THERMIC
Solar Systems

Do you have your own property?

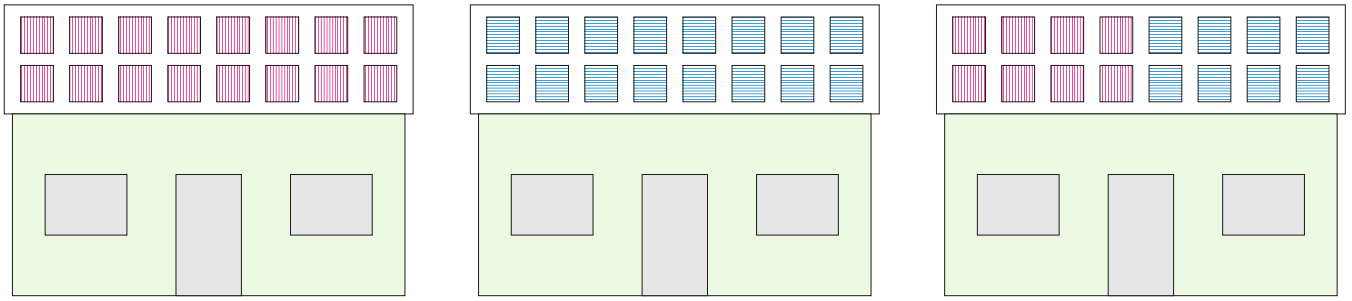
Do you want to convert it into 'Green-Tech'?

Are you choosing the method of solar collectors?

Is the available 'roof-space' area very limited?

What kind of solar collectors will you give priority?

Thermodynamics | **Photovoltaics** | **Fifty - Fifty**



What will be the 'outcome' of each alternative?

Good in winter time, but useless in summer time

Good in summer, but useless in winter time

Good all year around, but only with half the output

Here comes the solution to the space problem!

Now you can 'functionally double' the available space area!

Rotatable solar collectors - double faced - double functioning!

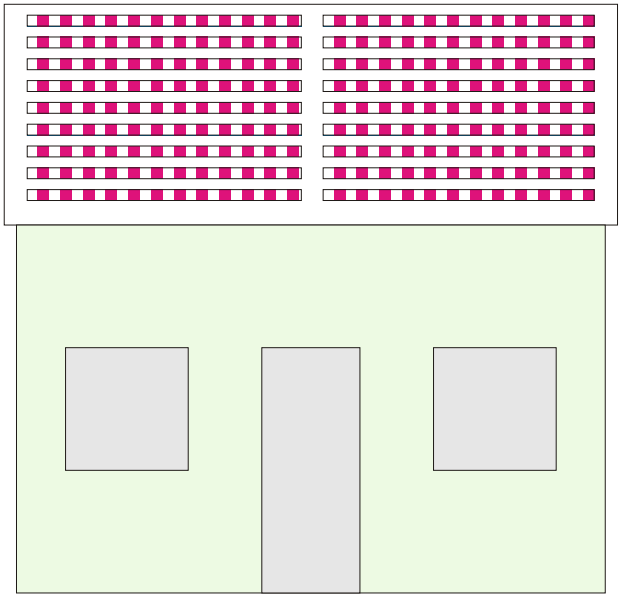
Thermodynamic on the one and Photovoltaic on the other side!

Total yearly energy output >200% compared to other makes!

Rotatable depending on season and according to your own energy requirements.

Thermodynamics in winter time for space heating.

Photovoltaics in summertime for electrical supply of air condition.



WINTER season:
Functioning 100 % thermodynamically for hot water supply and low temperature space heating.

SUMMER season:
Functioning 100% PV photovoltaically,
+15% hybrid cooling
+15% solar tracking
+15% increased hour East-West direction.

European patent protected

At last a fantastic revolution in Green Tech applications

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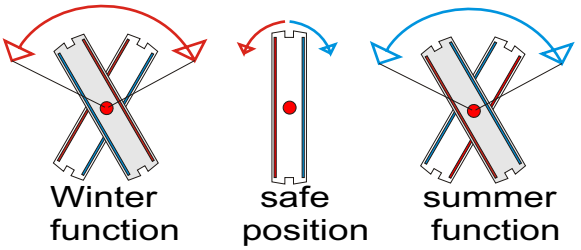
New thermo-electric double-faced solar collector TP4-TD/PV

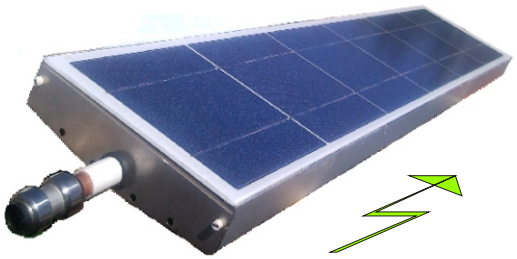
Capable to collect twice (200%) the solar energy / year compared to regular PV-systems.

