

# Polysun Feature List:

## Solar Thermal



### System Diagram Templates (download free demo for more info)

	Light	Prof	Designer
Limited template selection for basic residential application. Space heating-, DHW-, Pool application.	✓	✓	✓
Largest template database available for residential- and partly commercial application. Space Heating/cooling-, DHW-, Pool-, Combi system -application as well as system diagrams of manufacturer.	✗	✓	✓
Same as above, plus Commercial-, Industrial-, Process heat-, and District heating - application.	✗	✗	✓
Appartment Building Simulation with multiple dwelling units. Easily define the numer of units.	✗	✗	✓
Create your own system diagrams	✗	✗	✓

### Climatic Data

	Light	Prof	Designer
Select any location with Open Street Map	✗	✓	✓
8055 meteorological stations worldwide. Find more info about the climatic data on our partner's website. <a href="http://www.meteonorm.com/pages/en/meteonorm-6-online/stations-mn-6.1.php">http://www.meteonorm.com/pages/en/meteonorm-6-online/stations-mn-6.1.php</a>	✓	✓	✓
Import climatic data from different sources	✗	✗	✓
Select main temperature profile (cold water supply)	✓	✓	✓
Create main temperature profile (cold water supply)	✗	✓	✓

### Horizon

	Light	Prof	Designer
Design a Horizon Profile on map or enter values on table	✓	✓	✓
Import Horizon Profile from other tools (Suneye, Spyce, Precegio)	✗	✓	✓
Load Horizon Pèprofile online from Meteotest	✗	✓	✓

### Project Load / Save

	Light	Prof	Designer
Save and load your own projects, or load projects that have been saved by another Polysun Solarthermal Simulation Light user.	✓	✓	✓
Load projects that have been saved by another Polysun Solarthermal Simulation Light, Professional, or Designer user.	✗	✓	✓
Load Photography of site	✗	✓	✓
Print PDF file of project overview	✓	✓	✓

### Results

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Result Overview: Bar graphs containing 5-7 most important results.	✓	✓	✓
System Results: Analysis of hydronic loops. (Monthly evaluation in form of tables and bar graphs)	✗	✓	✓
Financail Analysis: Amortisation time, annual fuel cost savings, purchase cost after grants, etc.	✗	✓	✓

Component Results: Comprehensive monthly evaluation of energy flows, temperatures, heat losses, etc., of any component used in the system. Displayed in form of tables and bar graphs.	✗	✓	✓
Graphical Evaluation: Comprehensive hourly evaluation of energy flows, temperatures, heat losses, etc. of any component used in the system. Displayed in form of graphs.	✗	✓	✓
Tabular evaluation: Hourly evaluation of energy flows, temperatures, heat losses, etc. of each component used in the system. Displayed in form of tables. Export values to Excel for further proceedings.	✗	✗	✓
Compare Results with a reference system: Run the simulation of two different systems and compare results in a unified bar graph.	✗	✓	✓
Energy flow diagram (Coming soon)	✗	✓	✓

## Result Report

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Print result reports in PDF, Word or Power Point	✗	✓	✓
Short Sales Report: Result presentation of most important values and system components. Ideally to show house owner.	✓	✓	✓
Professional Report: Comprehensive technical report of the system, containing relevant info to persuade customer, to successfully apply for governmental subsidies, to inform installer about the system with piece list, etc. (See sample on homepage)	✗	✓	✓
Economy Report: Add financial analysis results to the Professional report (Coming soon)	✗	✓	✓
Report Designer: Create a custom pdf report template, containing only the results you want to show the customer. (Coming soon)	✗	✗	✗

## Options

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Set language (English, German, French, Italian, Spanish, Chinese, Portuguese, Czech, Greek, Romania, Swedish). Language can be changed while running Polysun. E.g. design the system in English and print report in Spanish.	✓	✓	✓
Include your company logo in the Result Report	✗	✓	✓
Set preferences for the unit system (Metric, Imperial, mixed)	✓	✓	✓
Set local currency	✓	✓	✓
Subscription for 1 year included to get updates several times per year.	✗	✓	✓

## Solar Thermal Collector

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Glazed flat plate collectors, unglazed pool absorbers, tube collectors	✓	✓	✓
Concentrating collectors	✗	✗	✓
Database containing all SRCC & SPF tested and certified collectors plus many more.	✓	✓	✓
Create / import your own collector and save it in Polysun's database.	✗	✓	✓
Define collector field orientation (azimuth angle)	✓	✓	✓
Define collector field tilt angle	✓	✓	✓
Modify wind speed at collector field surface	✗	✓	✓
Track collector with sun's position (North-South, East-West, Biaxial)	✗	✓	✓
Boundary conditions: Simulate collector fields containing up to 10000 modules.	✗	✓	✓
Boundary conditions: Simulate collector fields up to 5000 sqm	✗	✓	✓

