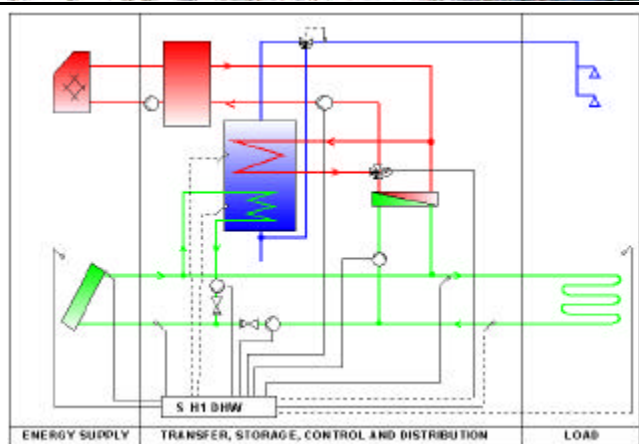


# Solar Combisystems – plant description – FR 1



## Main datas of building :

Total number of inhabitants	2
Total heated area	200 m <sup>2</sup>
Design outdoor temperature for space heating system	-13 °C
Design heating degree days (19)	3571 Kd
Total yearly space heating demand	25836 kWh/a
Total yearly DHW demand	1664 kWh/a
Total energy demand (space heating + DHW)	27500 kWh/a
Latitude	45.4 °
Situation	74 750 THORENS-



## Main datas of energy system :

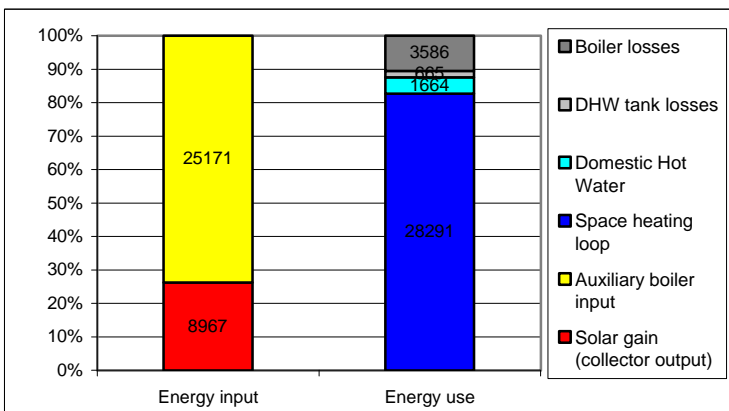
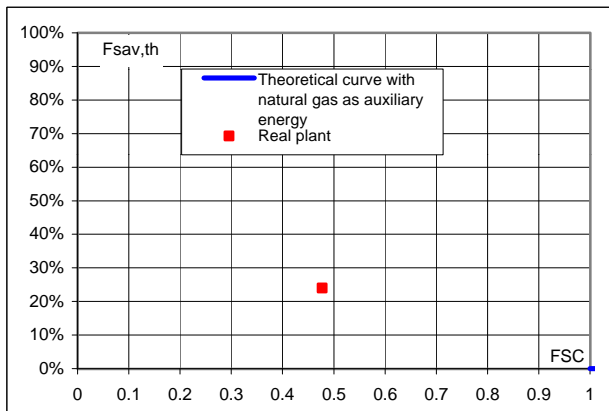
System No. of task 26 brochure	#3a modified
Gross collector area	26.6 m <sup>2</sup>
Net collector area	23.2 m <sup>2</sup>
Heat storage volume	0.20 m <sup>3</sup>
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	30.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	563 €/m <sup>2</sup>
<i>self installation</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	8967 kWh/a
Energy savings	7957 kWh/a
Energy savings per m <sup>2</sup>	299 kWh/m <sup>2</sup> .a
Fractional energy savings	24 %
FSC	0.48
Specific space heating load per m <sup>2</sup>	971 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	63 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1033 kWh/m <sup>2</sup>
Solar conversion factor	24 %
System efficiency (excl. Boiler eff.)	90 %
System efficiency (incl. Boiler eff.)	81 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

## Solar Combisystems – plant description – FR 2

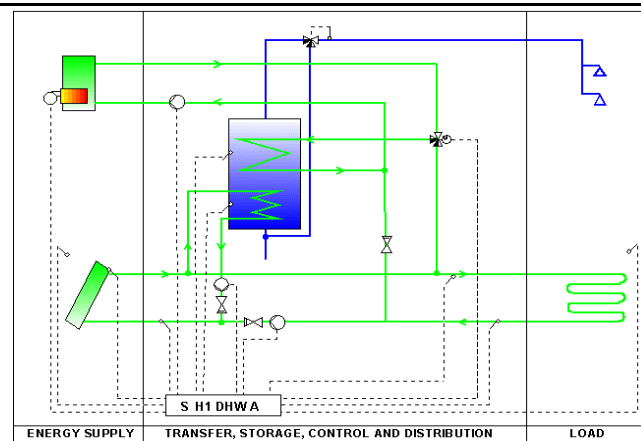


### Main datas of building :

Total number of inhabitants	5
Total heated area	190 m <sup>2</sup>
Design outdoor temperature for space heating system	-17 °C
Design heating degree days (19)	3250 Kd
Total yearly space heating demand	14698 kWh/a
Total yearly DHW demand	4258 kWh/a
Total energy demand (space heating + DHW)	18956 kWh/a
Latitude	44.6 °
Situation	05600 EYGLIERS

### Main datas of energy system :

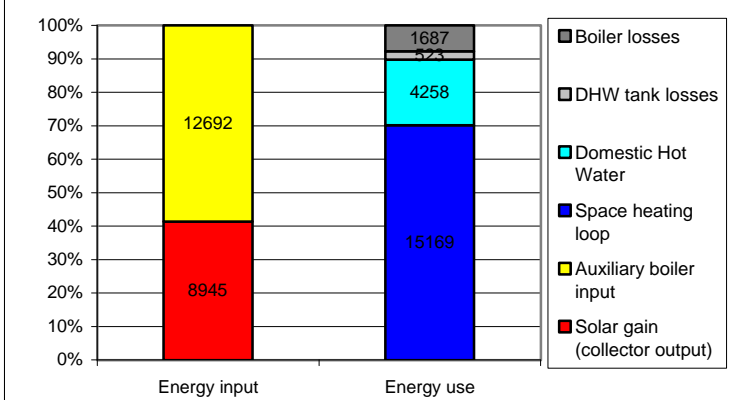
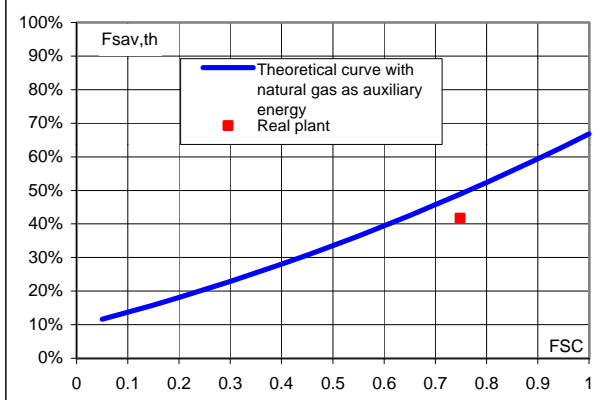
System No. of task 26 brochure	#3a
Gross collector area	28.0 m <sup>2</sup>
Net collector area	25.0 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.50 m <sup>3</sup>
Nominal power of auxiliary heater	14.4 kW
Auxiliary energy	electricity
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	488 €/m <sup>2</sup>
<i>self installation</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	8945 kWh/a
Energy savings	9102 kWh/a
Energy savings per m <sup>2</sup>	326 kWh/m <sup>2</sup> .a
Fractional energy savings	42 %
FSC	0.75
Specific space heating load per m <sup>2</sup>	526 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	152 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	678 kWh/m <sup>2</sup>
Solar conversion factor	20 %
System efficiency (excl. Boiler eff.)	95 %
System efficiency (incl. Boiler eff.)	88 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

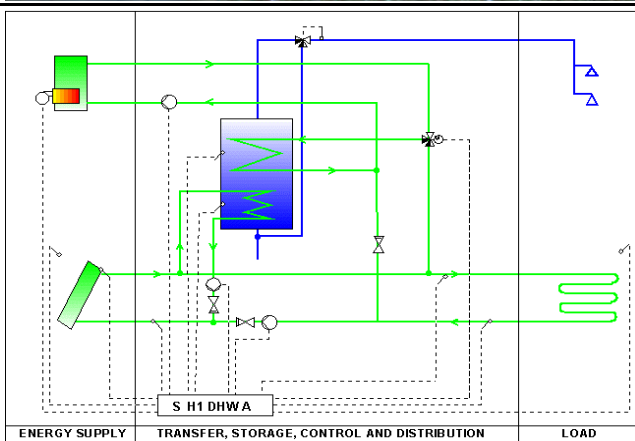
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

## Solar Combisystems – plant description – FR 3



### Main datas of building :

Total number of inhabitants	3
Total heated area	91 m <sup>2</sup>
Design outdoor temperature for space heating system	-12 °C
Design heating degree days (19)	3442 Kd
Total yearly space heating demand	13198 kWh/a
Total yearly DHW demand	2497 kWh/a
Total energy demand (space heating + DHW)	15695 kWh/a
Latitude	45.4 °
Situation	73540 ESSERTS BLAY



### Main datas of energy system :

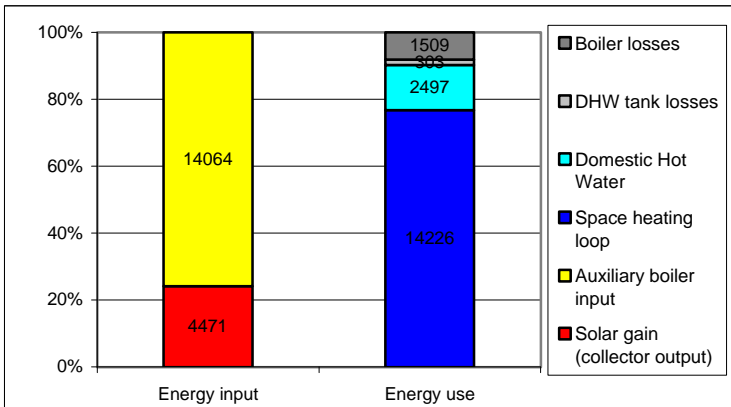
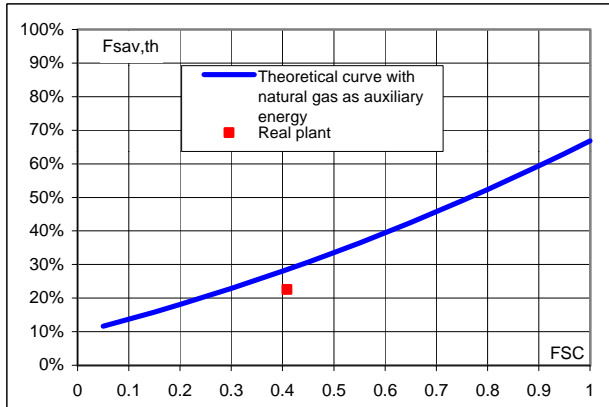
System No. of task 26 brochure	#3a
Gross collector area	10.8 m <sup>2</sup>
Net collector area	9.3 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	8.4 kW
Auxiliary energy	electricity
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	632 €/m <sup>2</sup>
<i>self installation</i>	
<i>pipework missing</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	4471 kWh/a
Energy savings	4102 kWh/a
Energy savings per m <sup>2</sup>	381 kWh/m <sup>2</sup> .a
Fractional energy savings	23 %
FSC	0.41
Specific space heating load per m <sup>2</sup>	1225 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	232 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1456 kWh/m <sup>2</sup>
Solar conversion factor	29 %
System efficiency (excl. Boiler eff.)	92 %
System efficiency (incl. Boiler eff.)	85 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )



## Solar Combisystems – plant description – FR 4

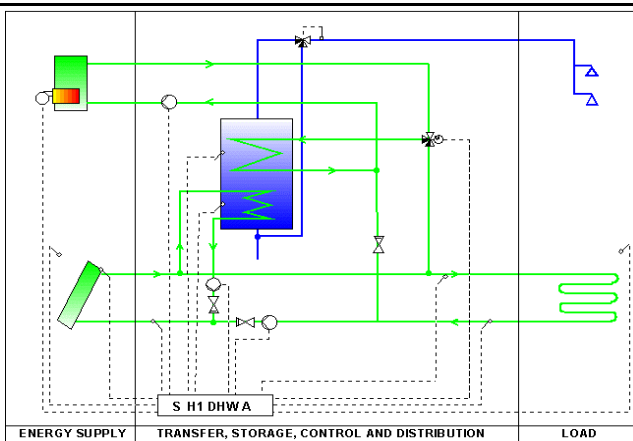


### Main datas of building :

Total number of inhabitants	10
Total heated area	200 m <sup>2</sup>
Design outdoor temperature for space heating system	-13 °C
Design heating degree days (19)	3664 Kd
Total yearly space heating demand	34734 kWh/a
Total yearly DHW demand	3173 kWh/a
Total energy demand (space heating + DHW)	37907 kWh/a
Latitude	45.4 °
Situation	38350 MARCIEU

### Main datas of energy system :

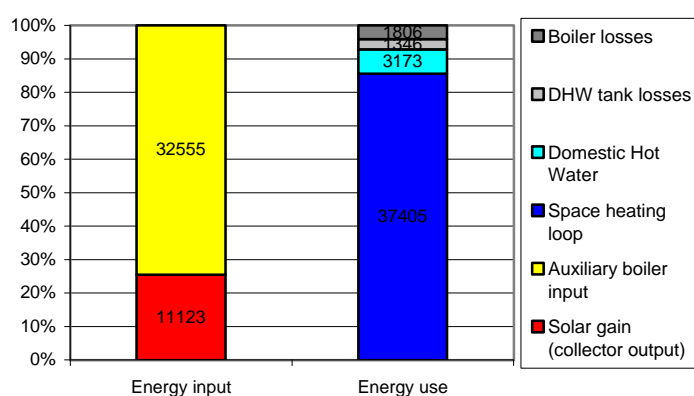
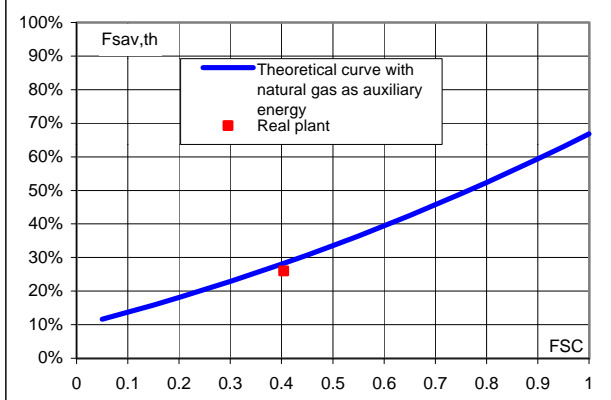
System No. of task 26 brochure	#3a
Gross collector area	20.8 m <sup>2</sup>
Net collector area	18.5 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	1.00 m <sup>3</sup>
Nominal power of auxiliary heater	8.4 kW
Auxiliary energy	electricity
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	539 €/m <sup>2</sup>
<i>self-installation of the heating floor</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	11123 kWh/a
Energy savings	11452 kWh/a
Energy savings per m <sup>2</sup>	550 kWh/m <sup>2</sup> .a
Fractional energy savings	26 %
FSC	0.40
Specific space heating load per m <sup>2</sup>	1668 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	152 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1820 kWh/m <sup>2</sup>
Solar conversion factor	38 %
System efficiency (excl. Boiler eff.)	91 %
System efficiency (incl. Boiler eff.)	87 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

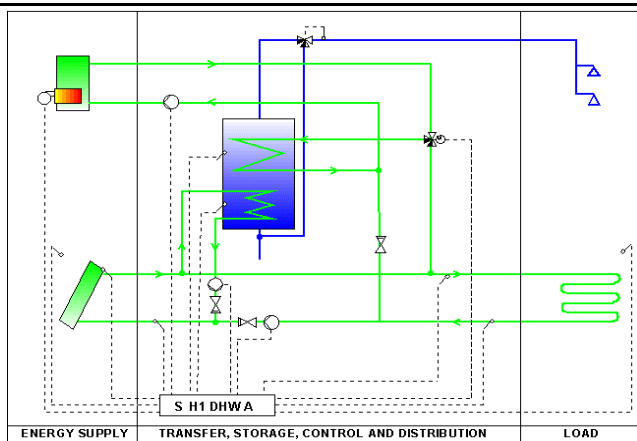
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

## Solar Combisystems – plant description – FR 5



### Main datas of building :

Total number of inhabitants	4
Total heated area	100 m <sup>2</sup>
Design outdoor temperature for space heating system	-17 °C
Design heating degree days (19)	3746 Kd
Total yearly space heating demand	14496 kWh/a
Total yearly DHW demand	3413 kWh/a
Total energy demand (space heating + DHW)	17909 kWh/a
Latitude	45.4 °
Situation	74250 BOGEVE



### Main datas of energy system :

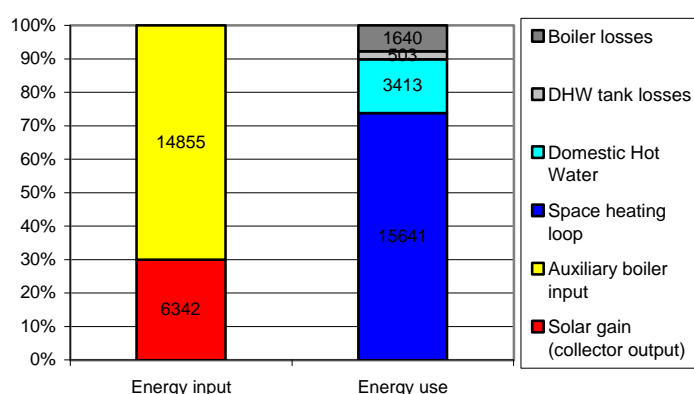
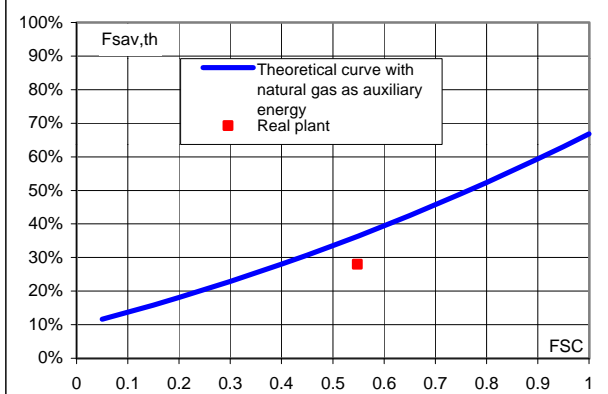
System No. of task 26 brochure	#3a
Gross collector area	15.7 m <sup>2</sup>
Net collector area	13.9 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.50 m <sup>3</sup>
Nominal power of auxiliary heater	9.6 kW
Auxiliary energy	electricity
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	570 €/m <sup>2</sup>
<i>self installation</i>	
<i>pipework missing</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	6342 kWh/a
Energy savings	5786 kWh/a
Energy savings per m <sup>2</sup>	369 kWh/m <sup>2</sup> .a
Fractional energy savings	28 %
FSC	0.55
Specific space heating load per m <sup>2</sup>	923 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	217 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1141 kWh/m <sup>2</sup>
Solar conversion factor	27 %
System efficiency (excl. Boiler eff.)	92 %
System efficiency (incl. Boiler eff.)	84 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 6



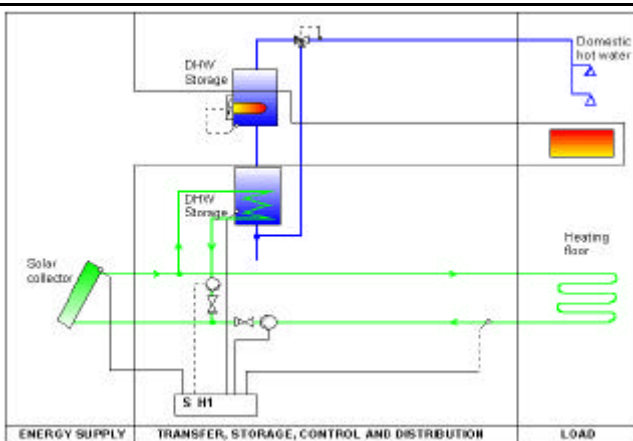
## Main datas of building :

Total number of inhabitants	15 to 20
Total heated area	220 m <sup>2</sup>
Design outdoor temperature for space heating system	-16 °C
Design heating degree days (19)	3974 Kd
Total yearly space heating demand	22247 kWh/a
Total yearly DHW demand	5041 kWh/a
Total energy demand (space heating + DHW)	27288 kWh/a
Latitude	45.1 °
Situation	43 CHAMBON SUR

## Main datas of energy system :

System No. of task 26 brochure	#1
Gross collector area	23.6 m <sup>2</sup>
Net collector area	20.4 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.50 m <sup>3</sup>
Nominal power of auxiliary heater	14.0 kW
Auxiliary energy	Wood chimney
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	484 €/m <sup>2</sup>

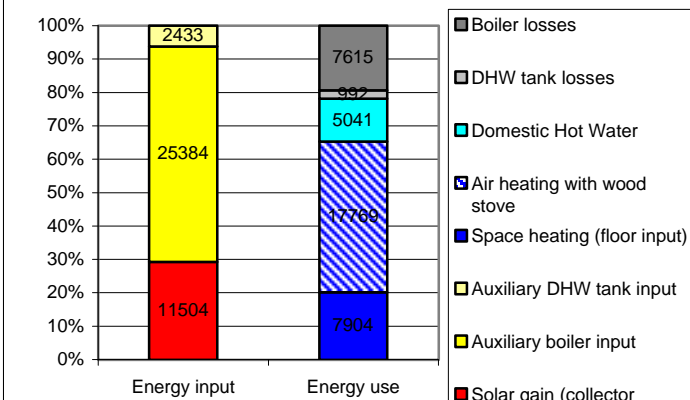
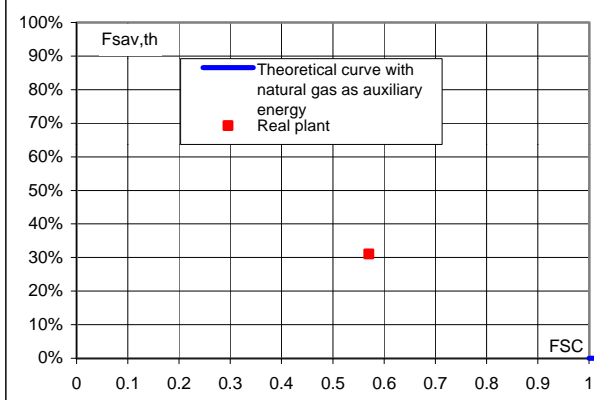
*auxiliary wood chimney missing*  
*auxiliary DHW tank missing*



