ENERGIE®
THERMODYNAMIC SOLAR ENERGY

Maaya Systems Pvt.Ltd

COMMERCIAL PRESENTATION

THERMODYNAMIC SOLAR ENERGY
HEAT PUMPS

ECONOMY | ECOLOGY | RENEWABLE ENERGY | CONFORT

MADE IN EUROPE

WHO WHE ARE

- Energie is present in 5 continents
- More than 40 countries around the world
- More than10.000 units per year
- 50 employees

WHO WHE ARE

ENERGIE IN THE WORLD

- **Strong Investment in R&D**
- **Working with the best European universities and labs**
- **Working with CEN- European Committee for Standardization, ITW - Institut für Thermodynamik und Wärmetechnik Universidad de Vigo, LNEG – National Laboratory For Energy**

THE SOLUTIONS

ECO

DOMESTIC HOT WATER – DOMESTIC USE
ECO
200 to 450 litre solutions
SOLAR BOX

ECO XL

DOMESTIC HOT WATER – INDUSTRIAL USE
ECO XL
1000 to 6000 litre solutions

CENTRAL HEATING

CENTRAL HEATING
SOLAR BLOCK
6 to 40 panel solutions

SP. HEATING

SWIMMING-POOL HEATING
SOLAR BLOCK
6 to 40 panel solutions

AQUAPURA

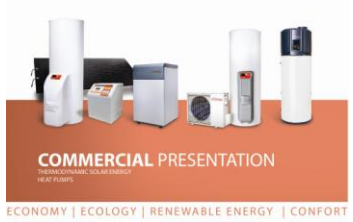
DOMESTIC HOT WATER
AQUAPURA SPLIT
AQUAPURA MONOBLOC

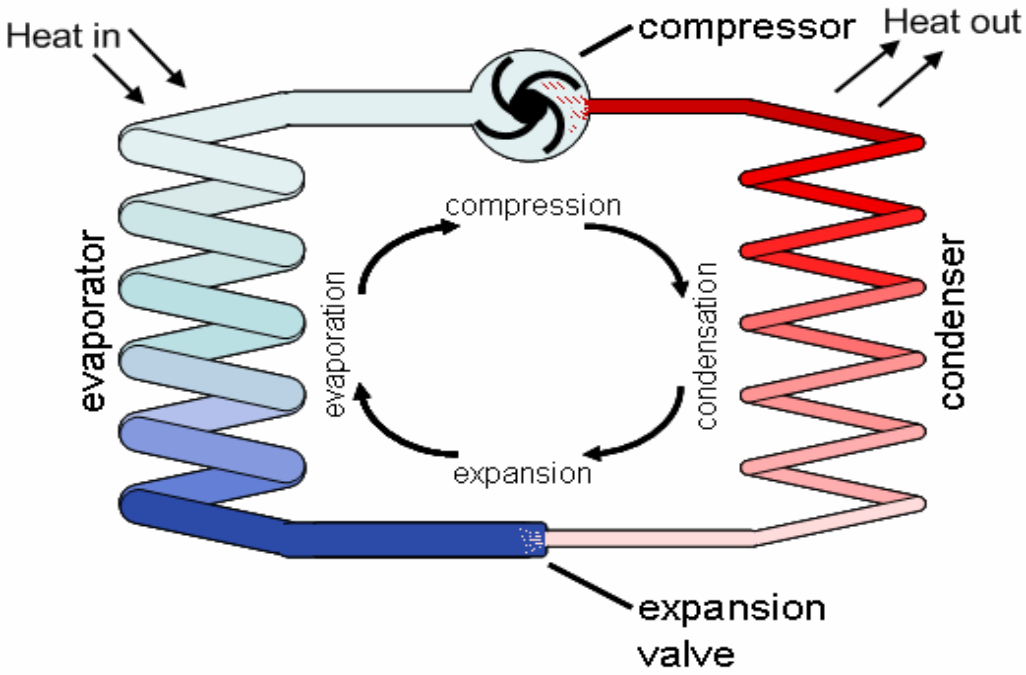
COMING SOON

CENTRAL HEATING HEAT PUMPS

CENTRAL HEATING HEAT PUNMPS
COMING SOON

OPERATING PRINCIPLE





BASED ON THE THERMODYNAMICS PRINCIPLE OF THE FRENCH PHYSICIAN NICOLAS CARNOT (1840)

