

Project summary

**Elderly house
Saignon
France**



Description

The specialised reception centre of Saignon, intended to physically handicapped persons, is an example of a high environmental quality process. This building was designed according to bioclimatic structure, especially with solar structure and was built on one floor to respect handicapped persons' functionality. It concerns the creation of 21 beds shared out in three life units. This operation has received the first price of the architecture national contest "Solar housing, housing of today 2002" in the category "tertiary buildings". The CSTS was designed to produce hot tap water and to preheat water for the balneo-therapy department.

Building

Type of building	Elderly house
Number of users/dwellings, floors	21 users 10 dwellings 1 floor
Year of construction	2002
Total effective area (heated)	n. a. m ²
Hot tap water consumption (calculated)	1,330 m ³ /a,
Whole energy consumption for heating purpose after CSTS implementation	35,000 kWh/a

System engineering

Year of construction of CSTS	2002
Type of collectors	Flat plate collectors
Thermal power	35 kW _{therm}
Aperture area of collectors ^{*)}	50 m ²
Buffer storage	./. m ³
Hot tap water storage	5.5 m ³
Total capacity of boilers (heating oil, electricity)	n. a. kW
Type of hot tap water heating	Centralised
Type of heating system	Centralised

Costs

Total cost solar system	57,600 Euro
Cost of CSTS / gross area of collectors	ca. 1,000 Euro/m ²
Subsidies	82 %

Output

Output of solar heat ^{**)}	33,000 kWh/a
Reduction of final energy ^{***)}	49,700 kWh/a
CO ₂ -emissions avoided	10.5 t CO ₂ /a
Solar performance guarantee	No

^{*)} Aperture area = light transmitting area of the front glass

^{**) measured, between storage and piping to taps (solar system output)}

^{***) related to the measured output mentioned before}

Mr. Bouillet, ADAPEI Apt / President:

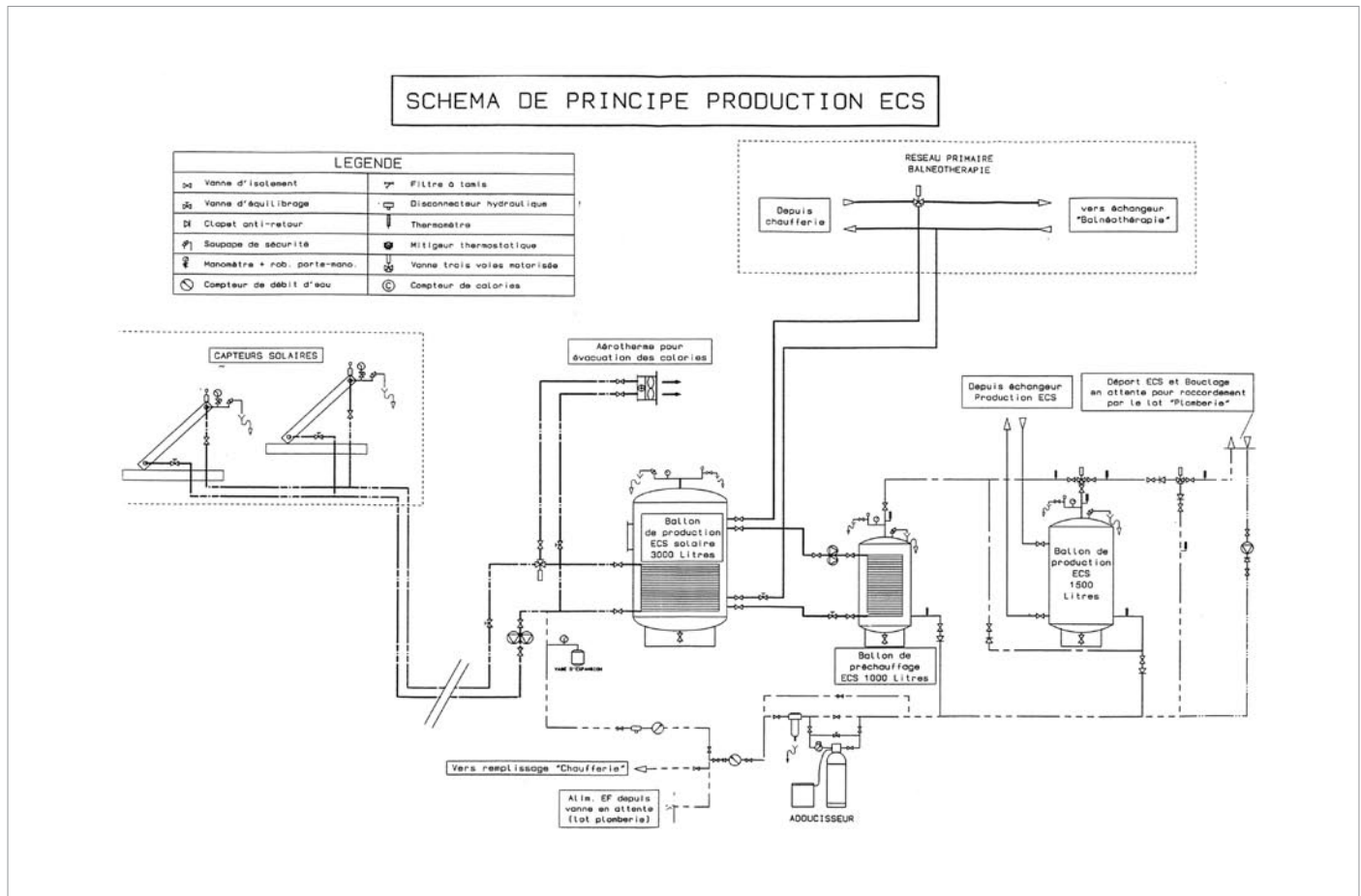
„We have realised an original project for physically handicapped persons with an innovating centre that also answered to our ecological sensibility. Moreover, realised heating oil and electricity savings are not negligible.“