## Main energy datas of solar combisystem :

simulation

Solar gain	11504 kWh/a
Energy savings	12523 kWh/a
Energy savings per m <sup>2</sup>	532 kWh/m <sup>2</sup> .a
Fractional energy savings	31 %
FSC	0.57
Specific space heating load per m <sup>2</sup>	944 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	214 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1158 kWh/m <sup>2</sup>
Solar conversion factor	36 %
System efficiency (excl. Boiler eff.)	86 %
System efficiency (incl. Boiler eff.)	69 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

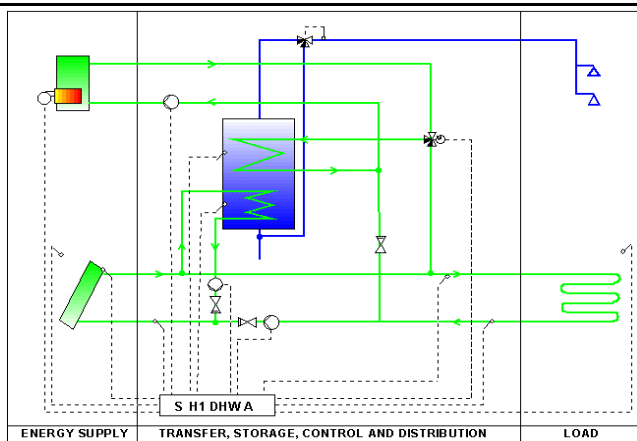


## Solar Combisystems – plant description – FR 7



### Main datas of building :

Total number of inhabitants	1
Total heated area	190 m <sup>2</sup>
Design outdoor temperature for space heating system	-11 °C
Design heating degree days (19)	3033 Kd
Total yearly space heating demand	18611 kWh/a
Total yearly DHW demand	1664 kWh/a
Total energy demand (space heating + DHW)	20276 kWh/a
Latitude	45.4 °
Situation	73230 ST ALBAN



### Main datas of energy system :

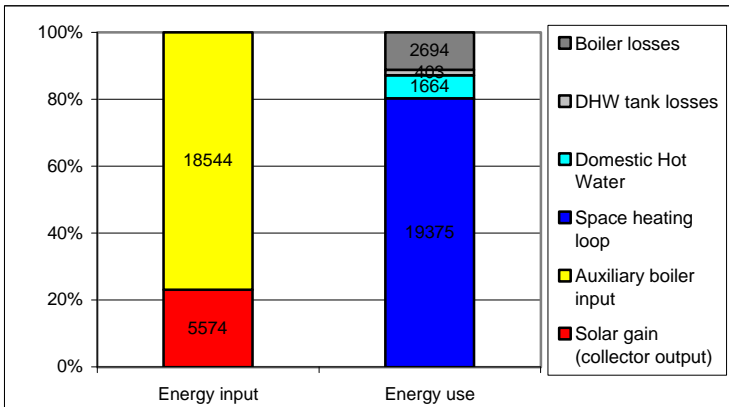
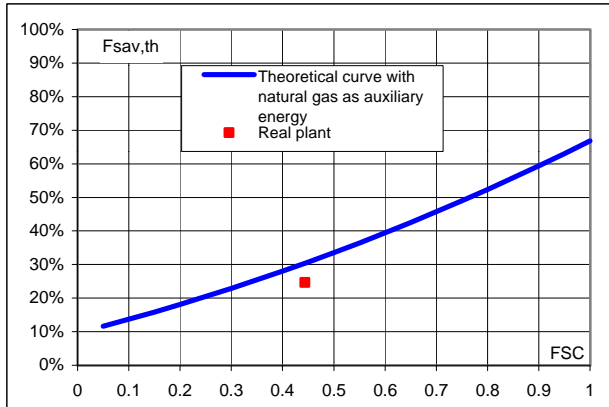
System No. of task 26 brochure	#3a
Gross collector area	20.4 m <sup>2</sup>
Net collector area	16.7 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	25.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	492 €/m <sup>2</sup>
<i>pipework missing</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	5574 kWh/a
Energy savings	6070 kWh/a
Energy savings per m <sup>2</sup>	297 kWh/m <sup>2</sup> .a
Fractional energy savings	25 %
FSC	0.44
Specific space heating load per m <sup>2</sup>	912 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	82 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	994 kWh/m <sup>2</sup>
Solar conversion factor	22 %
System efficiency (excl. Boiler eff.)	95 %
System efficiency (incl. Boiler eff.)	84 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

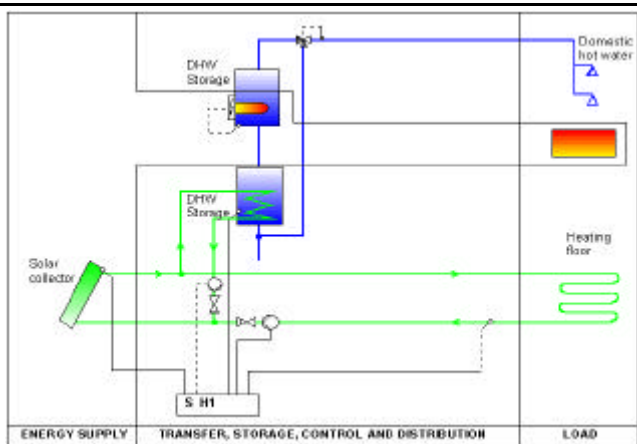
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

## Solar Combisystems – plant description – FR 8



### Main datas of building :

Total number of inhabitants	4
Total heated area	100 m <sup>2</sup>
Design outdoor temperature for space heating system	-13 °C
Design heating degree days (19)	3522 Kd
Total yearly space heating demand	9475 kWh/a
Total yearly DHW demand	3329 kWh/a
Total energy demand (space heating + DHW)	12804 kWh/a
Latitude	45.4 °
Situation	73 ST OFFENGE



### Main datas of energy system :

System No. of task 26 brochure	#1
Gross collector area	10.8 m <sup>2</sup>
Net collector area	9.3 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	9.0 kW
Auxiliary energy	Wood pellet stove
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	633 €/m <sup>2</sup>

*self installation*

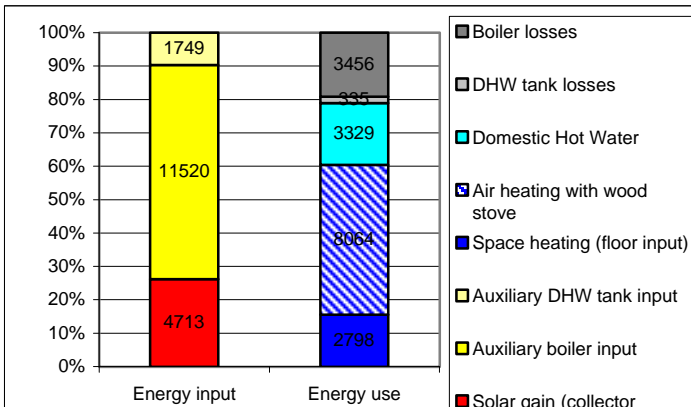
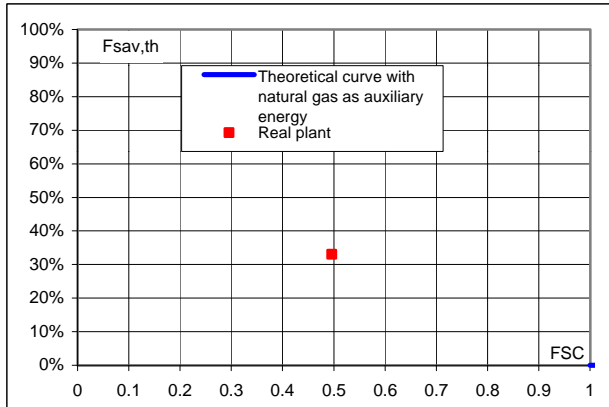
*auxiliary pellet stove : 2750 €*



### Main energy datas of solar combisystem :

**simulation**

Solar gain	4713 kWh/a
Energy savings	6353 kWh/a
Energy savings per m <sup>2</sup>	589 kWh/m <sup>2</sup> .a
Fractional energy savings	33 %
FSC	0.50
Specific space heating load per m <sup>2</sup>	879 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	309 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1188 kWh/m <sup>2</sup>
Solar conversion factor	42 %
System efficiency (excl. Boiler eff.)	88 %
System efficiency (incl. Boiler eff.)	71 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

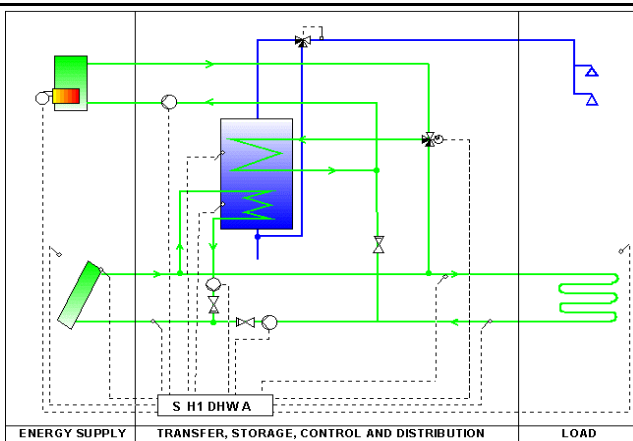


## Solar Combisystems – plant description – FR 9



### Main datas of building :

Total number of inhabitants	4
Total heated area	160 m <sup>2</sup>
Design outdoor temperature for space heating system	-5 °C
Design heating degree days (19)	2482 Kd
Total yearly space heating demand	8368 kWh/a
Total yearly DHW demand	4092 kWh/a
Total energy demand (space heating + DHW)	12460 kWh/a
Latitude	48.1 °
Situation	35160 BRETEIL



### Main datas of energy system :

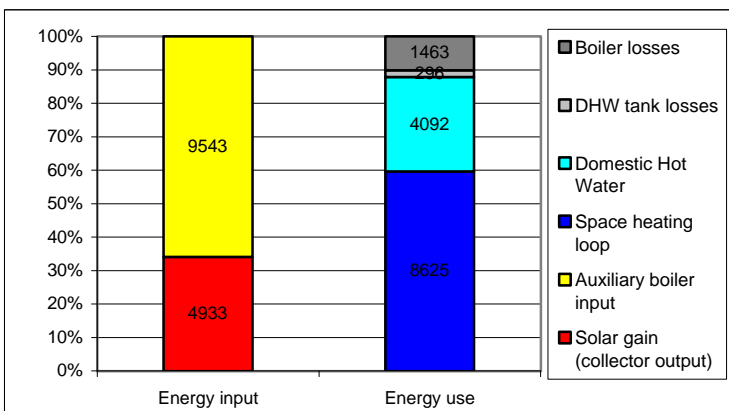
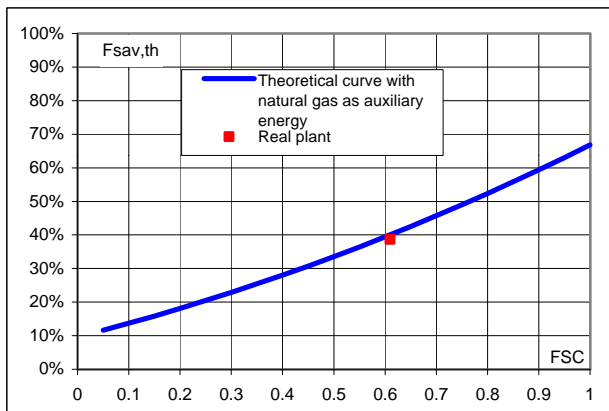
System No. of task 26 brochure	#3a
Gross collector area	14.7 m <sup>2</sup>
Net collector area	13.0 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	24.0 kW
Auxiliary energy	propane gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	566 €/m <sup>2</sup>
<i>self installation</i>	