EVAPORATION EXTRACT HEAT AND CONDENSATION RELEASES HEAT

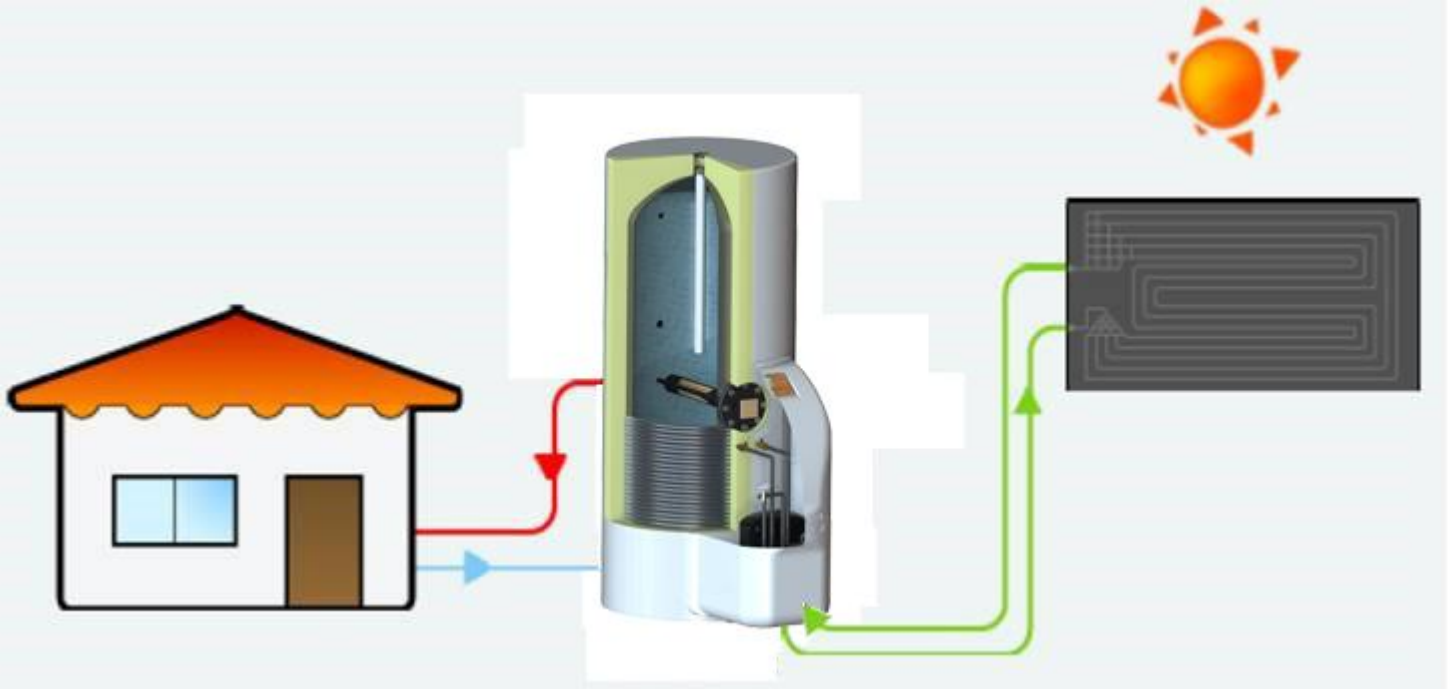
EVAPORATION ON THE SOLAR PANEL | CONDENSATION ON THE CONDENSER

A REFRIGERANT FLUID RUN IN THE PANEL AT ABOUT -15ºC

A COMPRESSURE MAKES THE FLUID TEMPERATURE TO RISE

A EXPANSION VALVES MAKES THE FLUID TEMPERATURE TO DROP

OPERATING PRINCIPLE



EVAPORATION ON THE SOLAR PANEL (-15ºC) CAPTURES ENERGY

COMPRESSOR WILL RAISE THE PRESSURE & TEMPERATURE

THE FLUID CONDENSATES REALISING HEAT TO THE WATER

EXPANSION VALVE WILL DROP THE PRESSURE & TEMPERATURE

THERMODYNAMIC SOLAR PANEL

- ✓ ANODISED/PAINTED ALUMINIUM WITH HYDROFOBIC FLEXIBLE COATING
- ✓ LIGHT WEIGHT = 8KG, EASY TO TRANSPORT AND TO INSTALL
- ✓ DIMENSIONS: 2,0m x 0,8m X 0,02m
- ✓ NO GLASS OR OTHER FRAGILE MATERIALS
- ✓ NO OVERHEATING PROBLEMS
- ✓ NO FREEZING PROBLEMS

THERMODYNAMIC SOLAR PANEL

- ✓ HIGH RESISTANCE TO HUMIDITY AND SALTY ENVIRONEMETS
- ✓ MAY BE INSTALLED ON FROM 10º TO 85º FROM THE HORIZONTAL
- ✓ PANEL EFFICIENCY WILL NOT DECREASE IN TIME
- ✓ NO NEED TO CLEAN
- ✓ 25 YEARS LIFE EXPECTANCY
- ✓ SOLAR KEYMARK CERTIFIED