## Boiler, Heat Pump, Compression Chillers

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Oil-, gas-, pellet-, fire wood-, electric -heaters & furnaces, air/water heat pump	✓	✓	✓
Select local brand heat generators / chillers from database	✓	✓	✓

Create / Import your own heat generator / chiller and save it in Polysun's database.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Define Control logic (Fix power, modulating power)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## Water Storage Tank

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DHW tanks and buffer tanks. Following tank set-ups are possible: 8 Internal coils, 4 internal stratifying lances, 3 internal heating elements (el. resistor, oil or gas burner), internal DHW tank, external coat heat exchanger, 10 connection flanges.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select local brand water tank from database.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create / Import your own water tank and save it in Polysun's database.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary conditions: Max tank volume 1 Mio Litres.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Pipe

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Smooth pipes, spiral pipes, ripped pipes, made of any material defined in the material catalog.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select pipe size and type from database	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create / Import your own pipe type and save it in Polysun's database	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Place pipe outdoor or indoor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Define pipe length	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose pipe insulation material and define insulation thickness	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Define pressure drop factors of pipe: pipe roughness, friction factor, linear form factor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Pump

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Pumps are defined with a flow rate - pressure drop curve and power curve.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select local brand pump from database.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create / Import your own pump and save it in Polysun's database	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Loop flow rate and pressure drop calculation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## External Heat Exchanger

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Heat exchangers are defined with a Transfer capacity value	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select heat exchanger from database	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create / import your own heat exchanger	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary conditions: Max transfer capacity 1 Mio W/K	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## DHW

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Set temperature of DHW at tap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set nominal flow rate at which DHW is tapped.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Activate hot water circulation, keeping manifolds warm at all times.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## DHW (Option 1)

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Set daily hot water demand for each month	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose a distribution profile of DHW consumption during day (e.g. morning profile means most of the water is used in the morning)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Creat a distribution profile of DHW consumption during day	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose an absence profile (during time of absence there is no DHW withdrawal)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create an absence profile	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Boundary conditions: Max DHW demand per day is 1 Mio litres	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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### DHW (Option 2)

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Set annual hot water demand	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose an annual DHW withdrawal profile (VDI profiles are predefined, Camping, Hospital, Elderly Care Home, etc.)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create an annual DHW withdrawal profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary conditions: Max DHW demand per year is 1 Mio m3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Building (Option 1: Building- insulation standard and -dimensions are known)

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Choose a building standard from catalog. World wide building standards are pre-set. Heat losses, ventilation losses, internal gains, window-wall-ratio, etc. are defined in the catalog.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create a building standard and save it in Polysun's database	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set total heated living area	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary conditions: Max DHW heated living area 10000m2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set building orientation (Used for calculation of solar irradiance through windows)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set shading temperature (Indoor temperature above which the shading would be used)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose an absence profile (during time of absence there is no DHW withdrawal)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create an absence profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set natural or active air ventilation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heat recovery gain when active ventilation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heating-set-point temperature day	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heating-set-point temperature night	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Building (Option 2: Annual heating demand and energy losses are known)

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Set annual heating demand	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set annual energy loss	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heating-set-point temperature	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Building (Option 3: Annual fuel consumption is known)

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Select fuel (Oil, Gas, Pellets, Fire Wood, Electricity)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set annual consumption	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary conditions: Max value 100000 units	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Choose heating generator old or new type (used for efficiency calculation)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heating-set-point temperature	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Convactor / Fan coil / Radiator / Underfloor

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Choose a heating / cooling system (Convactor, Fan Coil, Radiator, Underfloor)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create a heating / cooling system and save it in Polysun's database	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Pool

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Choose Indoor / outdoor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set length, width, average depth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Boundary conditions: Max surface 1 Mio m2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set fresh water supply in % per day	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Use pool cover to reduce heat losses and set times	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set wind portion at pool surface (heat losses depend on wind)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set pool absorptance of sun light	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set heat recovery of waste water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set room temperature for indoor pool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set relative air humidity for indoor pool	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set recovery of evaporated heat for indoor pool	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set U-Value of pool wall	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Energy sink / source (Option 1: Constant load for commercial application)**

	Light	Prof	Designer
Set inlet temperature of fluid	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set outlet temperature of fluid	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Set power	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Energy sink / source (Option 2: Variable load or source profile for any application)**

	Light	Prof	Designer
Define a demand profile, power, inlet temperature, and outlet temperature at each time step.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>