### Main energy datas of solar combisystem :

simulation

Solar gain	4933 kWh/a
Energy savings	5869 kWh/a
Energy savings per m <sup>2</sup>	399 kWh/m <sup>2</sup> .a
Fractional energy savings	39 %
FSC	0.61
Specific space heating load per m <sup>2</sup>	569 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	278 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	847 kWh/m <sup>2</sup>
Solar conversion factor	30 %
System efficiency (excl. Boiler eff.)	96 %
System efficiency (incl. Boiler eff.)	86 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 10



## Main datas of building :

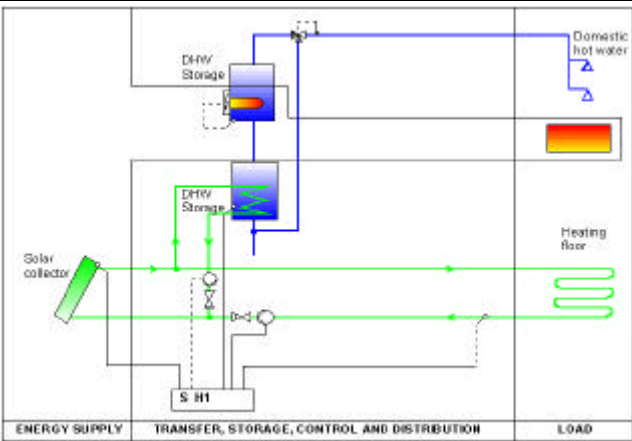
Total number of inhabitants	5
Total heated area	104 m <sup>2</sup>
Design outdoor temperature for space heating system	-11 °C
Design heating degree days (19)	3374 Kd
Total yearly space heating demand	11012 kWh/a
Total yearly DHW demand	4130 kWh/a
Total energy demand (space heating + DHW)	15142 kWh/a
Latitude	46.2 °
Situation	42260 CREMEAUX

## Main datas of energy system :

System No. of task 26 brochure	#1
Gross collector area	15.8 m <sup>2</sup>
Net collector area	13.9 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	14.0 kW
Auxiliary energy	Wood
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	426 €/m <sup>2</sup>

*self installation of the collector*

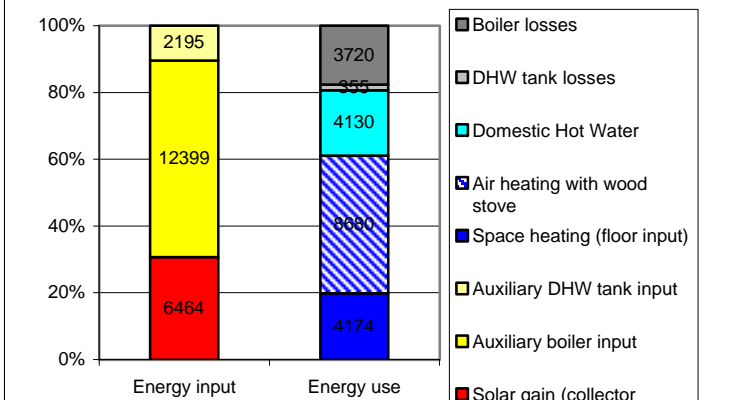
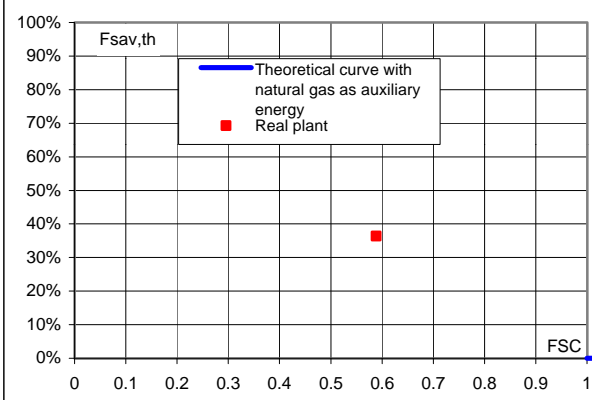
*self installation of the heating floor*



## Main energy datas of solar combisystem :

**simulation**

Solar gain	6464 kWh/a
Energy savings	8363 kWh/a
Energy savings per m <sup>2</sup>	528 kWh/m <sup>2</sup> .a
Fractional energy savings	36 %
FSC	0.59
Specific space heating load per m <sup>2</sup>	695 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	261 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	956 kWh/m <sup>2</sup>
Solar conversion factor	42 %
System efficiency (excl. Boiler eff.)	87 %
System efficiency (incl. Boiler eff.)	72 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

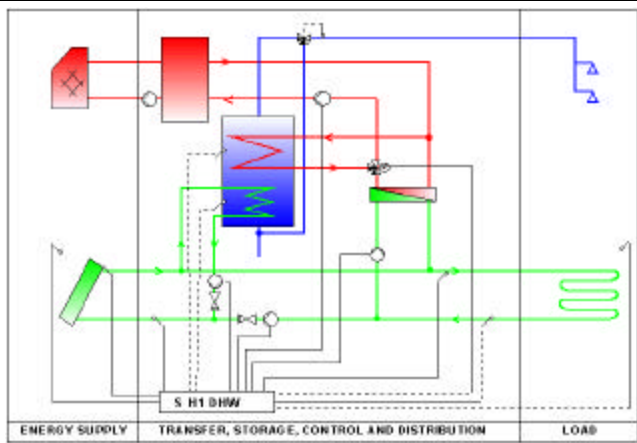
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 11



## Main datas of building :

Total number of inhabitants	4
Total heated area	150 m <sup>2</sup>
Design outdoor temperature for space heating system	-18 °C
Design heating degree days (19)	4023 Kd
Total yearly space heating demand	25438 kWh/a
Total yearly DHW demand	3413 kWh/a
Total energy demand (space heating + DHW)	28851 kWh/a
Latitude	45.4 °
Situation	73720 QUEIGE



## Main datas of energy system :

System No. of task 26 brochure	#3a modified
Gross collector area	16.1 m <sup>2</sup>
Net collector area	13.9 m <sup>2</sup>
Heat storage volume	0.50 m <sup>3</sup>
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	20.0 kW
Auxiliary energy	wood log
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	605 €/m <sup>2</sup>

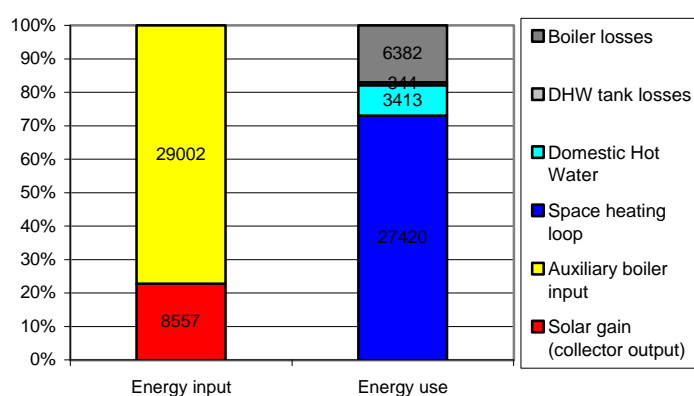
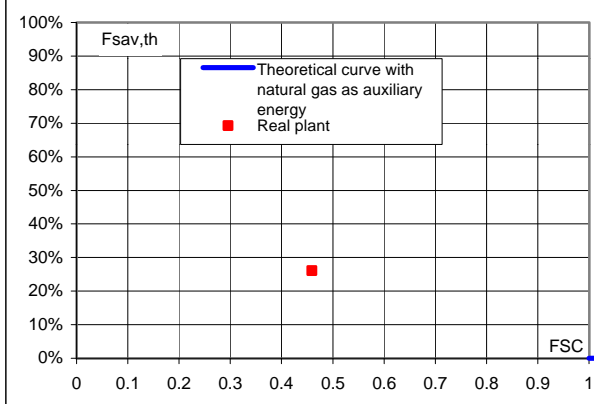
*solar collector on a separate building  
existing wood boiler and space heating loop*



## Main energy datas of solar combisystem :

**simulation**

Solar gain	8557 kWh/a
Energy savings	10361 kWh/a
Energy savings per m <sup>2</sup>	643 kWh/m <sup>2</sup> .a
Fractional energy savings	26 %
FSC	0.46
Specific space heating load per m <sup>2</sup>	1580 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	212 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1792 kWh/m <sup>2</sup>
Solar conversion factor	51 %
System efficiency (excl. Boiler eff.)	93 %
System efficiency (incl. Boiler eff.)	77 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )



# Solar Combisystems – plant description – FR 12



## Main datas of building :

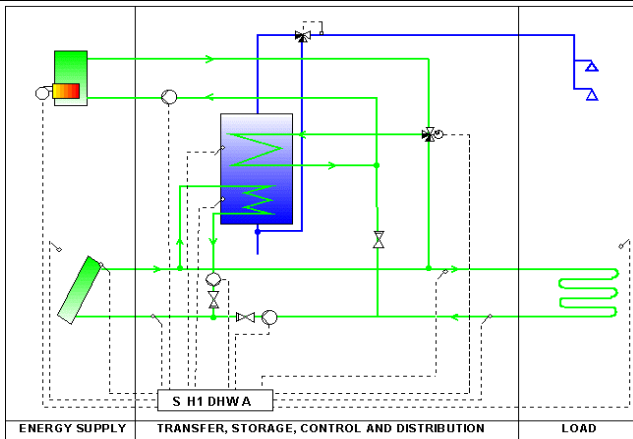
Total number of inhabitants	4
Total heated area	220 m <sup>2</sup>
Design outdoor temperature for space heating system	-13 °C
Design heating degree days (19)	3458 Kd
Total yearly space heating demand	19617 kWh/a
Total yearly DHW demand	4161 kWh/a
Total energy demand (space heating + DHW)	23778 kWh/a
Latitude	45.4 °
Situation	74 750 THORENS-