ECO

DHW THERMODYNAMIC SOLAR SYSTEM

ECO – DHW

- ✓ FROM 200 TO 450 LITERS (UP TO 6000L – DHWXL)
- ✓ WITH ONE OR TWO SOLAR PANELS
- ✓ STAINLESS STEEL OR ENAMELLED CYLINDERS
- ✓ CERAMIC IMMERSION HEATER - INSIDE A SHEATH
- ✓ HOT WATER UP TO 55ºC - WITH COMPRESSOR ONLY
- ✓ OPERATING TEMPERATURE FROM -5ºC UP TO + 45ºC
- ✓ FLUID: R134A PRE-CHARGE - ECOLOGICAL FLUID
- ✓ ANTI-LEGIONELLA FUNCTION
- ✓ BOOST FUNCTION
- ✓ VACATION FUNCTION
- ✓ DIFFERENT TEMPERATURE SET POINTS (COMPRESSOR + IMMERSION)
- ✓ PV INTELLIGENT FUNCTION (WATER TEMP. SET-POINT)

ECO

DHW THERMODYNAMIC SOLAR SYSTEM

All Eco's are supplied with:

- One or two solar Panels
- Hot Water Cylinder
- Thermodynamic Group
- R134a Pre-Charge
- Flare Valves

- **6 x "L" Brackets**
- **Pressure reducing Valve**
- **Safety Valve**
- **Dielectric Threads**

Accessories included in the equipment

Steel profiles to put up the panel (small and large sizes)

Safety group

Pressure reducing valve and manometer

M6 Screws + Washers + Rawplug

ECO

DHW THERMODYNAMIC SOLAR SYSTEM

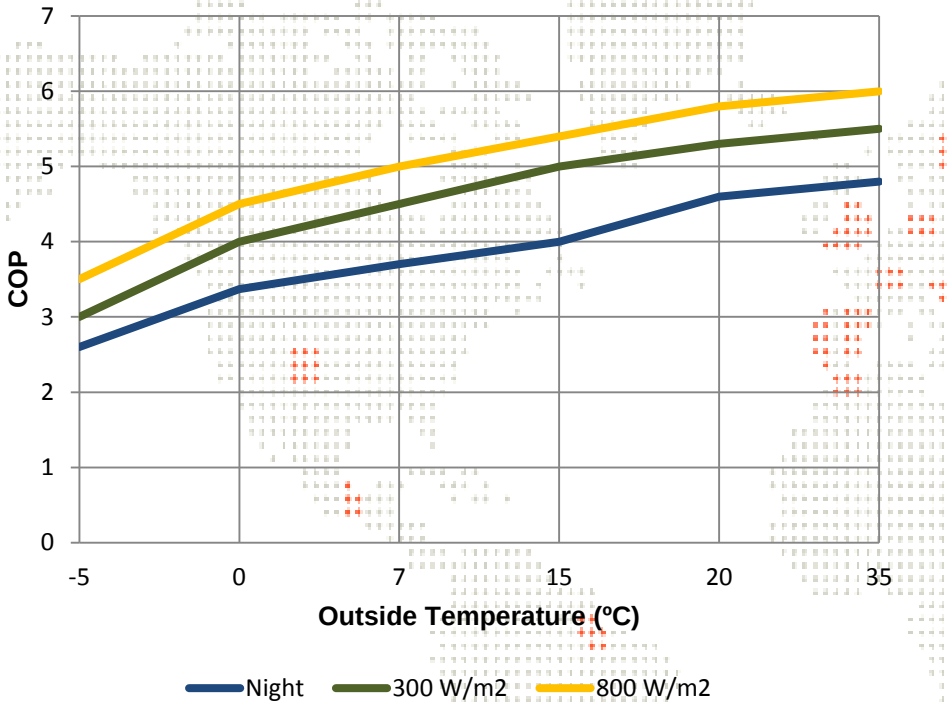
List of equipments

Model	No. of Panels	Enamelled	Stainless	Extra Coil	Litres	No. of People
Eco 200esm	1	x			200	4
Eco 250esm	1	x			250	4
Eco 300esm	1	x			300	5
Eco 250i	1		x		250	4
Eco 300i	1		x		300	5
Eco 250ix	1		x		250	4
Eco 300ix	1		x		300	5
Eco 300esms	2	x			300	6
Eco 250is	2		x		250	5
Eco 300is	2		x		300	6
Eco 450is	2		x		450	9
Eco 250isx	2		x		250	5
Eco 300isx	2		x		300	6
Eco 450isx	2		x		450	9