Owner

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Operator

See owner



Description of the CSTS

Year of construction of CSTS	2002
Thermal power	35 kW _{therm.}
Gross area of collectors	ca. 56 m ²
Aperture area of collectors	50 m ²
Type of collectors	Flat plate collectors
Type of assembly	On the ground
Orientation of collectors	South (0°)
Inclination angle to horizon	30°
Freezing protection	Glycol
Overheating protection	Expansion vessel
Operation mode	n. a.
Use of CSTS for	Hot tap water heating, swimming pool heating
Buffer storage	./. m ³
Hot tap water storage	5.5 m ³ number of storages: 3 volume per storage: 3,000 l, 1,500 l and 1,000 l 1 solar tank, 2 back-up tank
Control of backup-system/CSTS	Shared control

Hot tap water system

Type of hot water heating	Centralised
Recirculation system	Yes
For decentralised systems:	./
The installation on the consumer site	
Size of storage for hot tap water	5.5 m ³
Specification	./

Space heating system

Type of heating system	Centralised
Number of boilers	1
Total capacity (power output) of boilers	n. a. kW
Capacity of each boiler and the year of construction	No. 1: n. a. kW
Energy source	Heating oil, electricity
Type of boiler system	Low temperature

Type of operation

Operator of the CSTS system	Self-operation
CSTS monitoring	No
Data accessible via internet	No
Scientific monitoring & follow up	No
Maintenance contract	Yes, once a year
Visualisation of the solar heat output	No

Yield of CSTS plant

Output of solar heat	33,000 kWh/a
Origin of data	Measured
Measuring point	Between storage and piping to taps
Reduction of final energy	49,700 kWh/a
Origin of data	Calculated
Solar performance guarantee	No

Heat consumption

Whole energy consumption for heating purposes <i>after</i> CSTS implementation	35,000 kWh/a
Origin of data	Measured
Energy used for	Hot tap water heating
Whole energy consumption for heating purposes <i>before</i> CSTS implementation	84,500 kWh/a
Total tap water consumption	n. a. m ³ /a
Hot tap water consumption	1,330 m ³ /a,
Hot tap water temperature	50 °C
Cold water temperature	13.5 °C

Summary

The installation is running since 2002 and is composed of 50 m² of flat plate collectors located near the building on an embankment facing south and with an inclination of 30°. Storage is made by a solar tank of 3,000 litres and two back-up tanks of 1,500 and 1,000 litres.

Installer

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Introduction

The 50 m² solar installation of the specialised reception centre of Saignon has cost 57,600 EUR including engineering and TVA and was subsidized with 45,000 EUR by the FREE financing (State – Regional council and ADEME).

Financing of CSTS

Form of financing	Purchase
Distribution in percentage	82 %

Costs of solar materials

Total cost of solar system	57,600 Euro
Detailed costs for	
Collectors	19,000 Euro
Elevation/mounting structure	11,000 Euro
Storage/heat exchanger	5,500 Euro
Backup heater	9,000 Euro
Control	n. a. Euro
Installation	7,000 Euro
Planning/Engineering	2,900 Euro
Others	1,500 Euro

Operation costs of heating system

Power cost for pumping	n. a. Euro/a
Maintenance cost	n. a. Euro/a
Monitoring cost	n. a. Euro/a
Other operation cost	n. a. Euro/a
Total operation cost	n. a. Euro/a
Or: Increase of operation cost after CSTS implementation	n. a. Euro/a





Qualitative aspects

This operation has received the first prize of the architecture national contest "Solar housing, housing of today 2002" in the category "tertiary buildings".

Experiences management

Experience problems or failures?	Yes
Find solutions to these problems or failures?	Yes

Financial effects/project performance

Project economically efficient?	Yes
Fiscal or other financial effects?	No
Effects on rental fees?	No

Experiences technical staff

Experience problems or failures?	Yes
Find solutions to these problems or failures?	Yes

Summary of experiences / Notices to the project performance

This building was designed according to environmental and bioclimatic approach and, logically, CSTS has been integrated for hot tap water production.

A global project has been realised with an architect contest and a commission was created for the definitive project elaboration and to draft the contract in order to choose companies.

The CSTS perfectly running and provides 60 % of hot tap water needs of the building, as determined during the feasibility study.

Architect

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