## Main datas of energy system :

System No. of task 26 brochure	#3a
Gross collector area	32.5 m <sup>2</sup>
Net collector area	29.2 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	26.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	418 €/m <sup>2</sup>

self installation

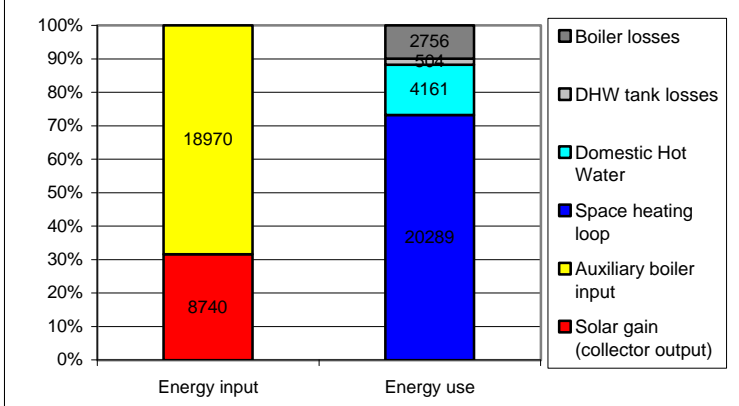
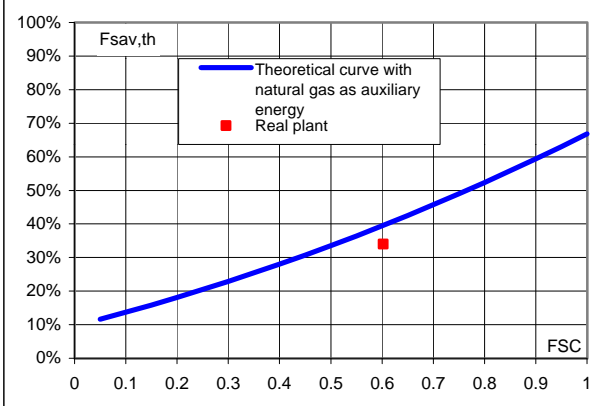
strong discount (about 30 to 40 %)



## Main energy datas of solar combisystem :

simulation

Solar gain	8740 kWh/a
Energy savings	9779 kWh/a
Energy savings per m <sup>2</sup>	301 kWh/m <sup>2</sup> .a
Fractional energy savings	34 %
FSC	0.60
Specific space heating load per m <sup>2</sup>	603 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	128 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	731 kWh/m <sup>2</sup>
Solar conversion factor	22 %
System efficiency (excl. Boiler eff.)	95 %
System efficiency (incl. Boiler eff.)	86 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

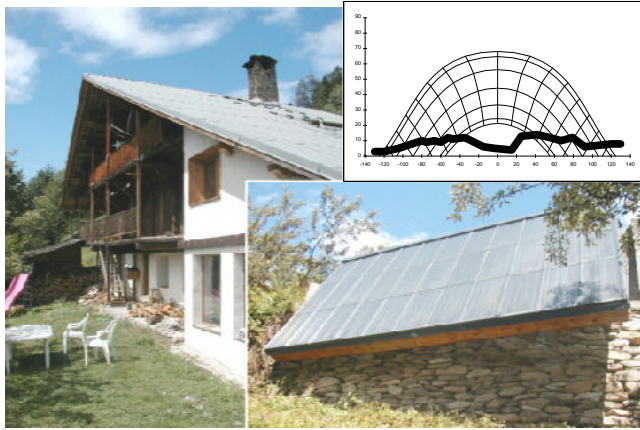
Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

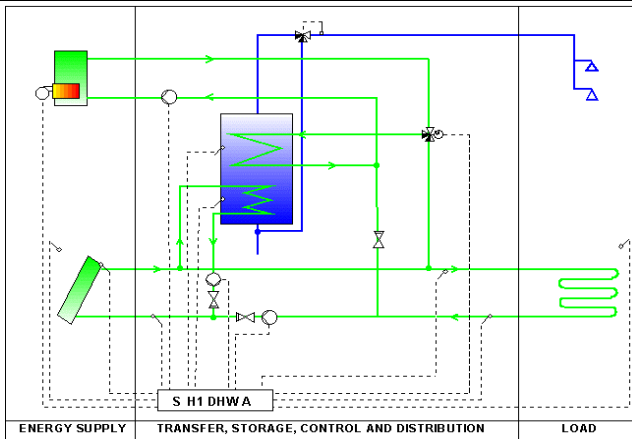
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

## Solar Combisystems – plant description – FR 13



### Main datas of building :

Total number of inhabitants	4
Total heated area	100 m <sup>2</sup>
Design outdoor temperature for space heating system	-16 °C
Design heating degree days (19)	3590 Kd
Total yearly space heating demand	15654 kWh/a
Total yearly DHW demand	3413 kWh/a
Total energy demand (space heating + DHW)	19068 kWh/a
Latitude	45.4 °
Situation	73 270 VILLARD SUR



### Main datas of energy system :

System No. of task 26 brochure	#3a
Gross collector area	17.4 m <sup>2</sup>
Net collector area	15.3 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	24.0 kW
Auxiliary energy	propane gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	529 €/m <sup>2</sup>

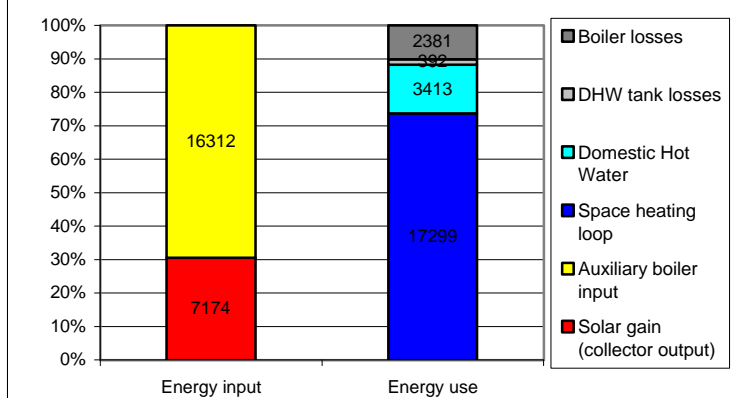
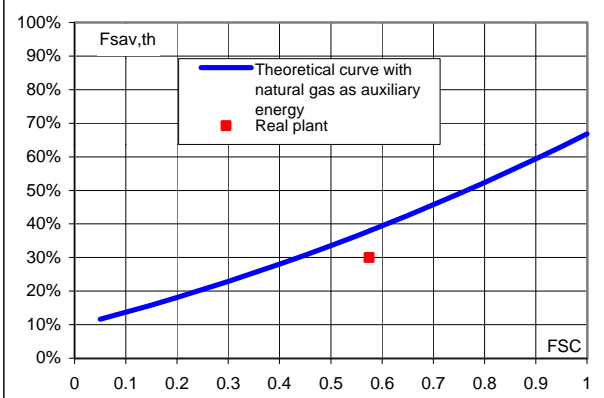
*solar collector on a separate building  
self installation of the collector*



### Main energy datas of solar combisystem :

simulation

Solar gain	7174 kWh/a
Energy savings	7005 kWh/a
Energy savings per m <sup>2</sup>	403 kWh/m <sup>2</sup> .a
Fractional energy savings	30 %
FSC	0.57
Specific space heating load per m <sup>2</sup>	900 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	196 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1096 kWh/m <sup>2</sup>
Solar conversion factor	34 %
System efficiency (excl. Boiler eff.)	90 %
System efficiency (incl. Boiler eff.)	81 %



### Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

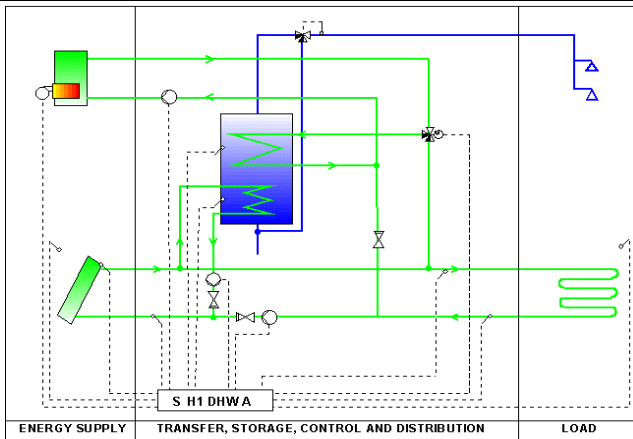
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 14



## Main datas of building :

Total number of inhabitants	5
Total heated area	120 m <sup>2</sup>
Design outdoor temperature for space heating system	-16 °C
Design heating degree days (19)	3978 Kd
Total yearly space heating demand	17355 kWh/a
Total yearly DHW demand	4956 kWh/a
Total energy demand (space heating + DHW)	22312 kWh/a
Latitude	45.4 °
Situation	38350 LA SALLE EN



## Main datas of energy system :

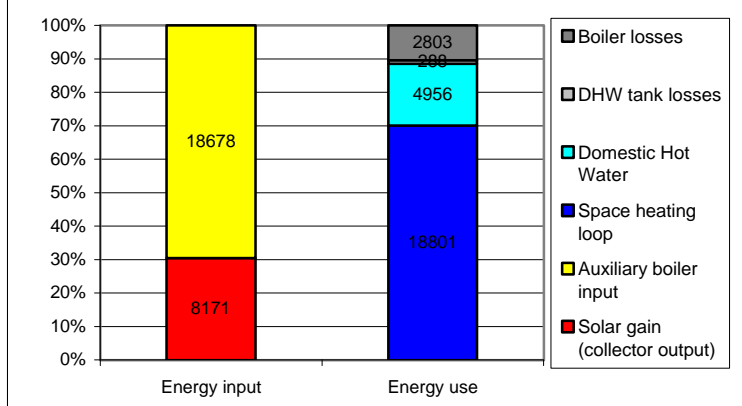
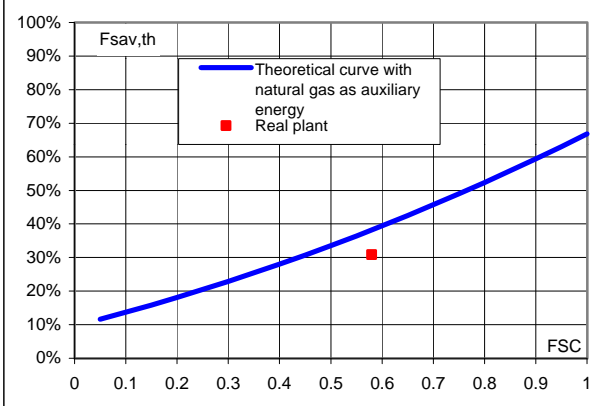
System No. of task 26 brochure	#3a
Gross collector area	18.8 m <sup>2</sup>
Net collector area	16.7 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	25.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	510 €/m <sup>2</sup>



## Main energy datas of solar combisystem :

simulation

Solar gain	8171 kWh/a
Energy savings	8355 kWh/a
Energy savings per m <sup>2</sup>	445 kWh/m <sup>2</sup> .a
Fractional energy savings	31 %
FSC	0.58
Specific space heating load per m <sup>2</sup>	925 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	264 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1189 kWh/m <sup>2</sup>
Solar conversion factor	30 %
System efficiency (excl. Boiler eff.)	93 %
System efficiency (incl. Boiler eff.)	83 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )