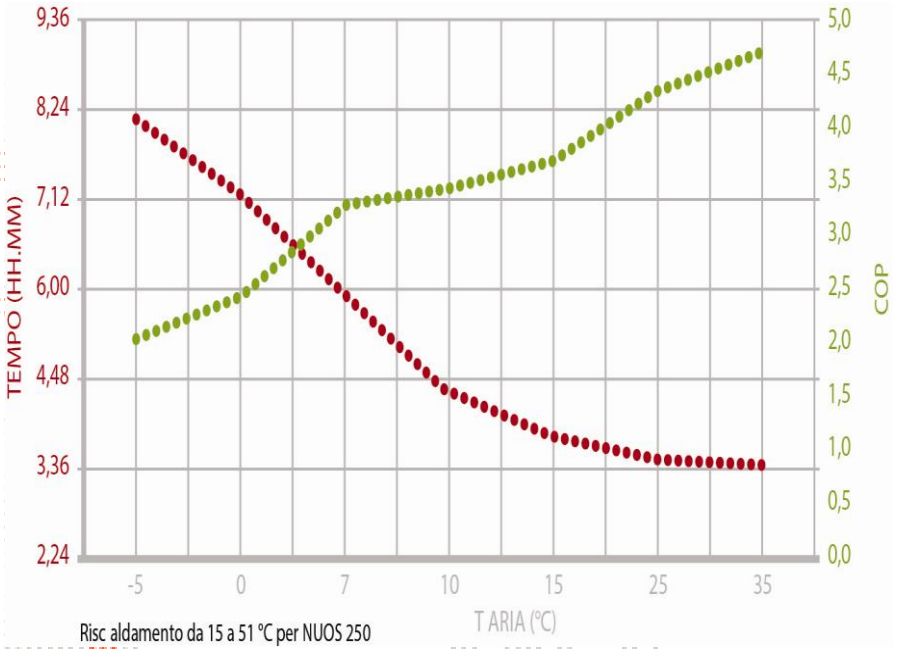
ECO

DHW THERMODYNAMIC SOLAR SYSTEM

Eco 250



DHW Heat Pump



ECO

DHW THERMODYNAMIC SOLAR SYSTEM

ECO *vs* DHW HEAT PUMP

- ✓ HIGHER EFFICIENCY = HARVEST THE ENERGY FORM THE SUN, WIND AND RAIN
- ✓ QUIETER OPERATION = NO FANS
- ✓ EASIER TO INSTALL = NO LARGE WHOLES REQUIRED
- ✓ DOES NOT TAKE HEAT FROM INSIDE THE HOUSE
- ✓ NO CONDENSING PIPES
- ✓ NO DEFROST CYCLES = LESS ELECTRICAL CONSUMPTION
- ✓ SOLAR PANEL = 20 LIFE EXPECTANCY TO SALTY ENVIRONMENTS
- ✓ NO CONDENSER OR EVAPORATOR CORROSION
- ✓ EASIER ACCESS IN CASE OF MAINTENANCE
- ✓ NEW PRODUCT = DIFFERENTIATION

ECO'S – ESTIMATED RUNNIG COSTS

ECO250

FAMILY OF 5 PERSONS
SYSTEM WORKING IN AVERAGE 7 HOURS PER DAY
CONSUMING IN AVERAGE 400Wh

Required Energy: 0,4 kW x 7 hours x 30days = 84k KWh/month
Running Cost: 84 kWh x 0.18€/kWh = **15 €/month**

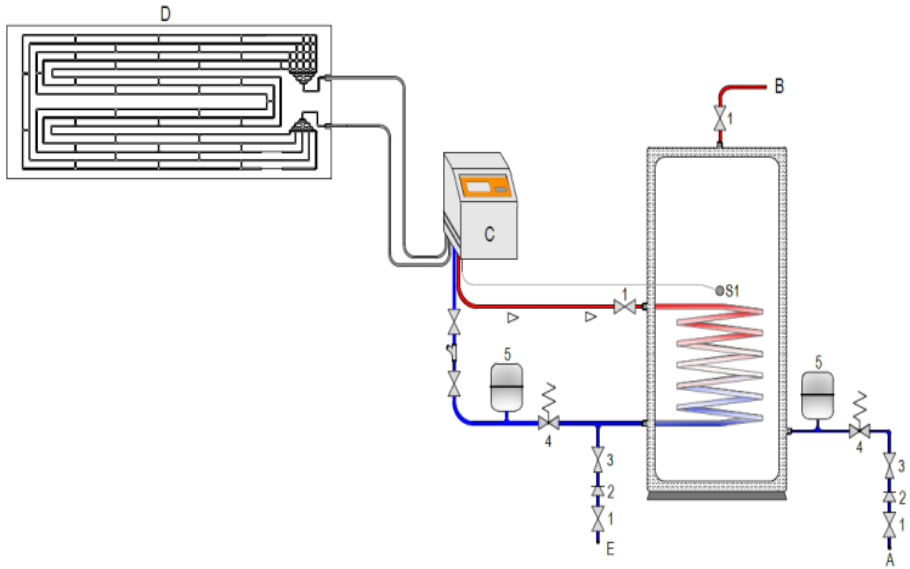
SOLAR BOX

RETRO FITS THE EXISTING CYLINDER

WORKS DAY & NIGHT, IN HAIL, RAIN, WIND OR SHINE
THE SOLAR BOX CAN BE HUNG ON THE WALL OR BE PLACED ON THE FLOOR
VERY COMPACT UNIT DESIGNED FOR TIGHT SPACES
ADAPTS TO ALL KINDS OF CYLINDERS
POSSIBLE TO CONTROL THE CYLINDER IMMERSION HEATER (<3kW)
BETTER TO INSTALL THE SOLAR BOX LOWER THAN THE CYLINDER
DIFERENT CONSUMER TARGET

