ZMERLY
SMART HEATING

Hybrid Space Heating
SOLAR THERMAL - HEAT PUMP
Zmerly Office - Tripoli - Lebanon

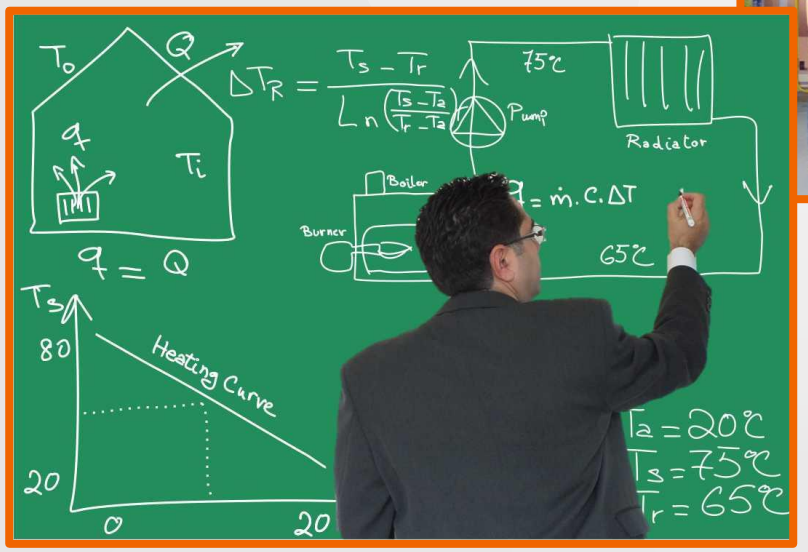
05/07/2018

- Located in Tripoli, in the North of Lebanon
- Suppliers for high efficiency Heating and Solar Energy material
- The local includes : Offices, Showroom, training center, warehouses

TECHNOLOGY

ZMERLY
HEATING ACADEMY

Launched in 2016



A one day Training.

Totally FREE

Dedicated for

- **Mechanical Engineers, Architect,**
- **Students,**
- **Plumbers,**
- **Or whoever is interested in heating technology.**

كن ماهر

Our new Vocational Training for youth

Kon Maher

In 2018

Talk the talk and walk the walk

Our office is a near to ZERO ENERGY building

- The heating is provided by Solar panels, and Air/Water Heat Pump.
- Using the latest OVENTROP system, REGUCOR WHS for heat storage and distribution
- Under Floor Heating and cooling.
- Low temperature radiators.
- Smart control and monitoring for Heating, Solar, and Hot Water.
- Powered by a PV system 7.5kWp
- We use LED for lighting.

First Floor (70 sqm)

Engineering Offices

Under Floor Heating

4300 W

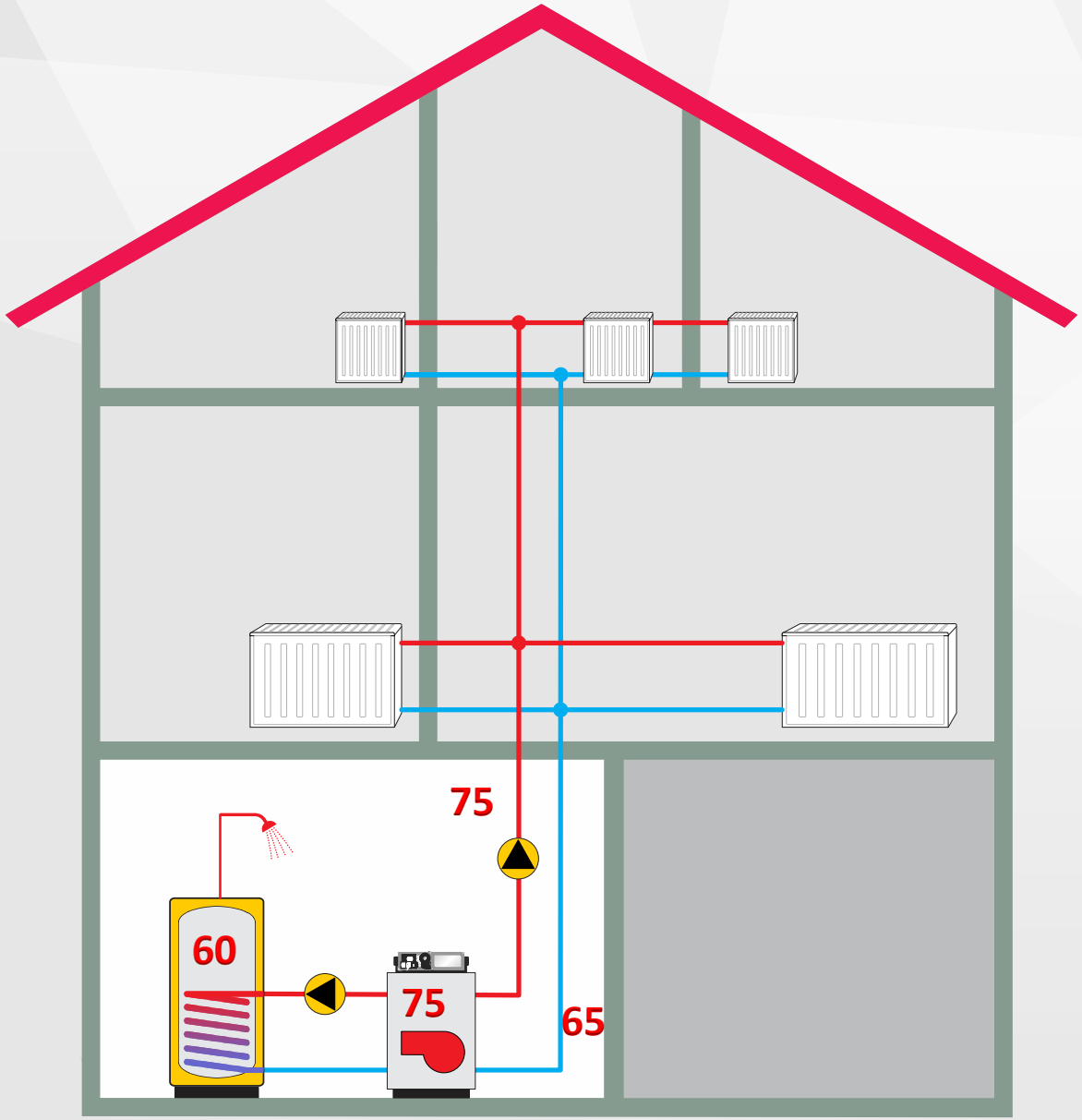
Ground Floor (70 sqm)

