



Intelligent Energy  Europe



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“ST-ESCOs”. Development of pilot Solar Thermal Energy Service Companies with high replication potential

SPANISH EXPERIENCE ON ST-ESCOs: REAL CASES

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General Director ARGEM-Energy Agency
ATHENS, 6th of June, 2007**

- 1/ Framework and ST-ESCOS evolution in Spain**
- 2/ ST-ESCOS Guide for end-users, financing, technician and managers or how to help for taking decisions**
- 3/ ST-ESCOS Software tool**
- 4/ ST-ESCOS signed agreements in Spain**
- 5/ REAL CASES**
- 6/ Conclusions/ Summary**

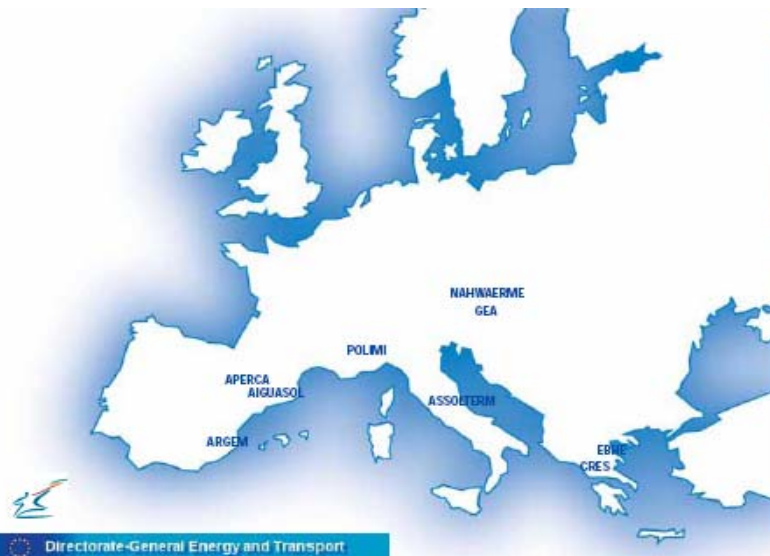
1/ Framework and Project's evolution

- The ST-ESCOs project has been presented in a large number of meetings. Recently, it was presented in ENERFORUM, ENERAGEN (Spanish Energy Agency Association), ASIT (Solar Thermal Industry Association) and presented to installers in January.
- ST-ESCOs Guide was translated to Spanish & published in Jan-07'.
- New Building regulation is working from 29th, September-2006. The new regulation effects will be important at the beginning of 2008.
- In December 2006, our Regional Government approved the RES Regulation that will boost solar thermal installations and society awareness. One of the main point is that all the public buildings will be obliged to use renewable energy sources in the next 7 years.
- Different public administrations are interested about ST-ESCOS like a formula to save energy without any investment.

2/

ST-ESCOs Guide for end-users, financing, technician and managers or HOW TO HELP FOR TAKING DECISIONS

- ST-ESCOs Guide has been translated and provided to all interested people that attended to the last meeting: more than 100 experts interested.
- The Guide has been published with a book-format and distributed to regional and national installers associations.
- Several model contracts are available with the guide and are been used by the first ST-ESCOs companies.
- An e-mailing to ARGEM´s database has been done in *.pdf format.



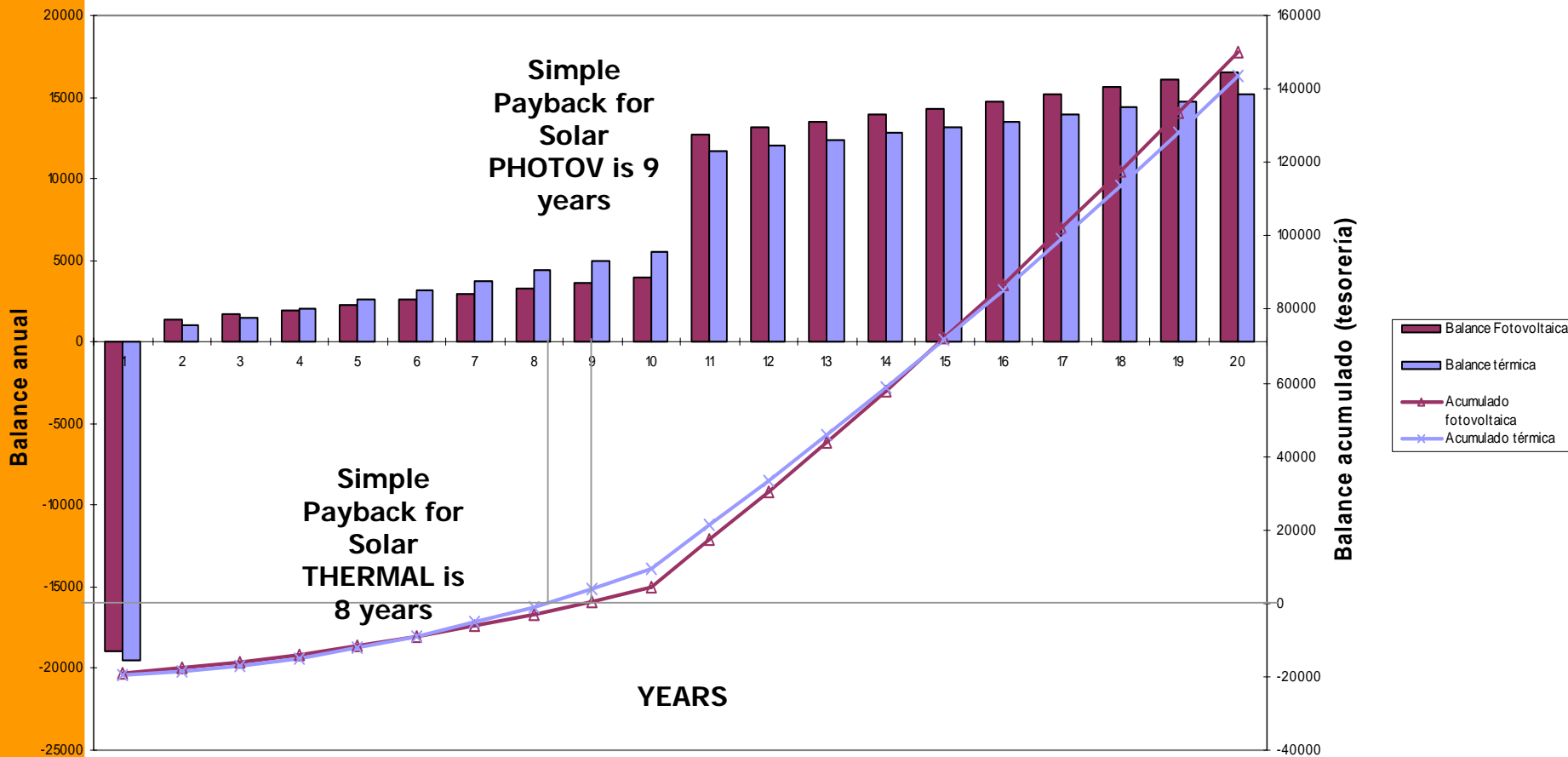
 Directorate-General Energy and Transport