SOLAR BOX


COMMERCIAL PRESENTATION
ECONOMY | ECOLOGY | RENEWABLE ENERGY | CONFORT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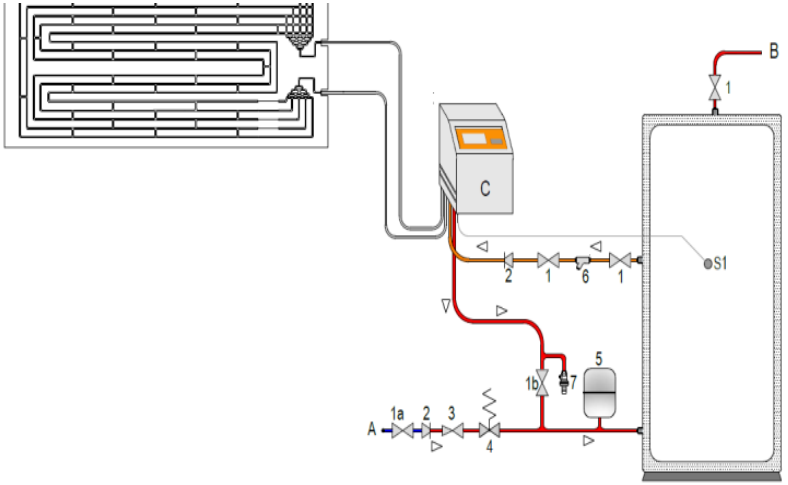
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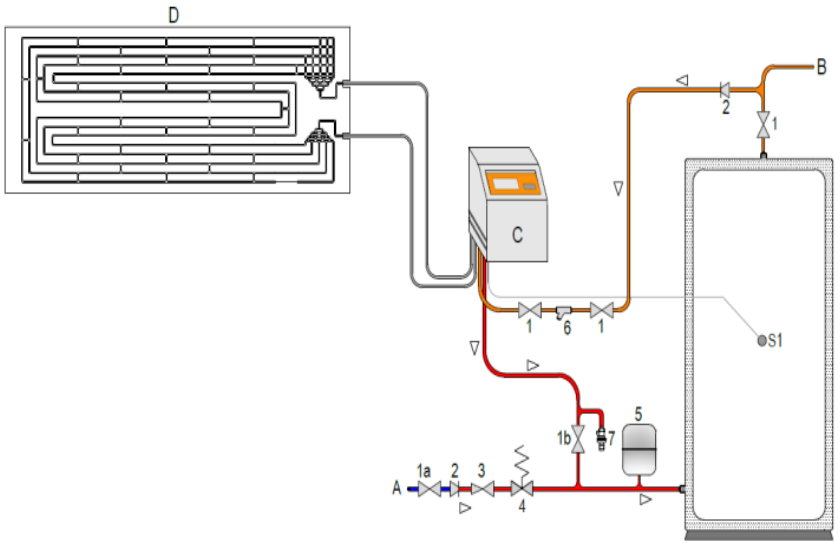
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SOLAR BLOCK

TOP QUALITY HEAT EXCHANGERS

ELECTRONIC EXPANSION VALVE

OPTMIZED SOUNDPROOFING

COPELAND SCROLL COMPRESSOR

SOLAR BLOCK

Operation Range

✓ Work with sun, wind, rain or even at night (from -5ºC* up to 45ºC)

Comfort

✓ Hot water temperature up to 55ºC (60ºC DHW XL)

✓ Low sound pressure

✓ New range up to 65ºC (SB 12/16/24)

Energy Savings

✓ Reduces up to 80% de energy consumption

✓ Fast payback of the investment

✓ Easier and more cost effective to run and to install than traditional flat plate collectors