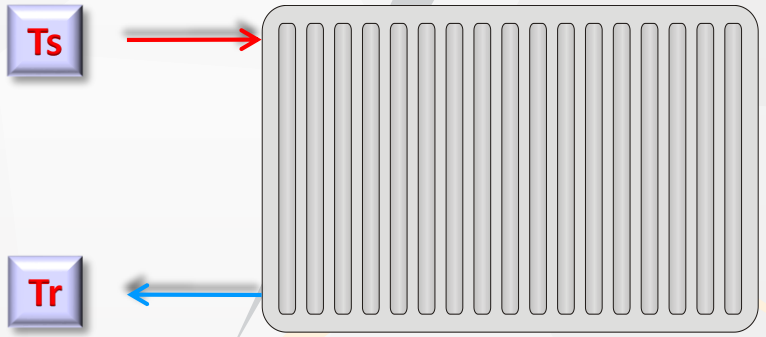
Training Center and Logistic department

Low temperature Radiators

5700 W

CONVENTIONAL HEATING SYSTEM

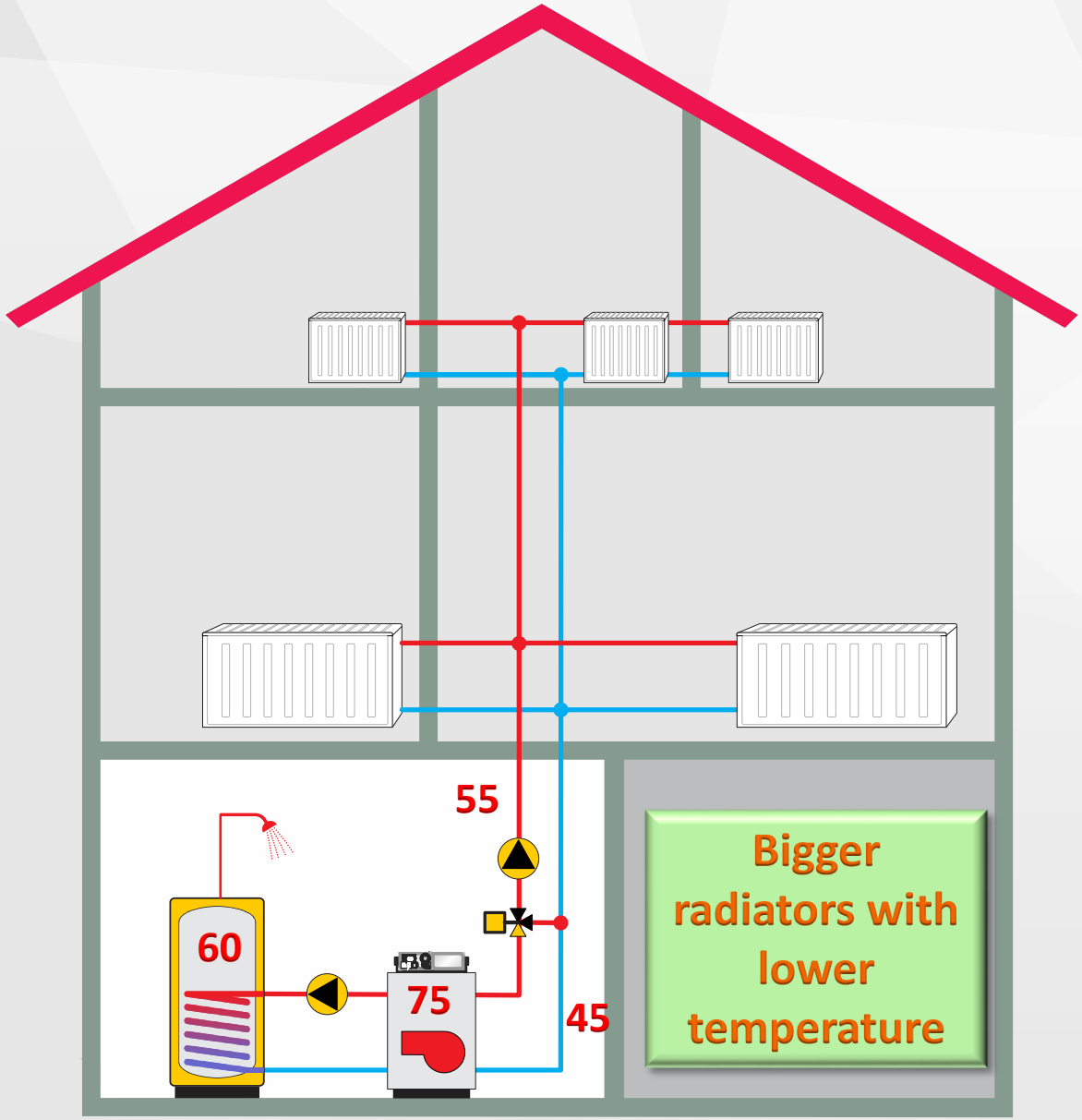




DIN EN EURONORM 442

Ts=75°C **Tr=65°C**

In these conditions we cannot use the Solar Heating, nor the Heat pump



Old standard

90°C

70°C

Small radiators with high temperature

EN standard