# Solar Combisystems – plant description – FR 15

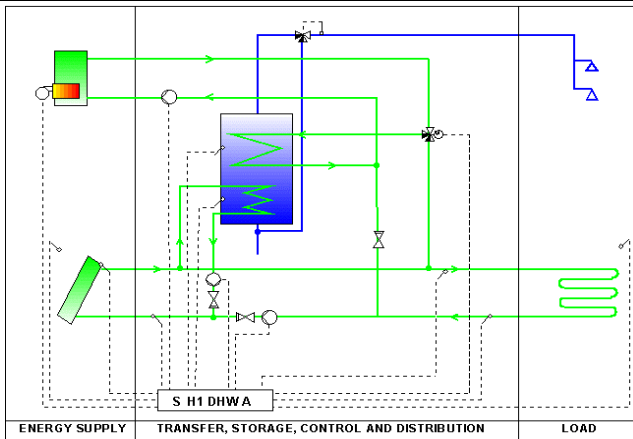


## Main datas of building :

Total number of inhabitants	2
Total heated area	180 m <sup>2</sup>
Design outdoor temperature for space heating system	-21 °C
Design heating degree days (19)	3497 Kd
Total yearly space heating demand	15540 kWh/a
Total yearly DHW demand	1703 kWh/a
Total energy demand (space heating + DHW)	17243 kWh/a
Latitude	44.6 °
Situation	05100 BRIANCON

## Main datas of energy system :

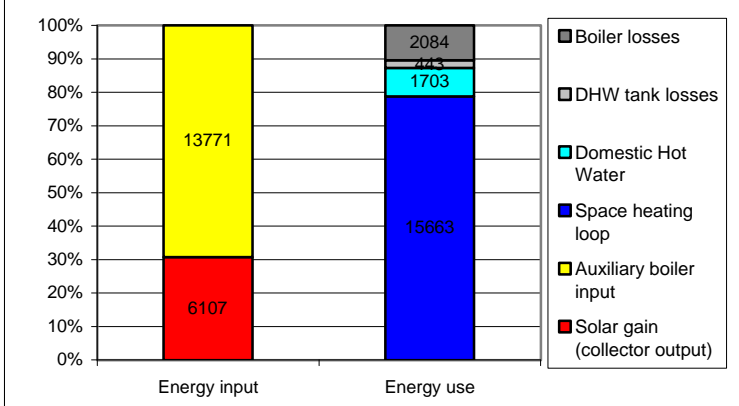
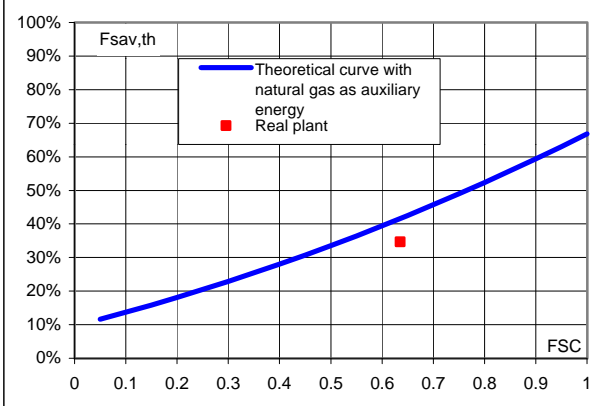
System No. of task 26 brochure	#3a
Gross collector area	18.8 m <sup>2</sup>
Net collector area	16.7 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	25.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	546 €/m <sup>2</sup>
<i>partial self installation</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	6107 kWh/a
Energy savings	7305 kWh/a
Energy savings per m <sup>2</sup>	389 kWh/m <sup>2</sup> .a
Fractional energy savings	35 %
FSC	0.64
Specific space heating load per m <sup>2</sup>	828 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	91 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	919 kWh/m <sup>2</sup>
Solar conversion factor	23 %
System efficiency (excl. Boiler eff.)	97 %
System efficiency (incl. Boiler eff.)	87 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

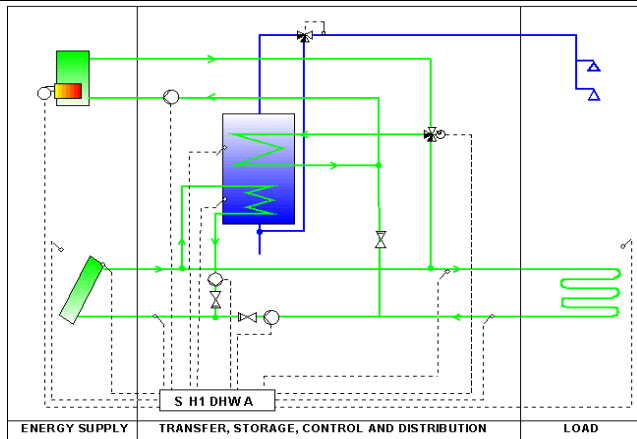
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 16



## Main datas of building :

Total number of inhabitants	5
Total heated area	130 m <sup>2</sup>
Design outdoor temperature for space heating system	-17 °C
Design heating degree days (19)	3336 Kd
Total yearly space heating demand	14914 kWh/a
Total yearly DHW demand	4258 kWh/a
Total energy demand (space heating + DHW)	19172 kWh/a
Latitude	44.6 °
Situation	05000 GAP



## Main datas of energy system :

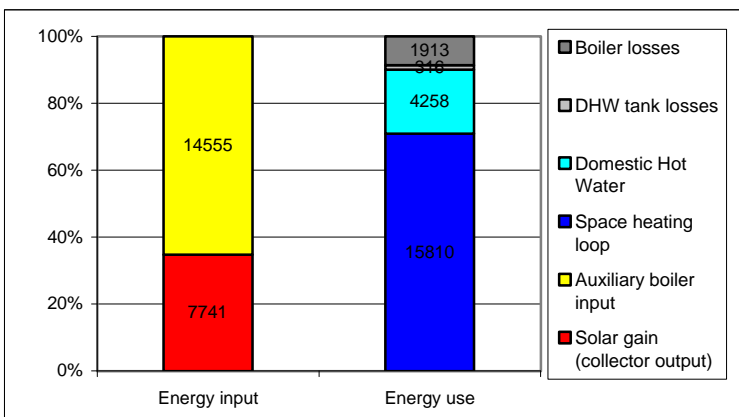
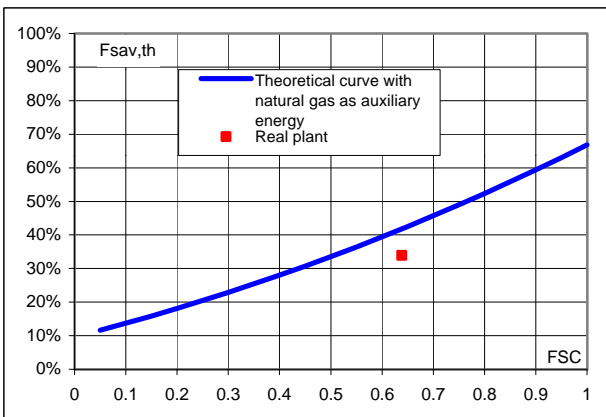
System No. of task 26 brochure	#3a
Gross collector area	18.3 m <sup>2</sup>
Net collector area	16.2 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	14.4 kW
Auxiliary energy	electricity
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	590 €/m <sup>2</sup>
<i>self installation</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	7741 kWh/a
Energy savings	7479 kWh/a
Energy savings per m <sup>2</sup>	410 kWh/m <sup>2</sup> .a
Fractional energy savings	34 %
FSC	0.64
Specific space heating load per m <sup>2</sup>	817 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	233 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1050 kWh/m <sup>2</sup>
Solar conversion factor	25 %
System efficiency (excl. Boiler eff.)	94 %
System efficiency (incl. Boiler eff.)	86 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

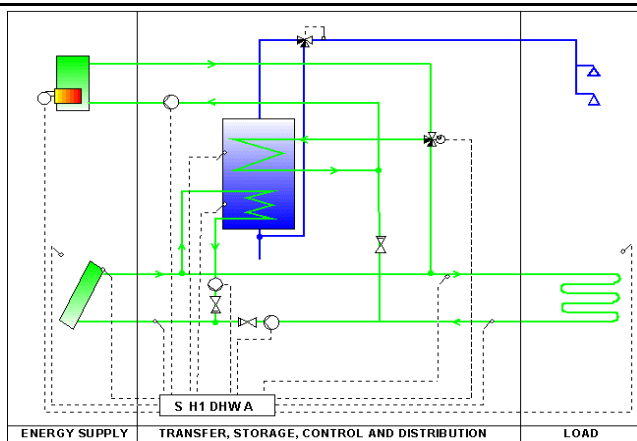
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 17



## Main datas of building :

Total number of inhabitants	4
Total heated area	150 m <sup>2</sup>
Design outdoor temperature for space heating system	-6 °C
Design heating degree days (19)	2083 Kd
Total yearly space heating demand	10085 kWh/a
Total yearly DHW demand	3087 kWh/a
Total energy demand (space heating + DHW)	13172 kWh/a
Latitude	44.1 °
Situation	84140 MONTFAVET



## Main datas of energy system :

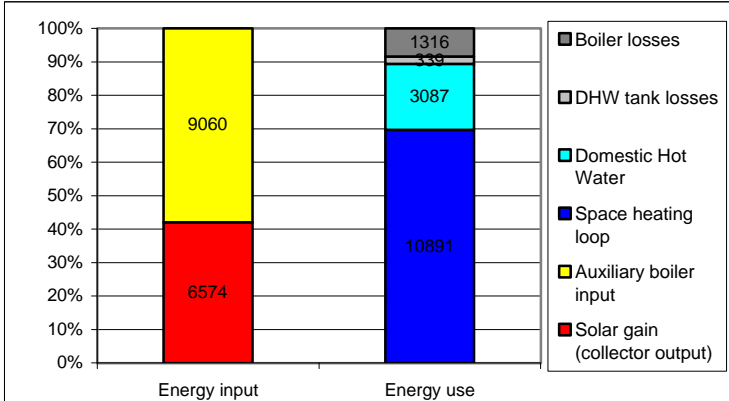
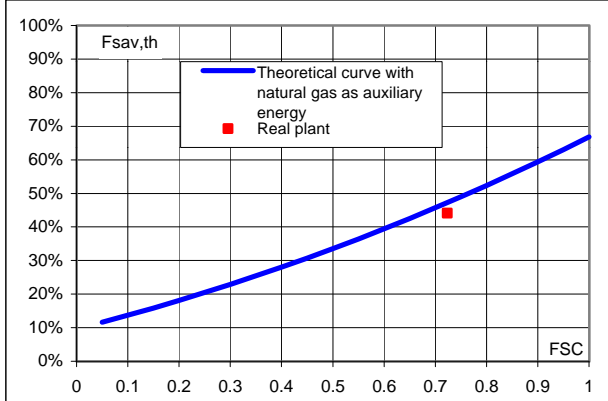
System No. of task 26 brochure	#3a
Gross collector area	19.3 m <sup>2</sup>
Net collector area	16.7 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	24.0 kW
Auxiliary energy	natural gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	573 €/m <sup>2</sup>
<i>self installation of the collector</i>	
<i>self installation of the heating floor</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	6574 kWh/a
Energy savings	7169 kWh/a
Energy savings per m <sup>2</sup>	371 kWh/m <sup>2</sup> .a
Fractional energy savings	44 %
FSC	0.72
Specific space heating load per m <sup>2</sup>	523 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	160 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	683 kWh/m <sup>2</sup>
Solar conversion factor	25 %
System efficiency (excl. Boiler eff.)	92 %
System efficiency (incl. Boiler eff.)	84 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