* - depends on the installation

ECO XL DHW THERMODYNAMIC SOLAR SYSTEM

Solar Thermal
Too much panels
Big Investment
Longer payback

Heat Pumps
No specific solution
Lower Performance

HOTELS

HOSPITALS

BUILDINGS

SWIMMING POOLS

SCHOOLS

CAMPINGS

RESTAURANTS

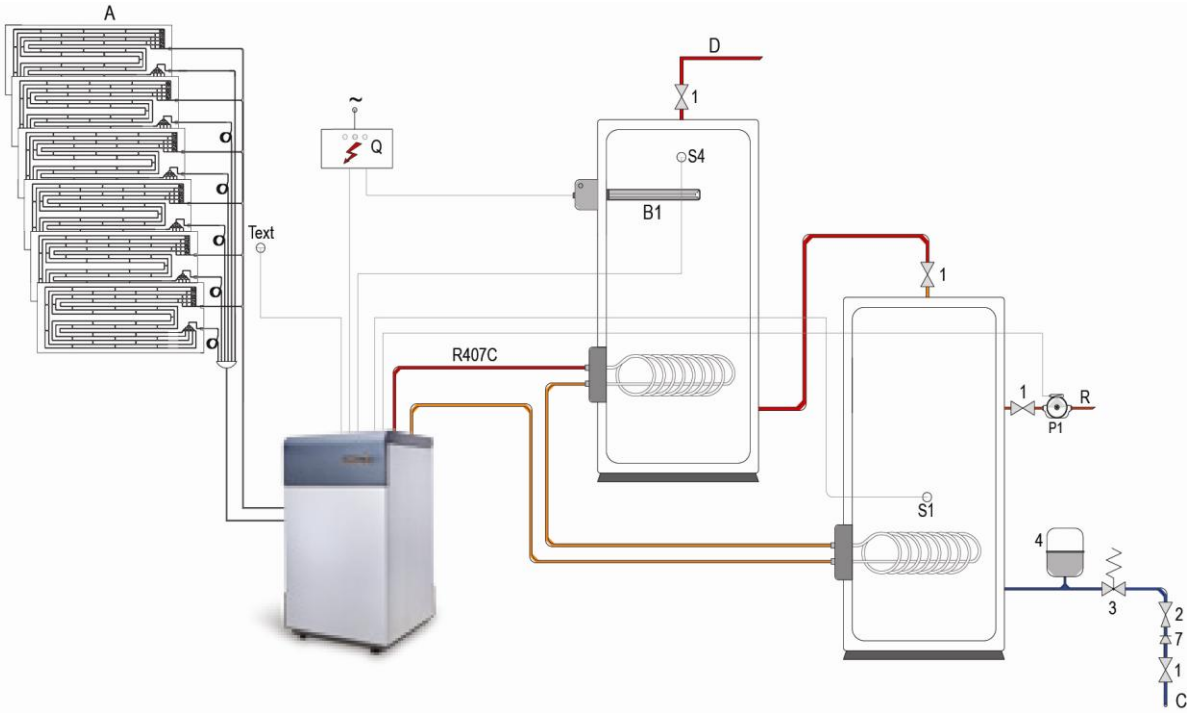
LAUNDRIES

MILITARY BARRACKS

INDUSTRIES

ECO XL DHW THERMODYNAMIC SOLAR SYSTEM

ECO XL
Installation with
2 Cylinders
in Series



From 1000 up to 6000 liters

