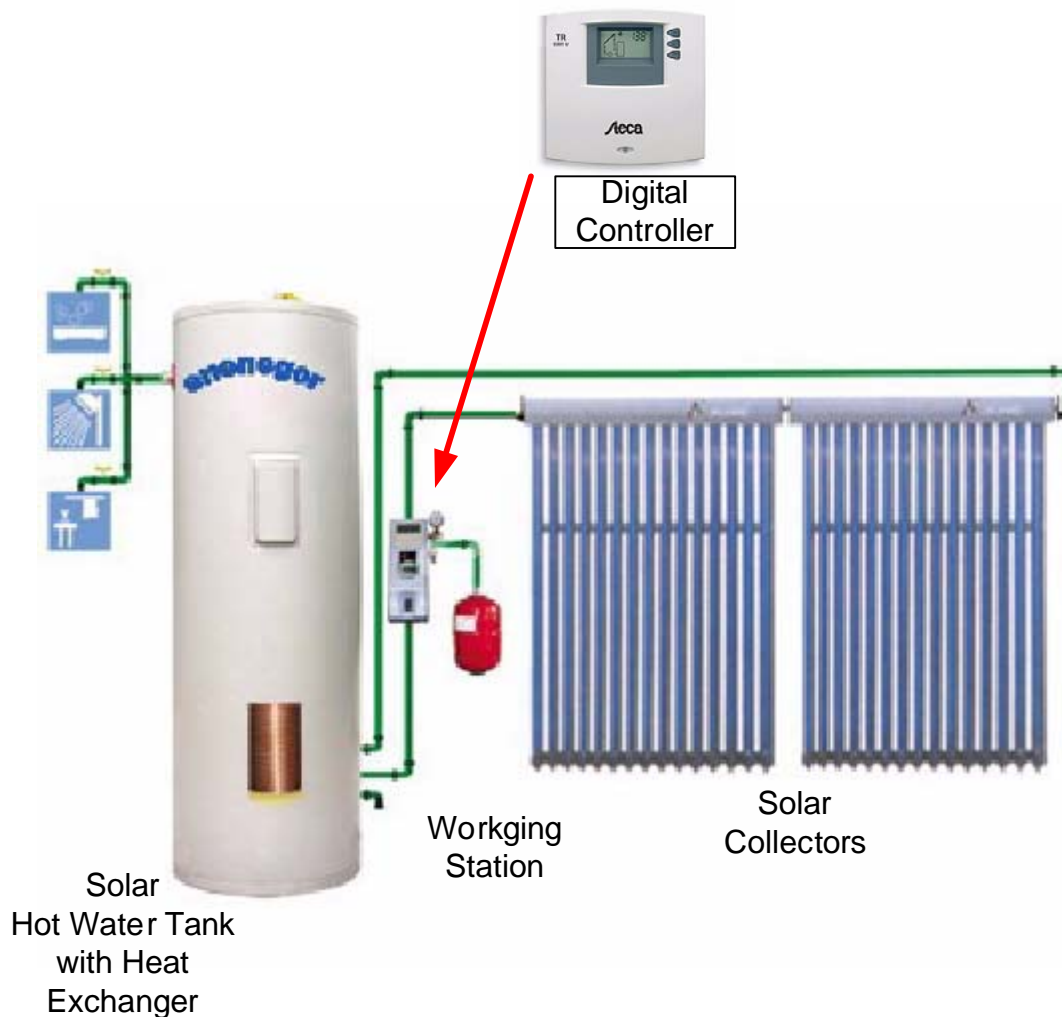




# Domestic Solar Hot Water Heating



52 (200 l) or 80 (300L) Gallons with copper heat exchanger



Northern Lights Solar Solutions  
305 McKay Ave Unit #20  
R0E 1J2 Winnipeg  
1 800 759 8990

info@solartubs.com

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Project Data	
Location:	"Los Angeles CA"
Climate Data	
Total Annual Global Radiation:	1799.81 kWh
Latitude:	33.93 °
Longitude:	118.4 °

Default Data	
<b>Domestic Hot Water</b>	
Daily Consumption:	200 l
Desired Temperature:	50 °C
Cold Water Temperature:	8 °C                      12 °C