The new solar collector Tp4 consists of two reversable funtioning sides, which exchange their position, facing the sun, depending on the seasons or on your own energy requirements, each functioning side can be turned towards the sun, e.g. in winter time it works with the thermodynamic (TD) side to produce hot water and in summer time it works with it's photovoltaic (PV) side to make electricity.

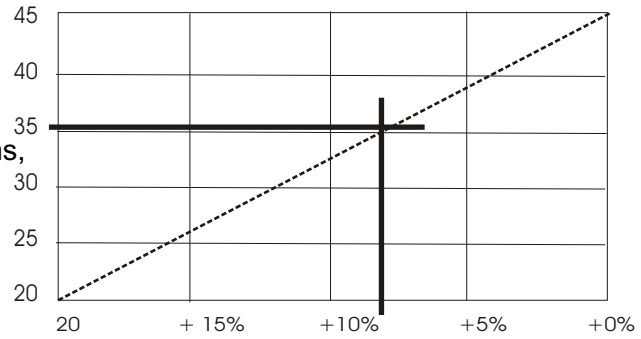


Space heating during the winter season, when there are needs to support hot water to the central heating system then the solar collectors are turned with there TD side towards the direct insolation, producing primarly domestic hot water and secondly warm water for the Floor Heating System, Fun Coils or Low Temperature Radiators, either by direct utilization of the water flow or by storaging the water in well insulated hot water tanks.

Electricity production during summer season, when there is no requirements of space heating and the demand of hot water is considerably reduced, then the solar collectors are turned with their photovoltaic (PV) side towards the direct solar insolation, producing DC electricity which then can be inverted into 220VAC current, which preferably can be used directly for the covering of electric energy demands for any cooling equipment, such as Cool Heat Pump and Air Conditioning units. It is possible to keep part of the solar panels in TD-position whilst the other will be turned into their PV-position.

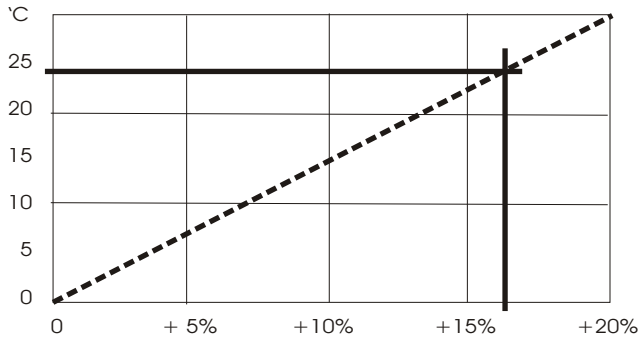


The Thermodynamic TD side of the solar collector Tp4 can during winter time, produce hot water for heating at a temperature of approx. 50'C to be stored in big hot water heating tanks, in order to be used for floor heating systems, which as a low temperature heating source is requirering approx. 30-35'C during ordinary sunny winterdays, when normally the outside temperature stays about 7 to 10'C, which makes the hot water collection 4-6 times more effective than the other photovoltaic side.

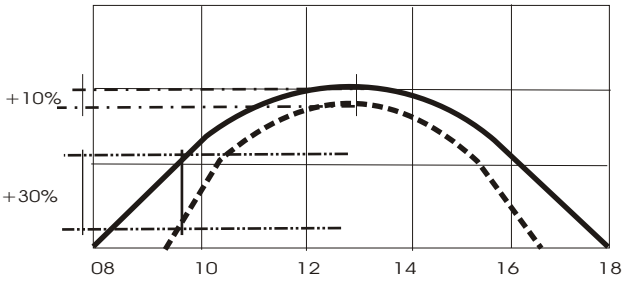


The Photovoltaic PV side of the collector consists of weather-proofed lamelled PV modules with 5 or 6 cells each 156mm in glassed units without any framing, with the connection box sealed with a 2.5mm vired contact Mc3 for interior serie connection of up to 3 moduls in each solar panel, which is constructed in extruded aluminium with an incorporated waterpipe in the middle, converting the thermodynamic solar panel into a photovoltaic solar panel with hybrid cooling effect on the PV cells.

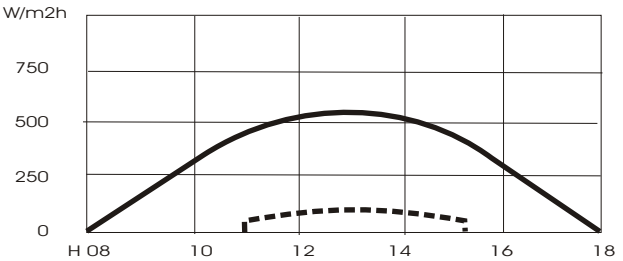
The output of electricity from the monocrystallic cells is increased by two means, first from the hybrid ability to cool down the air space behind the PV modules as much as 20-30'C, whilst producing either domestic hot water or heating the swimming pool water and secondly by the ability of the solar panels to rotate automatically facing the sun, by the incorporated 1-axis solar tracker system, which may increase the energy output as much as 30-40% compared to stationary no hybrid collectors.