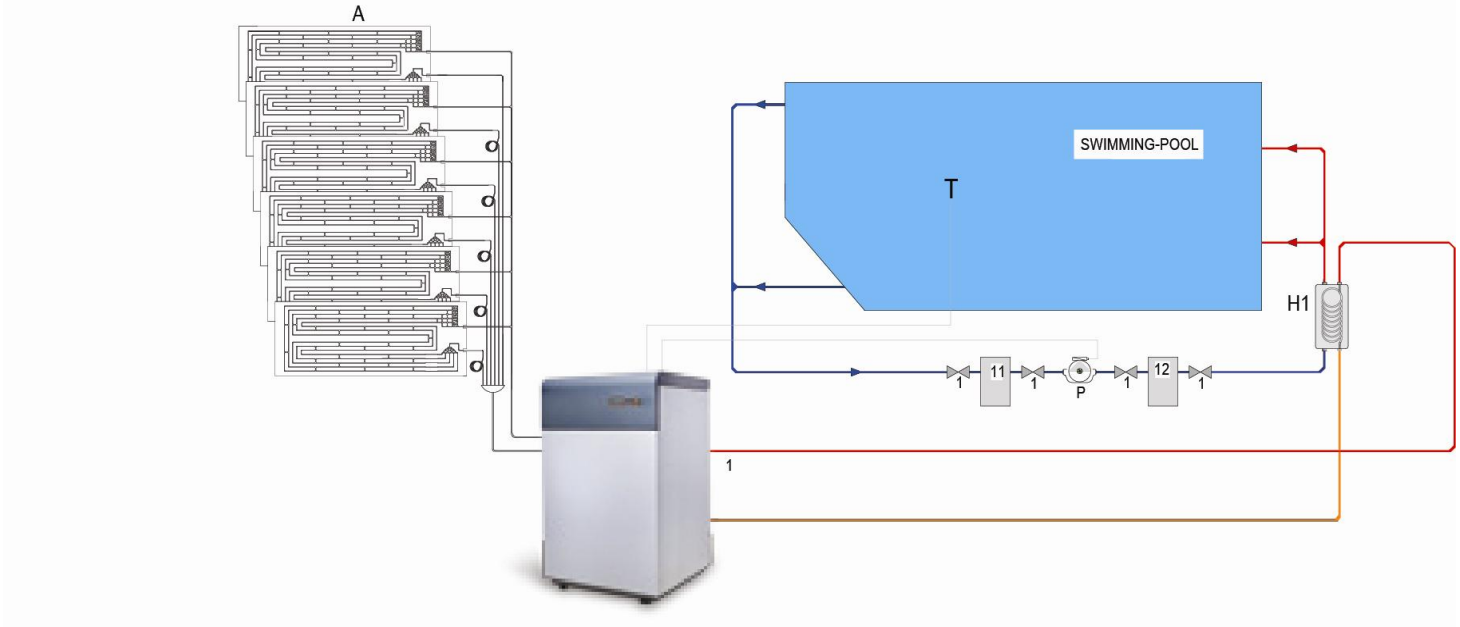
2 CYLINDERS IN SERIE = 60ºC

AISI 316 CYLINDERS

LESS SPACE
LOWER INVESTMENT
FASTER PAYBACK

SOLAR BLOCK – Swimming Pool

Swimming-pool Heating
Standard Installation



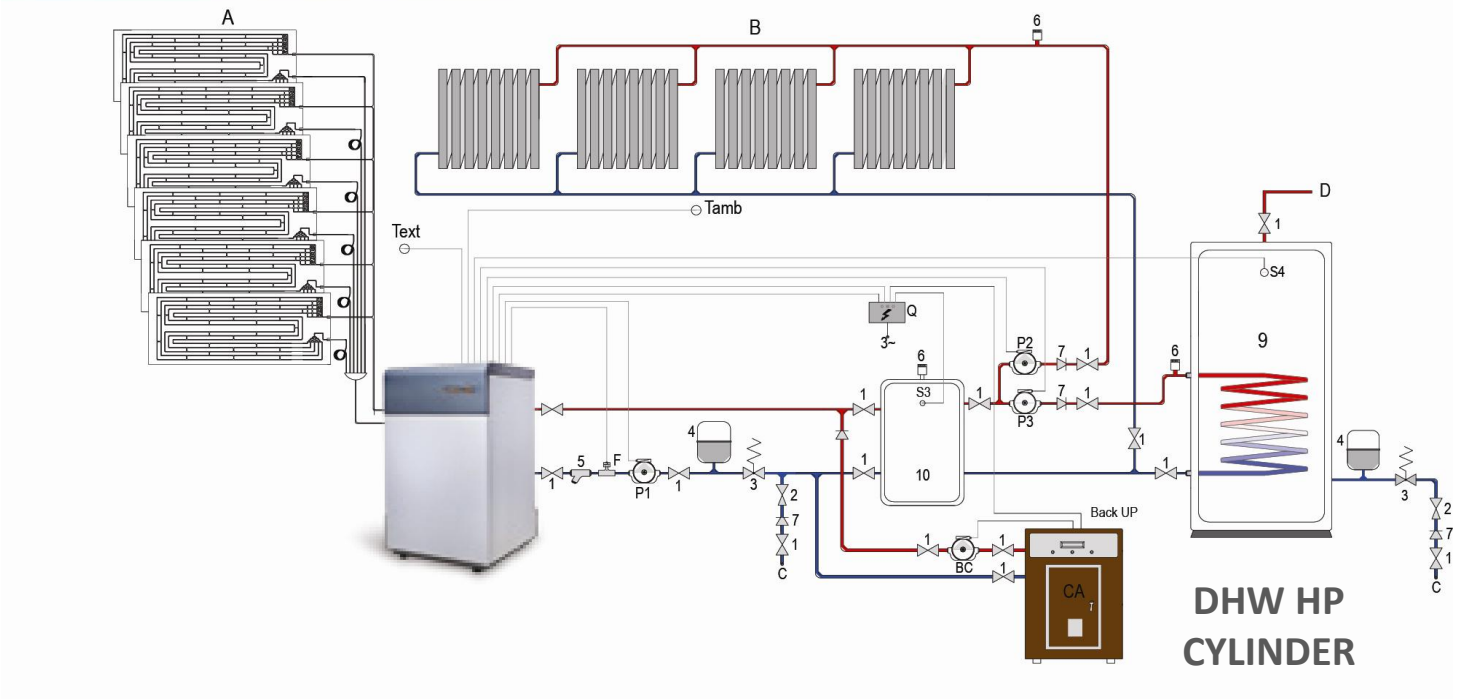
Titanium Heat Exchanger

From 1000 up to 6000 liters

SOLAR BLOCK – Central Heating

Central heating

Combined Solution with Backup (Central Heating + Domestic Hot Water with a backup boiler)