DIN EN EURONORM 442

75°C

65°C

The new Low temperature standard

55 45 DIE neue WÄRME

55°C

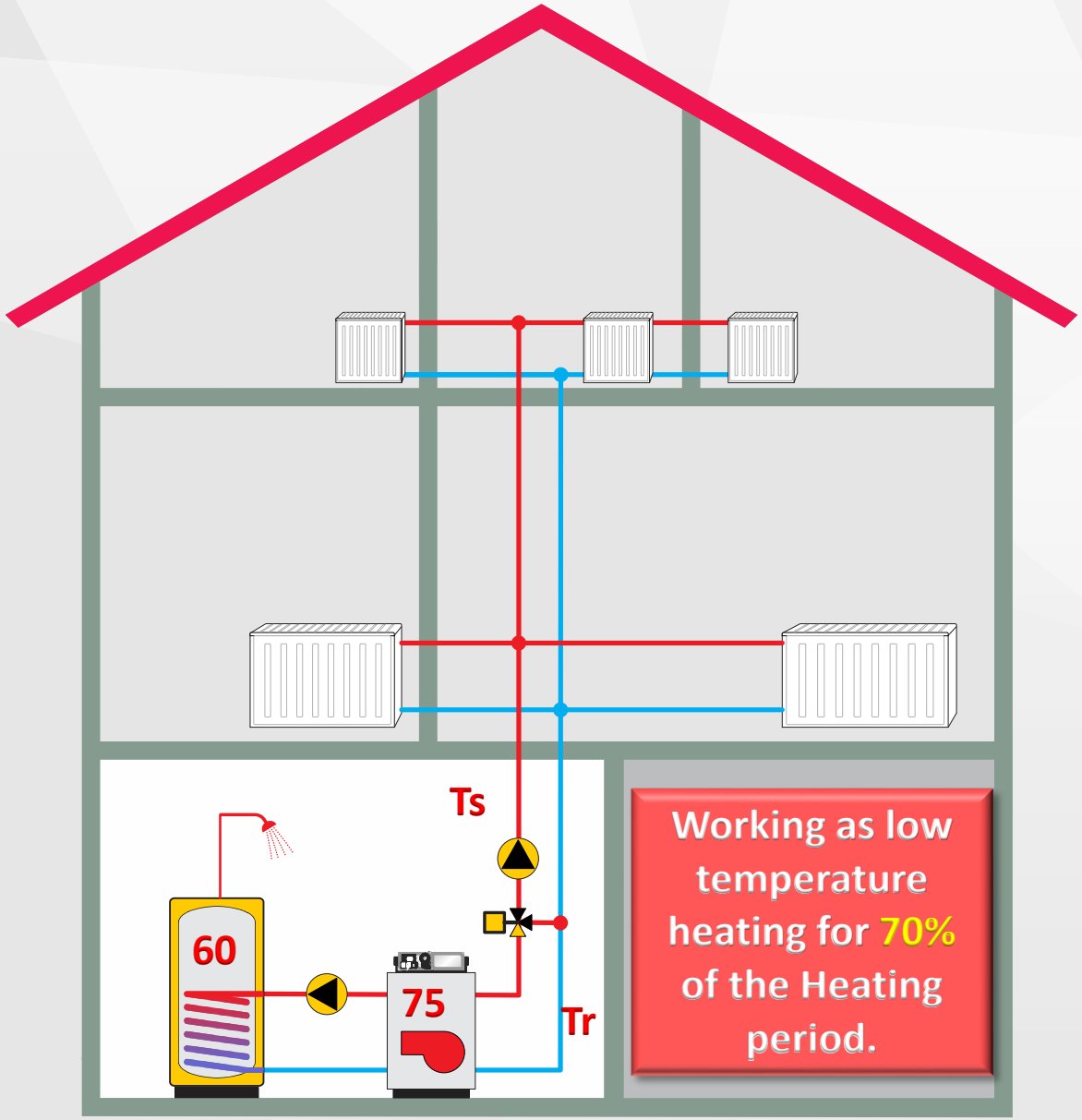
45°C

More radiation and more comfort.

High efficiency and low losses.

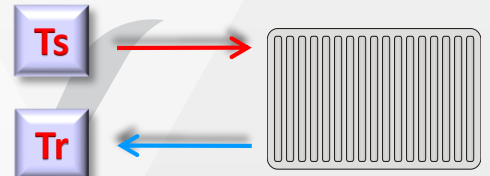
Best use with condensing boilers.

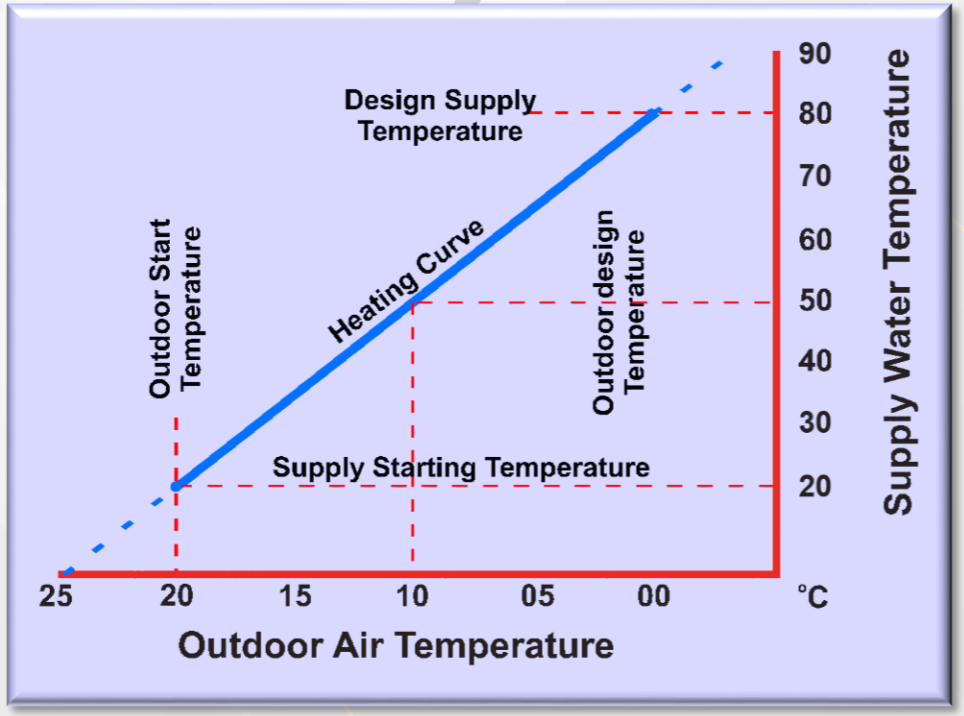
Convenient for all kind of renewable energy.