System Components	
<b>Collector Loop</b>	
Type:	Evacuated Tube Collector Heat Pipe
Total Gross Surface Area:	4.5 m <sup>2</sup>
Total Active Solar Surface Area:	3 m <sup>2</sup>
Tilt Angle:	44 °
Azimuth:	0 °
<b>Bivalent (Twin Coil) DHW Tank</b>	
Type:	TSOL Tank
Volume:	300 l
<b>Auxiliary Heating</b>	
Type:	El. Nachheizung ( 12 kW)

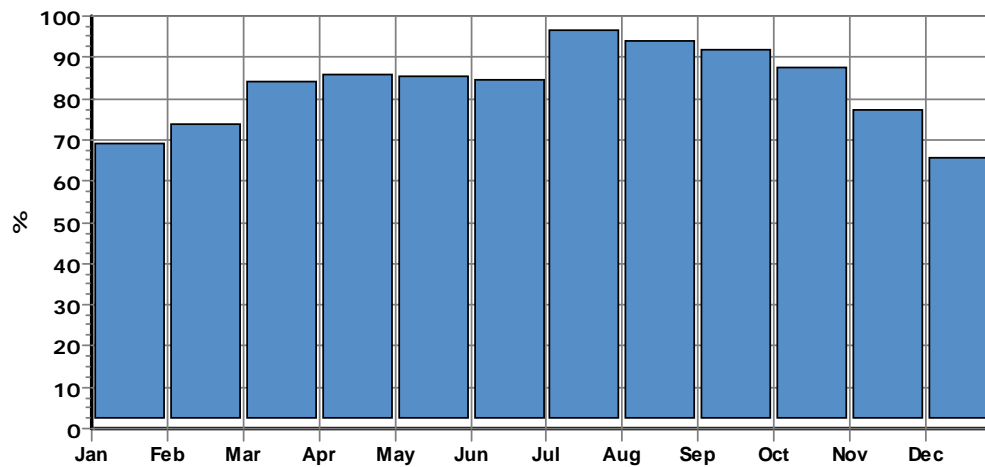


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### Solar Fraction



	Irradiation onto Collector Area [kWh]	Collector Loop Energy [kWh]	Net Energy [kWh]	Solar Fraction [%]	CO2 Savings [Kg]
Jan	413	260	334	69	173
Feb	414	256	306	74	170
Mar	520	305	307	84	203
Apr	531	299	291	86	199
May	505	274	261	85	182
Jun	470	257	249	85	171
Jul	535	289	225	97	192
Aug	551	300	249	94	200
Sep	509	286	246	92	190
Oct	510	302	284	87	201
Nov	437	276	314	77	184
Dec	389	248	333	66	165
<b>Year</b>	<b>5783</b>	<b>3351</b>	<b>3400</b>	<b>82.3</b>	<b>2232</b>

The Solar Fraction is determined for each hour in the year and monthly averages are then calculated for the table above.

These calculations are carried out by T\*SOL express - the Simulation Programme for Solar Thermal Heating Systems. The system schematic above does not represent and cannot replace a full technical drawing of the solar system.

Northern Lights Cedar Hot Tubs

13 Blue Spruce Rd.  
 Oakbank, MB  
 R0E 1J2  
 Canada

# Estimate

Date	Estimate #
11/10/2008	7026

Name / Address
Demo Los Angeles

Terms	Rep	FOB	Project

Item	Description	Qty	Rate	Total
Solar-NL58-24	Solar Heat Pipe Collector with 24 tubes		1,100.00	1,100.00
Solar-200-DWT	Solar hot water tank 52 Gallon (200l) with built in heat exchanger and 2 Kw heating element.	1	1,485.00	1,485.00
Solar-Working-St...	Complete solar working station includes pump, expansion tank, fittings, T&P valve, Fill valve and air valve	1	495.00	495.00
Solar-Controller	Solar controller for upto 2 pump and 2 storage tanks.	1	199.00	199.00
Discount	package discount		-329.00	-329.00

Subtotal		US\$2,950.00
GST		US\$0.00
PST		US\$0.00
<b>Total</b>		<b>US\$2,950.00</b>

Signature \_\_\_\_\_

Phone #
204 977 1674