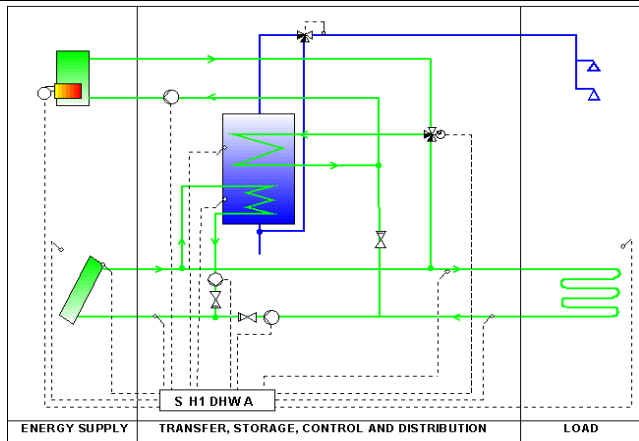


# Solar Combisystems – plant description – FR 18



## Main datas of building :

Total number of inhabitants	5
Total heated area	140 m <sup>2</sup>
Design outdoor temperature for space heating system	-7 °C
Design heating degree days (19)	2277 Kd
Total yearly space heating demand	9241 kWh/a
Total yearly DHW demand	3859 kWh/a
Total energy demand (space heating + DHW)	13100 kWh/a
Latitude	44.1 °
Situation	84490 ST SATURNIN



## Main datas of energy system :

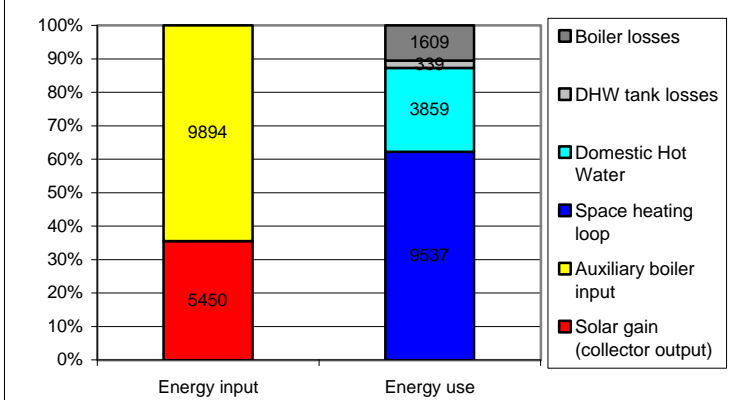
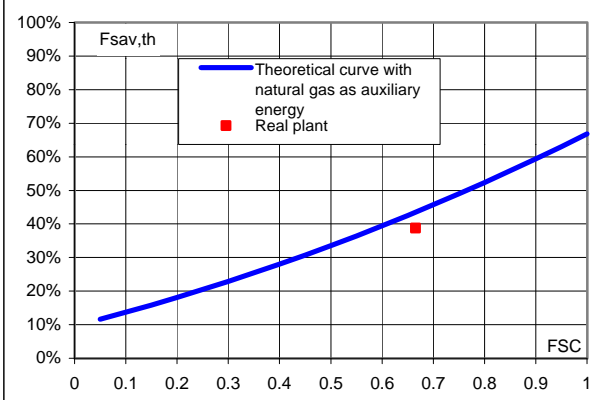
System No. of task 26 brochure	#3a
Gross collector area	17.4 m <sup>2</sup>
Net collector area	14.8 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	25.0 kW
Auxiliary energy	oil
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	610 €/m <sup>2</sup>
<i>self installation of the collector</i>	
<i>self installation of the heating floor</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	5450 kWh/a
Energy savings	6257 kWh/a
Energy savings per m <sup>2</sup>	359 kWh/m <sup>2</sup> .a
Fractional energy savings	39 %
FSC	0.66
Specific space heating load per m <sup>2</sup>	531 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	222 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	752 kWh/m <sup>2</sup>
Solar conversion factor	26 %
System efficiency (excl. Boiler eff.)	95 %
System efficiency (incl. Boiler eff.)	85 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

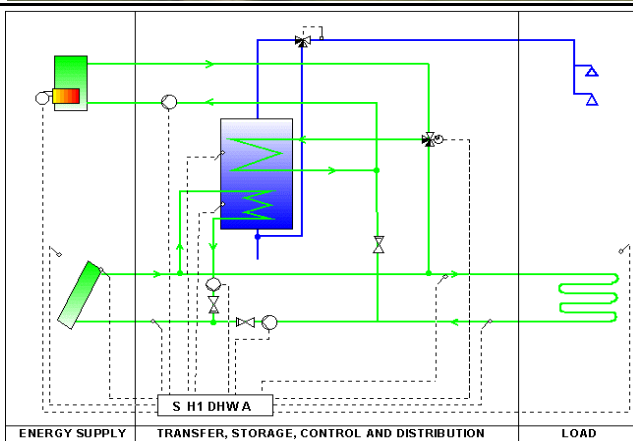
System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 19



## Main datas of building :

Total number of inhabitants	2
Total heated area	126 m <sup>2</sup>
Design outdoor temperature for space heating system	-5 °C
Design heating degree days (19)	2572 Kd
Total yearly space heating demand	10840 kWh/a
Total yearly DHW demand	1637 kWh/a
Total energy demand (space heating + DHW)	12477 kWh/a
Latitude	48.1 °
Situation	35660 LANGON



## Main datas of energy system :

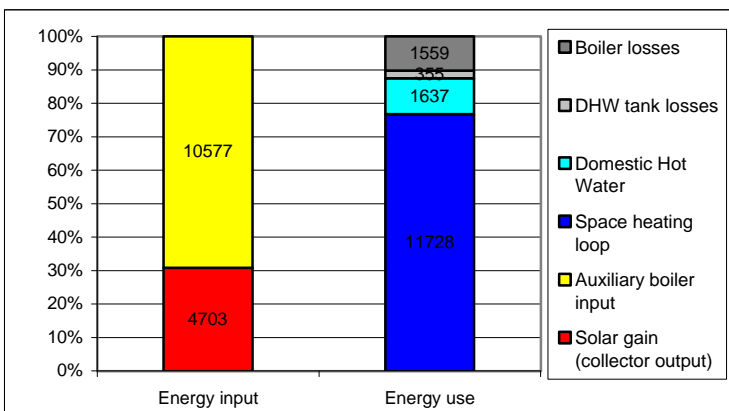
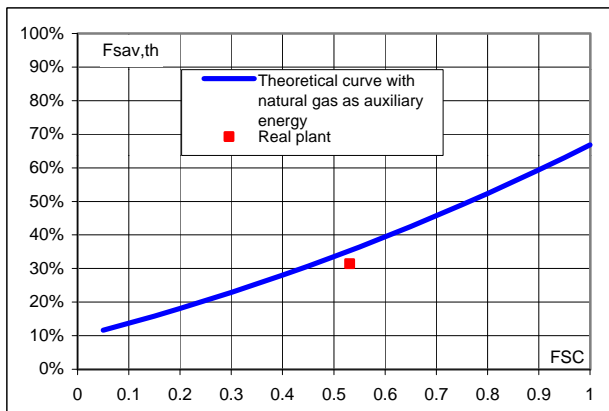
System No. of task 26 brochure	#3a
Gross collector area	13.1 m <sup>2</sup>
Net collector area	11.6 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	23.0 kW
Auxiliary energy	propane gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	583 €/m <sup>2</sup>
<i>self installation</i>	
<i>radiators in the first floor</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	4703 kWh/a
Energy savings	4855 kWh/a
Energy savings per m <sup>2</sup>	370 kWh/m <sup>2</sup> .a
Fractional energy savings	31 %
FSC	0.53
Specific space heating load per m <sup>2</sup>	825 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	125 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	950 kWh/m <sup>2</sup>
Solar conversion factor	28 %
System efficiency (excl. Boiler eff.)	91 %
System efficiency (incl. Boiler eff.)	82 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

# Solar Combisystems – plant description – FR 20



## Main datas of building :

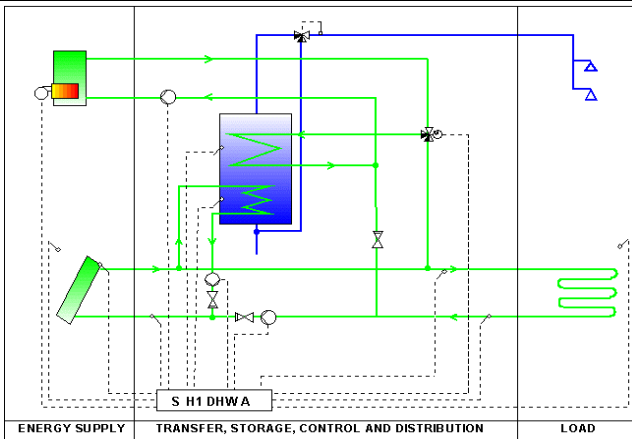
Total number of inhabitants	4
Total heated area	160 m <sup>2</sup>
Design outdoor temperature for space heating system	-2 °C
Design heating degree days (19)	2150 Kd
Total yearly space heating demand	9764 kWh/a
Total yearly DHW demand	3238 kWh/a
Total energy demand (space heating + DHW)	13002 kWh/a
Latitude	48.9 °
Situation	22120 QUESSOY

## Main datas of energy system :

System No. of task 26 brochure	#3a
Gross collector area	18.1 m <sup>2</sup>
Net collector area	15.7 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	23.0 kW
Auxiliary energy	propane gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	491 €/m <sup>2</sup>

self installation

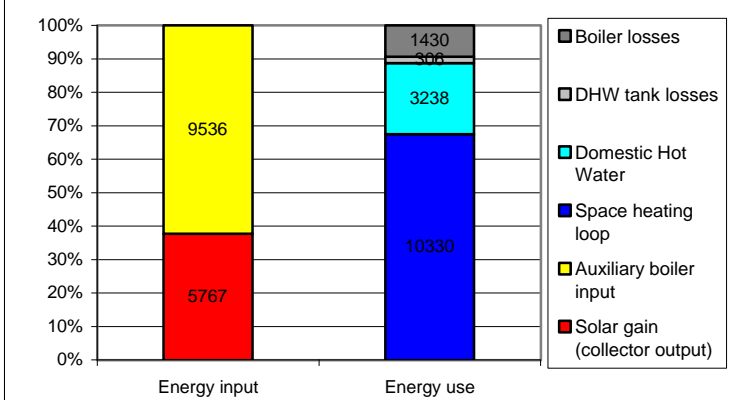
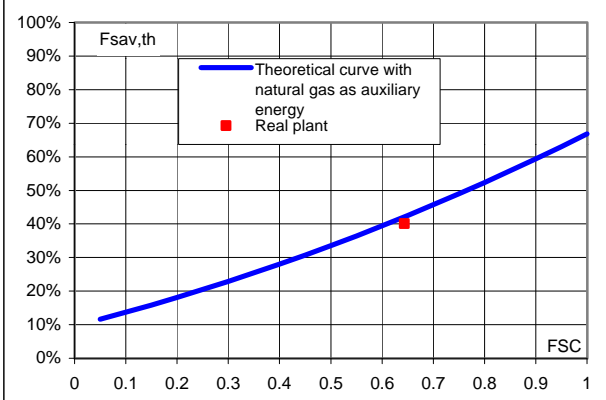
cost of space heating loop is missing