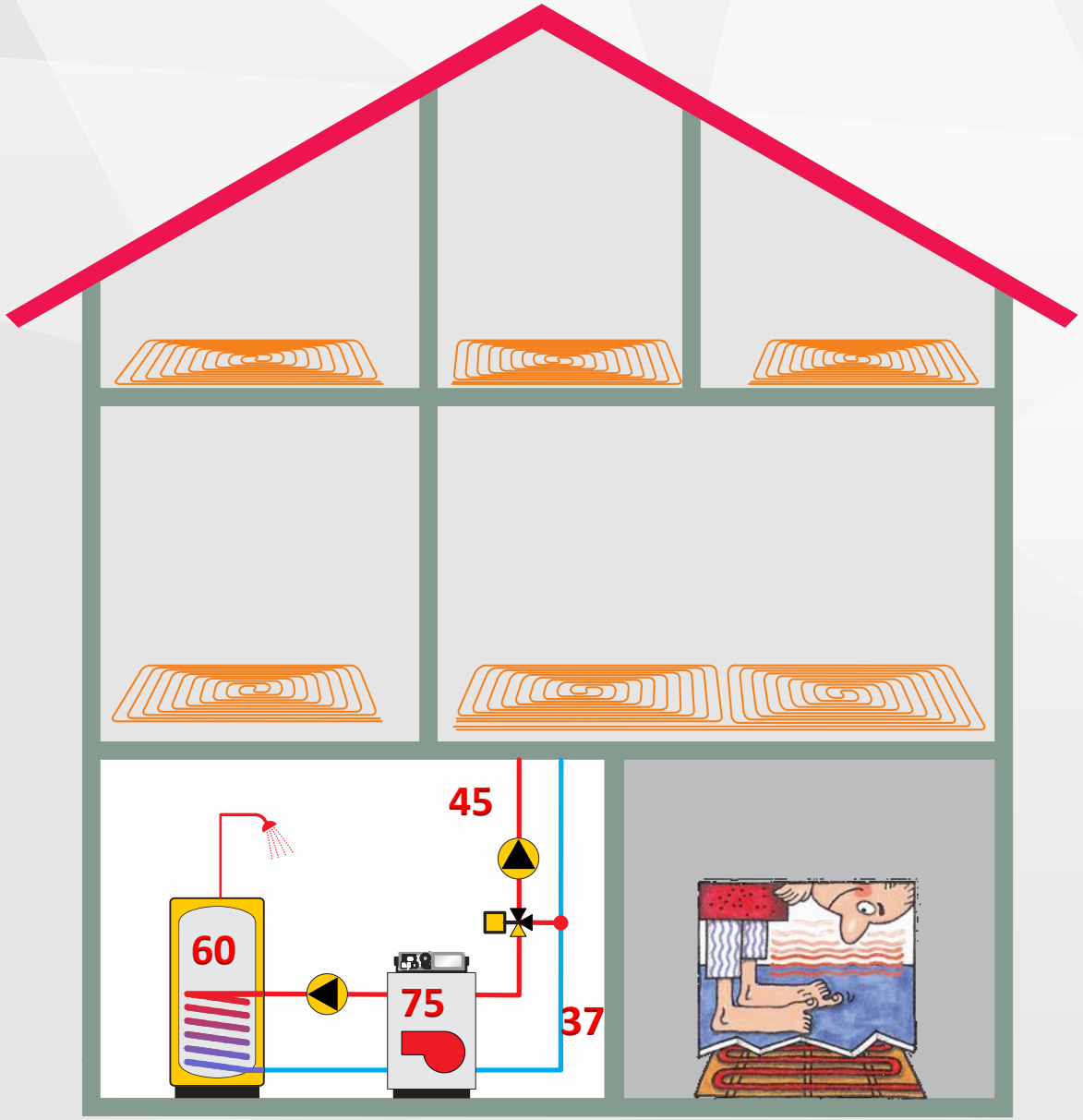
Working as low temperature heating for 70% of the Heating period.