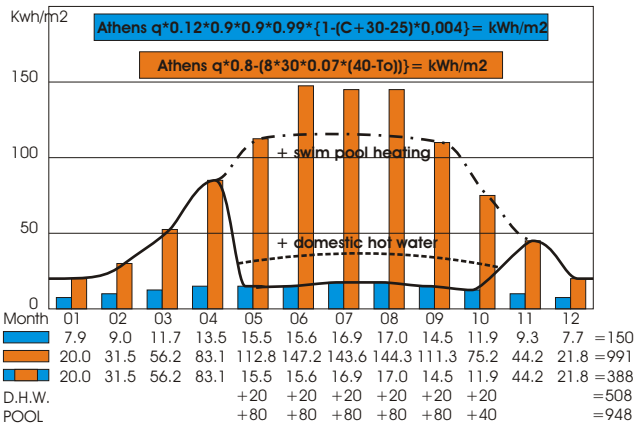
The rotatable solar collector TP4 can rotate around it's central thermodynamic water copper pipe up to 330'C allowing either functioning side to center itself towards the direct solar radiation and even move from South to North or East to West, early in the morning and late in the evening, so the actual effective solar collection period has no east and west limit solar position, which increases the total daily energy output by at least 10 - 30 % depending on seasons.



The efficiency of the Thermodynamic side is about 5-6 times higher (>300W/m2) when producing 35'C floor heating water, than the revers photovoltaic side which in winter time produces much less (<50W/m2), and often even less due to inadvecate angle towards the sun, whilst the TP4-collectors automatically moves it's functiong side correctly towards the sun and as a result the total saved energy increases considerably.



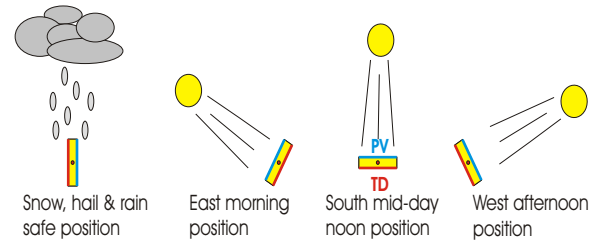
Simple math will confirm that as the TP4-collectors have two functional modes allowing the collection of solar energy either as heat or electricity depending on season and energy needs, collecting 5-6 times more heating energy in winter time during 6 months period and as well producing much more electrical energy in summertime, due to it's unic hybrid and tilting function, giving a high electric output 100%+10%+20%= 130%, conclusively the combination of TD and PV modes increases the yearly energy output to at least 200% compared to other existing solar panels. Additional energy saving can be obtained for domestic hot water and swimming pool heating whenever needed.



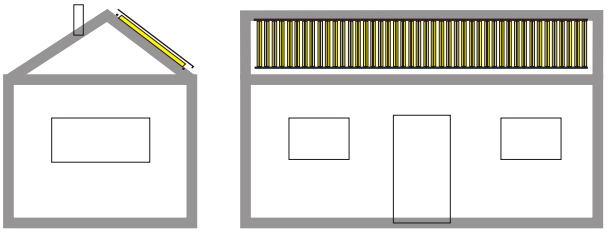
The solar tracker is also a double faced device with totally 4 solar sensors, directing the solar panels on an 1-axes base, to follow the sun all day by tilting the panels by the worm gear drive controlled by an electronic differential heliostat..

The moving mechanism is tilting the panels by a stainless steel (worm gear) mechanism, moved by a single or a double weatherproofed electric 12 VDC motor with terminal and intermideate position switches, allowing the panels to move into a 'safe' vertical position in case of hail and snow, offering automatic rain-cleaning of surfaces.

The basic purpose of using the new double faced thermo-electric solar collector TP4-TD/PV is not the production of electricity for delivery to the local grid, but making your own home, energy independent all year around, as you can install both TD and PV solar panels in the same area, which area often is strictly limited and normally forces you to choose the one or the other solar collecting method and not both.



A new idea and an innovation which combines two different methods in one double faced rotatable unit which has a lot of technical advantages as well as an estetical finish easy to apply to all buildings without any severe architectional disturbance to the building and it's surrounding, producing both central heating and cooling electricity depending on the season and on your own domestic energy demands.



Vertical positioning on a south oriented building can double the energy output

Installation on flat roof for central floor heating system, hot water and pool heating.

Installation as shadowing pergola for floor heating system, hot water and pool heating.

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