## Main energy datas of solar combisystem :

simulation

Solar gain	5767 kWh/a
Energy savings	6510 kWh/a
Energy savings per m <sup>2</sup>	360 kWh/m <sup>2</sup> .a
Fractional energy savings	40 %
FSC	0.64
Specific space heating load per m <sup>2</sup>	540 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	179 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	719 kWh/m <sup>2</sup>
Solar conversion factor	28 %
System efficiency (excl. Boiler eff.)	94 %
System efficiency (incl. Boiler eff.)	85 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

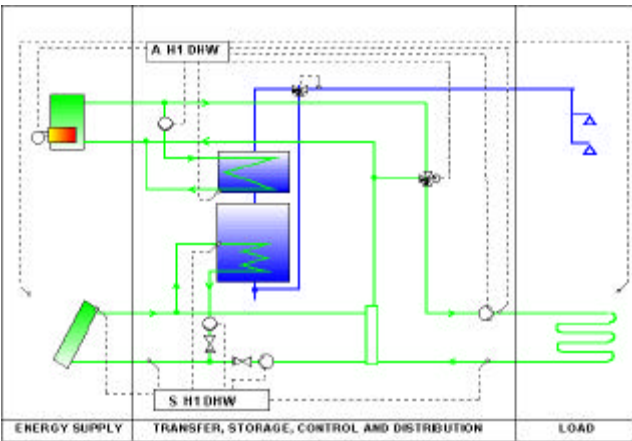


# Solar Combisystems – plant description – FR 21



## Main datas of building :

Total number of inhabitants	2
Total heated area	112 m <sup>2</sup>
Design outdoor temperature for space heating system	-11 °C
Design heating degree days (19)	3088 Kd
Total yearly space heating demand	12199 kWh/a
Total yearly DHW demand	1664 kWh/a
Total energy demand (space heating + DHW)	13863 kWh/a
Latitude	45.4 °
Situation	73190 CHALLES LES



## Main datas of energy system :

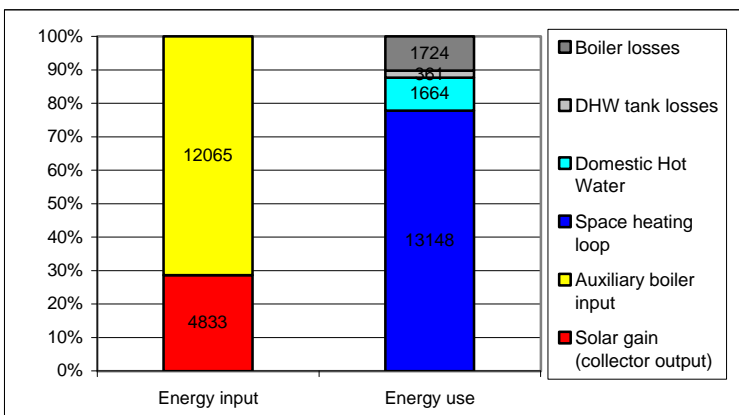
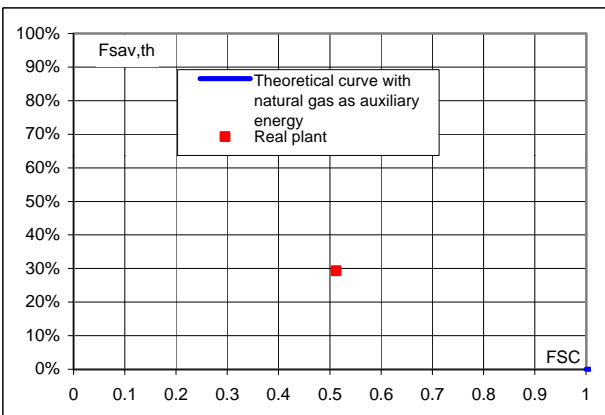
System No. of task 26 brochure	#3a modified
Gross collector area	14.7 m <sup>2</sup>
Net collector area	13.0 m <sup>2</sup>
Heat storage volume	none
DHW storage volume	0.33 m <sup>3</sup>
Nominal power of auxiliary heater	24.0 kW
Auxiliary energy	natural gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	578 €/m <sup>2</sup>
<i>Only solar part</i>	



## Main energy datas of solar combisystem :

simulation

Solar gain	4833 kWh/a
Energy savings	5006 kWh/a
Energy savings per m <sup>2</sup>	340 kWh/m <sup>2</sup> .a
Fractional energy savings	29 %
FSC	0.51
Specific space heating load per m <sup>2</sup>	830 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	113 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	943 kWh/m <sup>2</sup>
Solar conversion factor	25 %
System efficiency (excl. Boiler eff.)	91 %
System efficiency (incl. Boiler eff.)	82 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )

Main datas of building :	
Total number of inhabitants	3
Total heated area	140 m <sup>2</sup>
Design outdoor temperature for space heating system	-8 °C
Design heating degree days (19)	2591 Kd
Total yearly space heating demand	13195 kWh/a
Total yearly DHW demand	2084 kWh/a
Total energy demand (space heating + DHW)	15279 kWh/a
Latitude	44.6 °
Situation	26110 CONDORCET

Main datas of energy system :	
System No. of task 26 brochure	#9 modified
Gross collector area	15.4 m <sup>2</sup>
Net collector area	13.9 m <sup>2</sup>
Heat storage volume	0.80 m <sup>3</sup>
DHW storage volume	0.17 m <sup>3</sup>
Nominal power of auxiliary heater	15.0 kW
Auxiliary energy	wood log
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	494 €/m <sup>2</sup>

Main energy datas of solar combisystem :		simulation
Solar gain	6310 kWh/a	
Energy savings	7189 kWh/a	
Energy savings per m <sup>2</sup>	466 kWh/m <sup>2</sup> .a	
Fractional energy savings	34 %	
FSC	0.56	
Specific space heating load per m <sup>2</sup>	855 kWh/m <sup>2</sup>	
Specific DHW load per m <sup>2</sup>	135 kWh/m <sup>2</sup>	
Specific total load per m <sup>2</sup>	990 kWh/m <sup>2</sup>	
Solar conversion factor	29 %	
System efficiency (excl. Boiler eff.)	92 %	
System efficiency (incl. Boiler eff.)	76 %	

design heating degree days (19) : room temperature = 19°C

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation circuit, VAT and subsidies

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.])

# Solar Combisystems – plant description – FR 23



## Main datas of building :

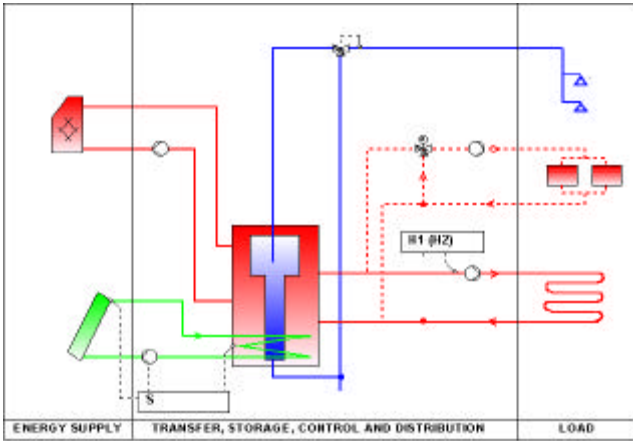
Total number of inhabitants	2
Total heated area	120 m <sup>2</sup>
Design outdoor temperature for space heating system	-5 °C
Design heating degree days (19)	2507 Kd
Total yearly space heating demand	14580 kWh/a
Total yearly DHW demand	1949 kWh/a
Total energy demand (space heating + DHW)	16529 kWh/a
Latitude	43.9 °
Situation	30130 PUJAUT

## Main datas of energy system :

System No. of task 26 brochure	#9 modified
Gross collector area	15.4 m <sup>2</sup>
Net collector area	13.9 m <sup>2</sup>
Heat storage volume	0.80 m <sup>3</sup>
DHW storage volume	0.17 m <sup>3</sup>
Nominal power of auxiliary heater	20.1 kW
Auxiliary energy	propane gas
Type of space heating system	heating floor
Total system cost per m <sup>2</sup> collector	760 €/m <sup>2</sup>

Only solar part

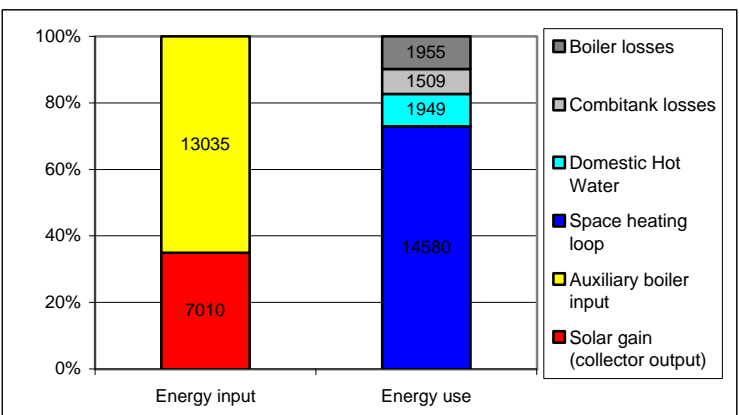
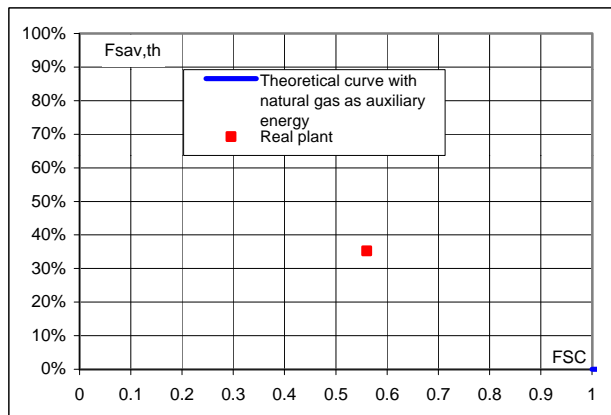
Without space heating loop



## Main energy datas of solar combisystem :

simulation

Solar gain	7010 kWh/a
Energy savings	7104 kWh/a
Energy savings per m <sup>2</sup>	460 kWh/m <sup>2</sup> .a
Fractional energy savings	35 %
FSC	0.56
Specific space heating load per m <sup>2</sup>	944 kWh/m <sup>2</sup>
Specific DHW load per m <sup>2</sup>	126 kWh/m <sup>2</sup>
Specific total load per m <sup>2</sup>	1071 kWh/m <sup>2</sup>
Solar conversion factor	27 %
System efficiency (excl. Boiler eff.)	91 %
System efficiency (incl. Boiler eff.)	82 %



## Explanations :

design heating degree days (19) : room temperature = 19°C

Net collector area : area of absorber sheet

“Energy savings per m<sup>2</sup>” and “total system cost per m<sup>2</sup> collector” : per m<sup>2</sup> gross collector area

Specific space heating load, DHW load and total load per m<sup>2</sup> : per m<sup>2</sup> gross collector area

Total system cost per m<sup>2</sup> collector : including collector, solar circuit, heat storage tank and DHW-preparation / excluding boiler, space heating and DHW distributing system / without installation cost, VAT and subsidies

Solar conversion factor : energy savings / irradiation on gross collector area

System efficiency: (DHW + Space heating + circulation losses) / ( Solar gain + auxiliary [incl./excl. Boiler eff.] )