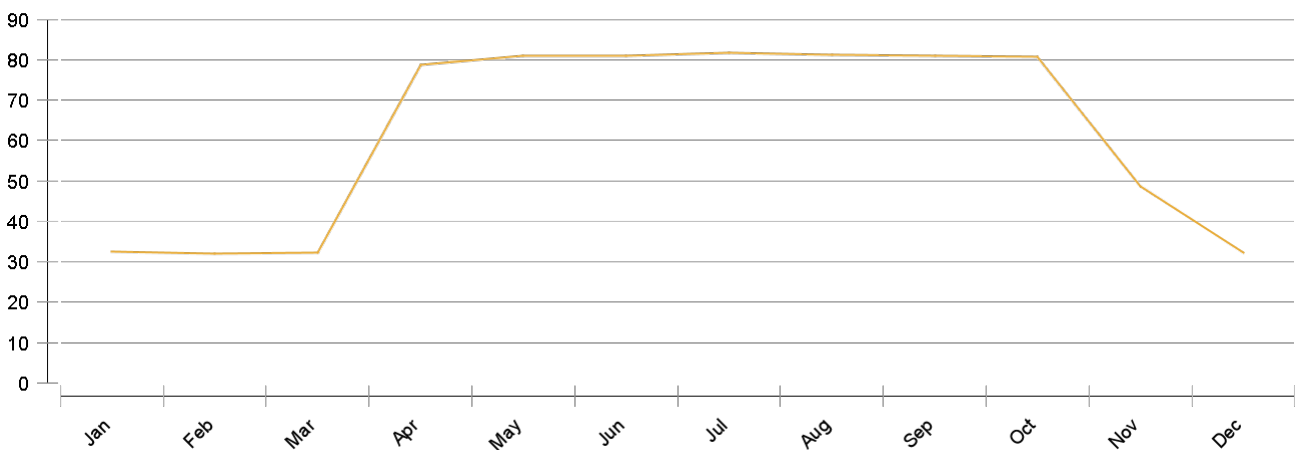
Collector North America

Daily maximum temperature [°F]



Pool Pool

Monthly average - Temperature [°F]



Energy flow diagram