HEATS UP TO 55ºC

NEW RANGE Up to 65ºC SB 12/16/24

DOMESTIC HOT WATER HEAT PUMPS

AQUAURA SPLIT & AQUAPURA MONOBLOC

DOMESTIC HOT WATER HEAT PUMPS

AQUAURA SPLIT

ADVANTAGES AQUAPURA SPLIT

- SMALL SPACE REQUIRED. ONLY THE CYLINDER STAYS INSIDE THE HOUSE
- ABSOLUTE SILENCE INSIDE YOUR HOME
- VARIOUS CAPACITIES, MODELS WITH AND WITHOUT SUPPLEMENTARY COIL

DOMESTIC HOT WATER HEAT PUMPS

Split Heat Pump standard version

Specifications		Aquapura Split 200esm	Aquapura Split 250i /250esm	Aquapura Split 300i
Nominal Capacity	l	200	250	300
Thermal Power (Med/Max)	W	1920/3200	1920/3200	1920/3200
Power Consumption (Med/Max)	W	600/1000	600/1000	600/1000
Temperature (Factory Setpoint)	°C	52	52	52
Maximum Temperature	°C	80	80	80
Max. Amount of water at 40°C in a run (St./En.)	l	-/290	330/345	375/-
Maximum Operation Pressure	bar	6	6	6
Sound Power Level	dB	33	33	33
Liquid Line	Pol.	1/4	1/4	1/4
Suction Line	Pol.	3/8	3/8	3/8
Electrical back-up power	W	1500	1500	1500
Gross Weight of Cylinder (St./En.)	Kg	-/73	62/83	74/-
Electrical Supply	V/Hz	230/50	230/50	230/50

DHWHP vs Thermodynamic Solar System

DHW Heat Pump	Eco - Thermodynamic Solar Systems
Good Efficiency = Harvest Energy from the Air	Higher Efficiency = Harvest energy from the Sun, Wind, Air and Rain
Fan to Make the Air Circulate	No Fans = Quieter and More Economical Operation
Requires a 150mm Hole on the Wall to Expel the Cold Air Outside	Easier to Install = No Large Holes Required
Takes Heat From the Inside of the House	Doesn't Take Heat from Inside the House = Less Heating Costs and More savings
Requires the Evacuation of Condensates	No Condensing Pipes or Drain = Faster Installation
Defrost Cycles Start at Temperature Below 7ºC	No Defrost Cycles = Less Electrical Consumption and More Efficiency
Evaporator Short Life Span when Installed in Salty ou High Humidity Environments (e.g. near the sea, river or lake)	Solar Panel Passed 20 years Salty Environment Exposure Test = Longer Life
Condenser Performance will Decrease with Dirt = Efficiency Drop = Cleaning Required	Solar Panel With Hydrophobic Flexible Painting Avoids the Dirt Deposition and Performs Auto-Cleaning
Difficult Access to the Mechanical and Electronic Parts	Easy to Access all Components = Easier Maintenance
Supplied in One Heavy Package = Hard to Carry	Supplied in Three Packages = Easier to Carry
Several Origins	High Quality Components from the Best European Brands Thermodynamic Group, Cylinder and Solar Panel made by Energie in Europe
Many Players in The Market	New Product = Differentiation = More Value

Solar Thermal *vs* Thermodynamic Solar System

Solar Thermal	Eco - Thermodynamic Solar Systems
Works Only with Sun	Work with Sun, Wind, Air, Rain or even at Night
Average Overall Year Performance	Higher Overall Year Performance
Solar Panel Made of Glass and other Materials	Solar Panel Made of Aluminium = No Glass or Fragile Materials = Hail Resistance
Requires Glycol Mixture to be Added at Least Once per Year	No Refilling Required
Overheating = Solar Panels Blow Up or Permanent Damage = Low Life Span	No Overheating Problems = Long Life Span
Freezing Problems = Solar Panels Blow Up or Permanent Damage = Low Life Span	No Freezing Problems = No Defrost Cycles
Solar Collector Short Life Span when Installed in Salty or High Humidity Environments (e.g. near the sea, river or lake)	Solar Panel Passed 20 years Salty Environment Exposure Test = Longer Life
Solar Collector Performance Decrease with Dirt = Efficiency Drop = Cleaning Required	Solar Panel With Hydrophobic Flexible Painting Performs Auto-Cleaning
Solar Collector Performance Decrease with Time	Performance Does Not Decrease with Time
Solar Collector Dry Weight from 35Kg to 100Kg	Thermodynamic Solar Panel Weights Only 8Kg = Easier to Transport and Install
Must be Installed South Facing with a Specific Tilt Angle	May be Installed South, East or West | On a Roof or Façade from Horizontal to Vertical
Large Area Required to Install the Collectors	Less Area of Collectors Required
Takes in Average 2/3 Days to Install	Takes In Average Less Than One Day to Install
Several Origins | Mainly Chinese Rebranded	High Quality Components from the Best European Brands Thermodynamic Group, Cylinder and Solar Panel made by Energie in Europe
Many Products in The Market	New Product = Differentiation = More Value

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