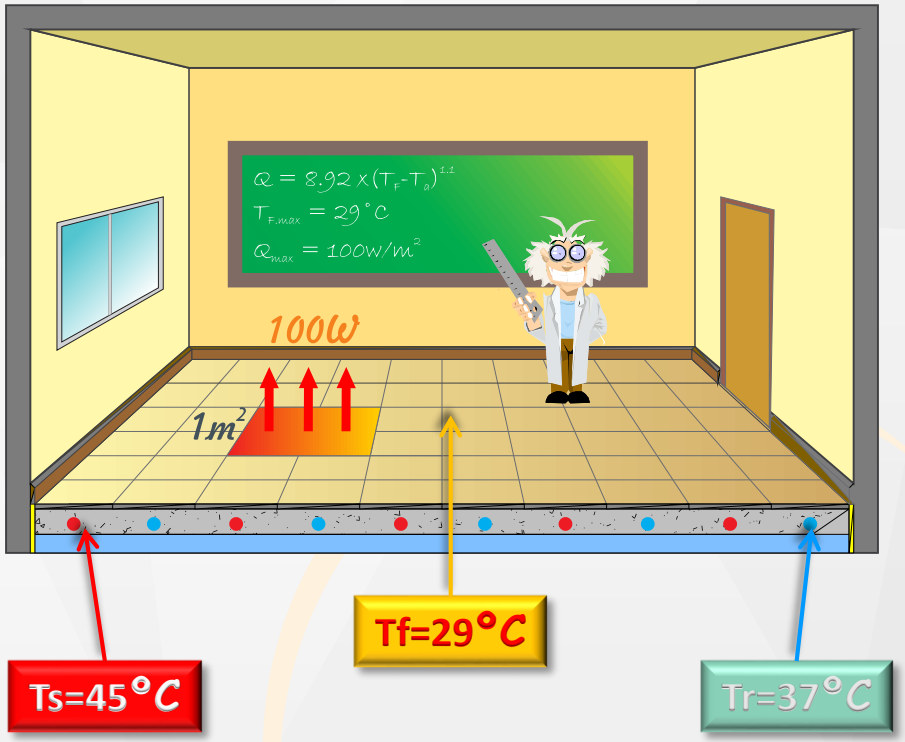
Weather compensation Controller





According to the heating curve, the supply temperature for radiators varies with the outdoor temperature, from 35°C to 75°C



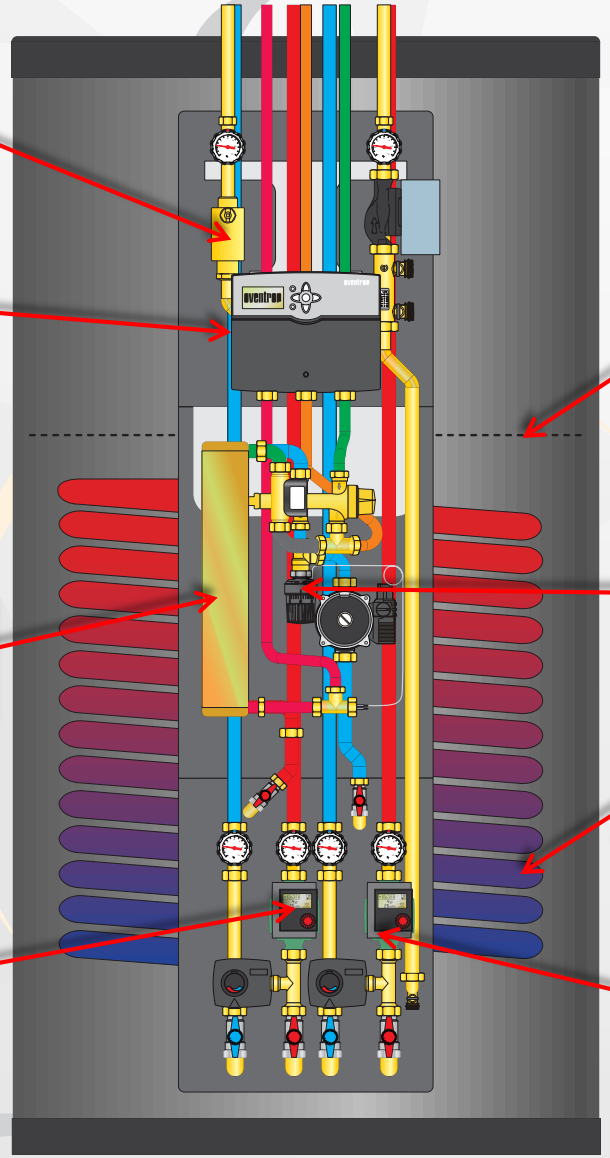


Conventional Under Floor Heating systems use
Ts = 45°C

Special Under Floor Heating systems use
Ts = 35°C

Using heating curve, the **Ts** varies and from
30°C up to **35°C**

Oventrop – Regucor WHS Energy Storage System 800L



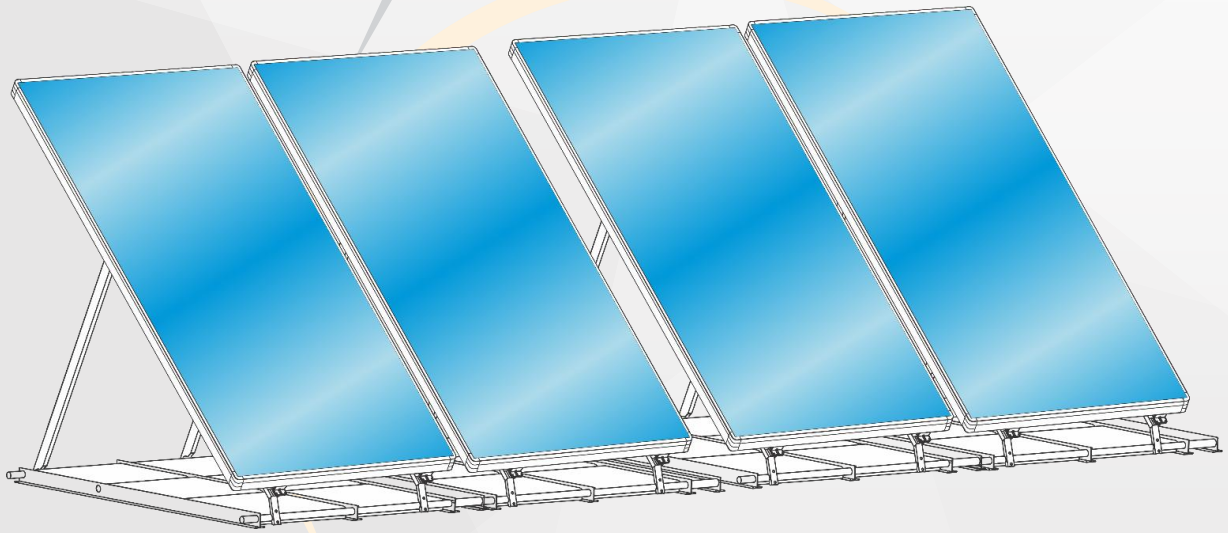
Complete system in one preassembled kit with the perfect components, ensure the optimum running of the system

The smart temperature stratification in the buffer result in more energy saving.

Many heating sources can be connected to the buffer, like heat pump, solid fuel boiler, gas or fuel boiler, Electric Resistance, or heat recovery from Generator exhaust.

Nobel – Apollon – High efficiency selective Flat Panels

6 panels of 2m²



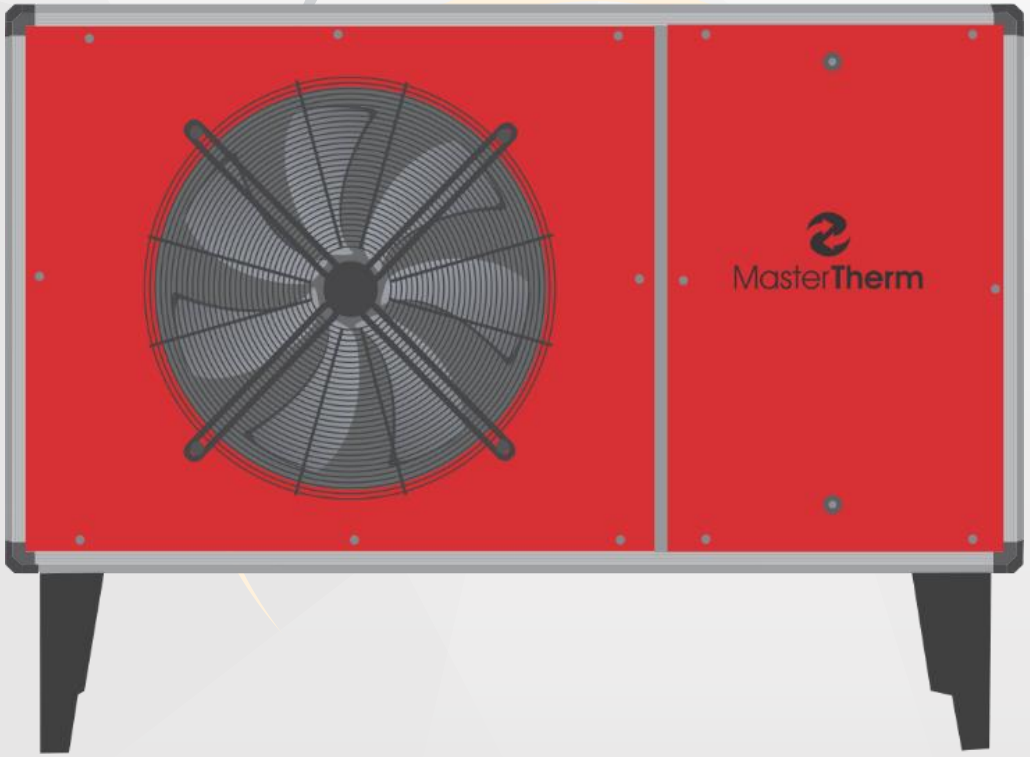
In Summer 60 to 80˚C

In Winter sunny day 40 to 60˚C

In Winter cloudy day 30 to 40˚C

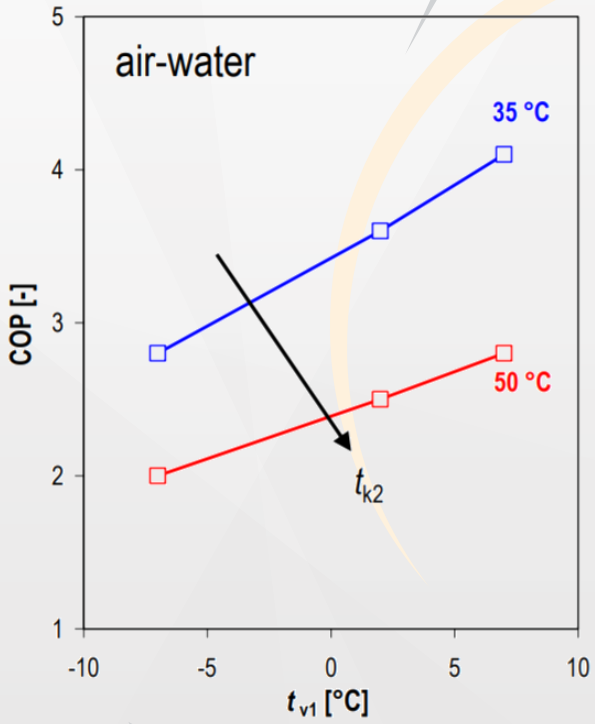
Master Therm – Air/Water Heat Pump

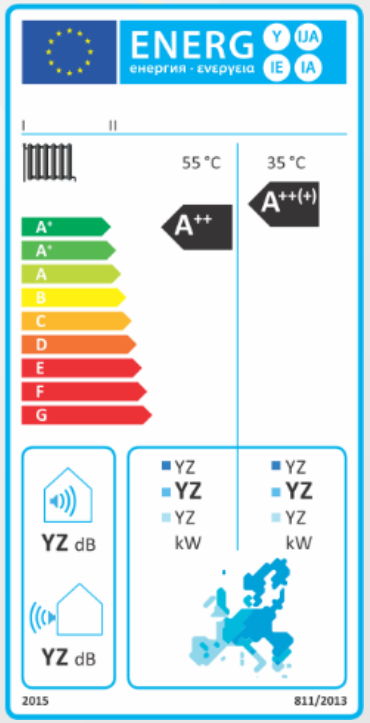
From 3 to 8kW



COP at 55˚C = 3.45 A++

COP at 35˚C = 4.5 A++(+)





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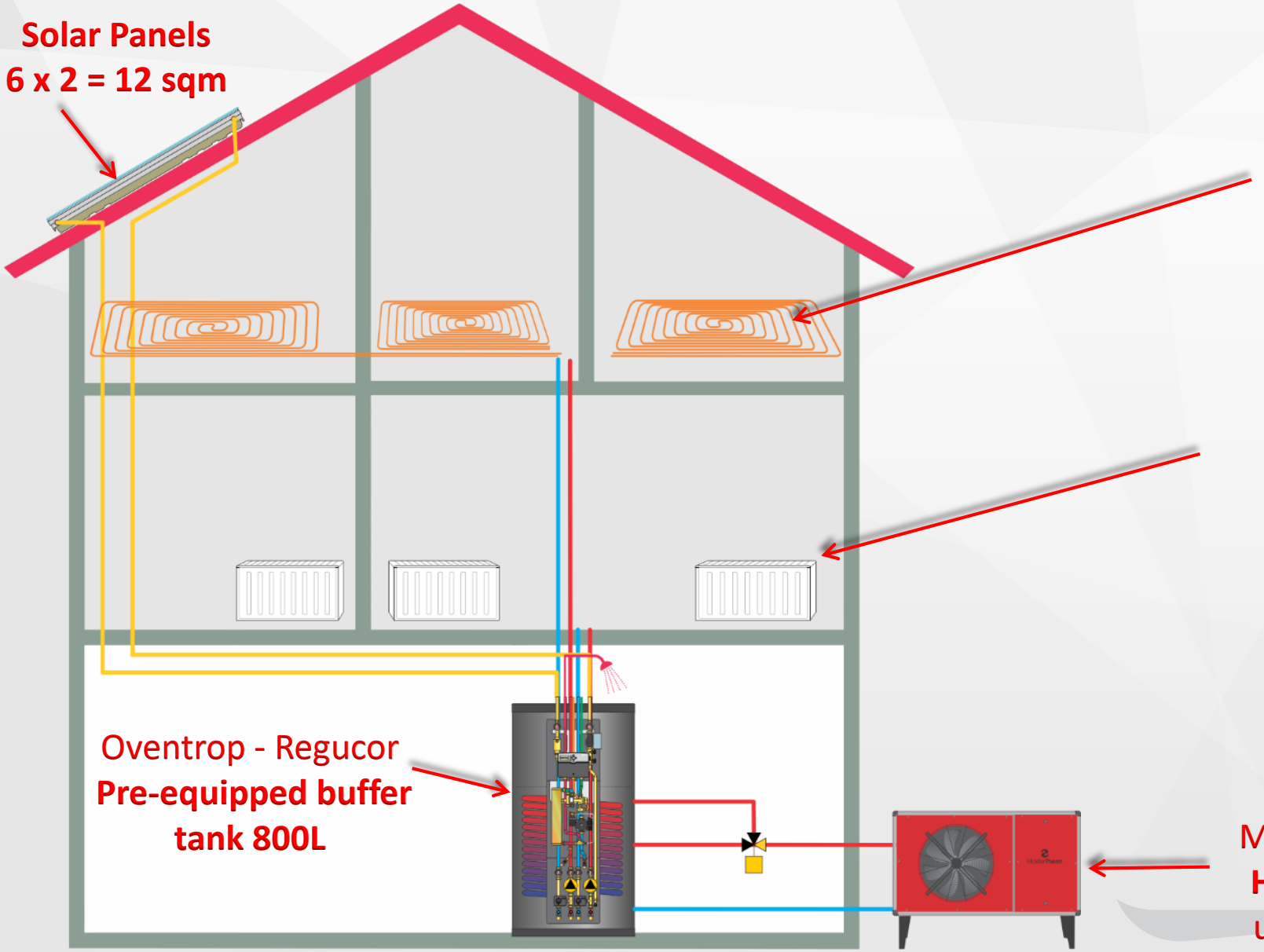
Solar Panels
6 x 2 = 12 sqm



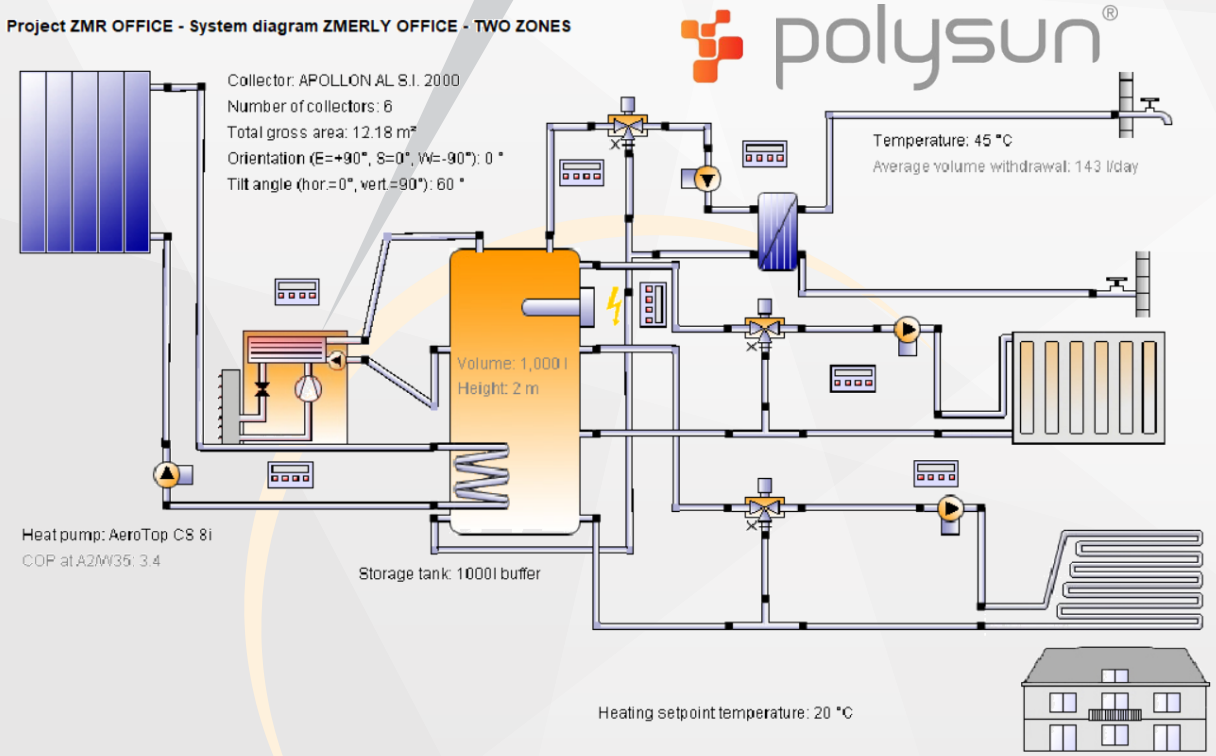
Special **Under Floor Heating**
From **Oventrop-Germany**
Flow temperature **35˚C** and below
4300W

Low temperature
Steel Panel radiators
From **Copa-Germany**
Flow temperature **55˚C** and below
5700W

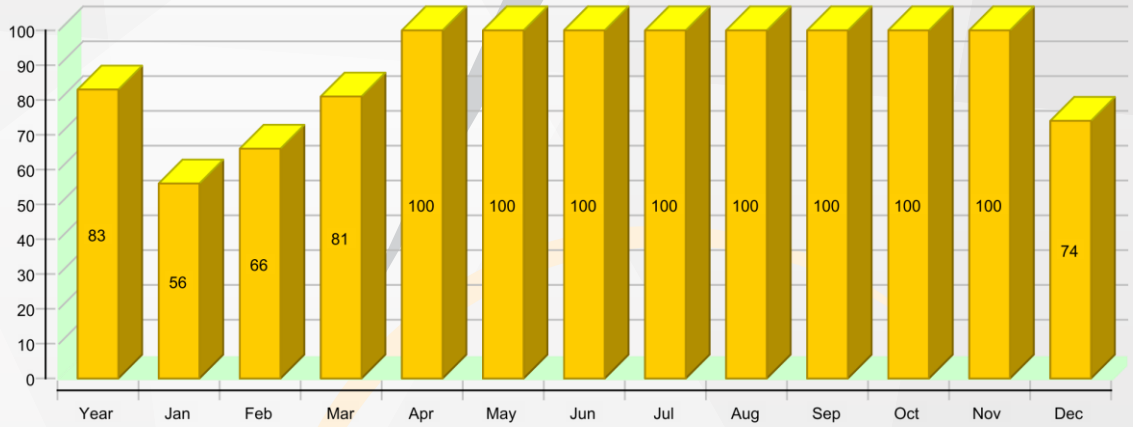
Oventrop - Regucor
Pre-equipped buffer tank 800L

Master-Term
Heat pump
up to **8 kW**

The best COP at
35˚C



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



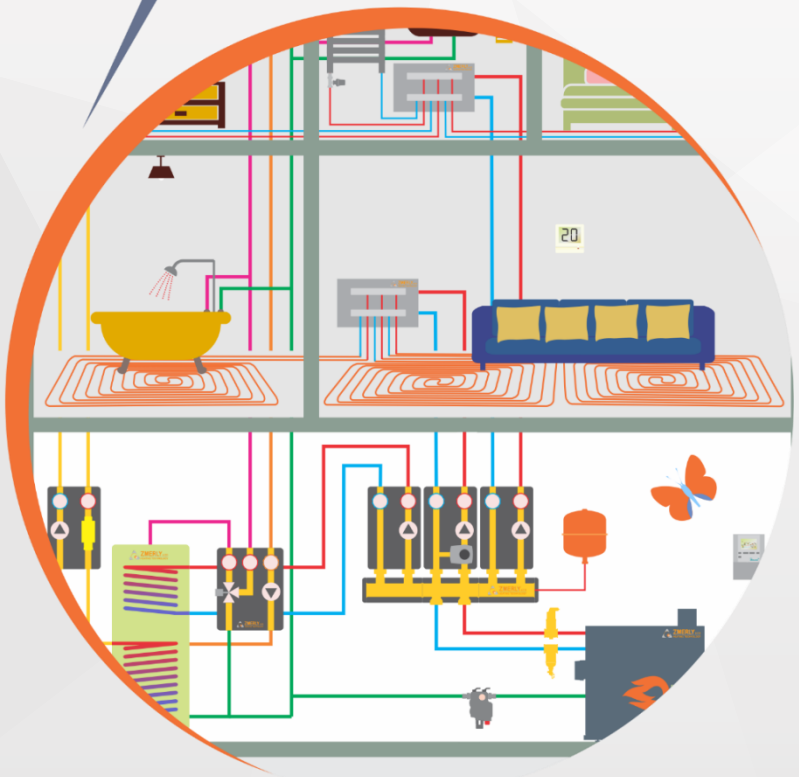
Overview solar thermal energy (annual values)

Collector area	12.2 m²
Solar fraction total	83%
Solar fraction hot water [SFnHw]	90.1 %
Solar fraction building [SFnBd]	70.3 %
Total annual field yield	5,561.2 kWh
Collector field yield relating to gross area	456.6 kWh/m²/Year
Collector field yield relating to aperture area	503.7 kWh/m²/Year
Max. energy savings	1,959.2 kWh
Max. reduction in CO2 emissions	1,051 kg

Solar Fraction for heating = **70.3%**

To benefit from **Solar thermal** or **Heat pump** for the **space heating** purposes:

- Use low temperature heating, as UFH or Low temperature radiators.
- The Heating Load must be lower than 50 W/m2 (in Lebanon it is between 100 and 175 W/m2)
- Smart storage tank will increase the efficiency of the system.



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Thank you