ST-ESCOS es un proyecto europeo que persigue promocionar la creación de empresas que vendan energía solar térmica

GUÍA PARA EL DESARROLLO DE PROYECTOS ST-ESCOS

GUÍA ST-ESCOS

Comparative between SOLAR THERMAL AND PHOTOV for the same INVESTMENT (EUROS)





3/ Specific Software Tool

- Software for engineering and economical simulation has been distributed to the interested companies.
- Feedback has been satisfactory.

The advertisement for Aiguasol features a photograph of a modern building with a grid-like facade. The Aiguasol logo is in the top left corner. The text on the right describes the company's services in energy engineering and consulting. At the bottom, there are four small images showing various energy-related projects.

AIGUASOL
INGENIERÍA Y CONSULTORÍA ENERGÉTICA

aiguasol | ingeniería y consultoría energética

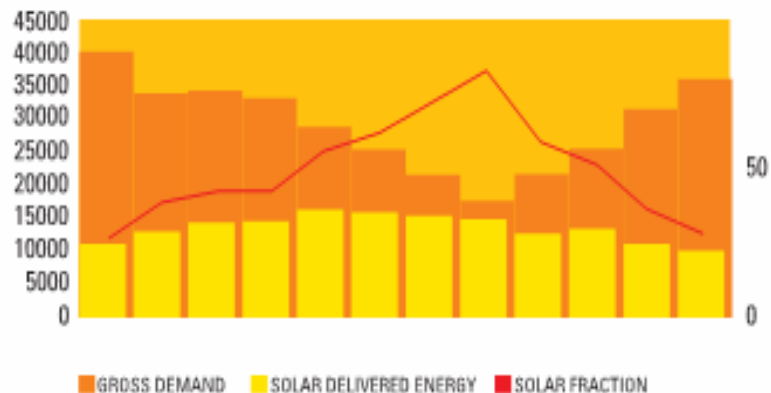
Aiguasol es una ingeniería especializada en el análisis del comportamiento energético y lumínico de edificios, así como en la optimización y diseño de sistemas eficientes de clima, combinando las más avanzadas tecnologías, como la geotermia o la refrigeración solar.

Nuestros servicios, con el uso de potentes herramientas de cálculo, comprenden todas las fases del proceso de diseño y construcción de un edificio, desde el análisis de soluciones constructivas hasta la dirección de obra de sistemas energéticos avanzados, pasando por la verificación del cumplimiento del nuevo Código Técnico de la Edificación.

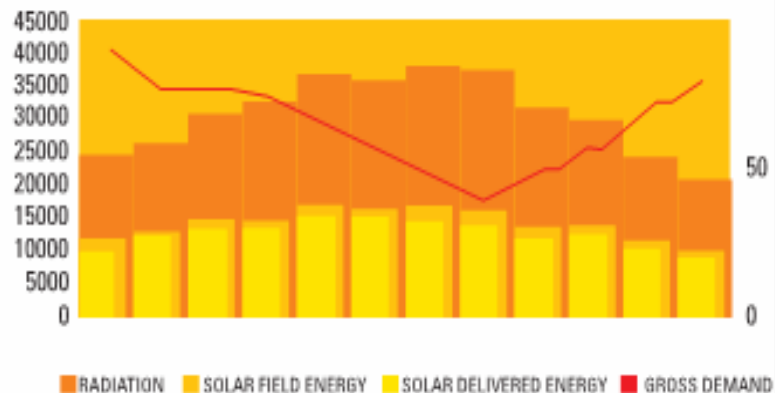
www.aiguasol.coop Tel.: 933 424 755

Complejo residencial Carrión de los Pequeños
Construcción con agua Aiguasol

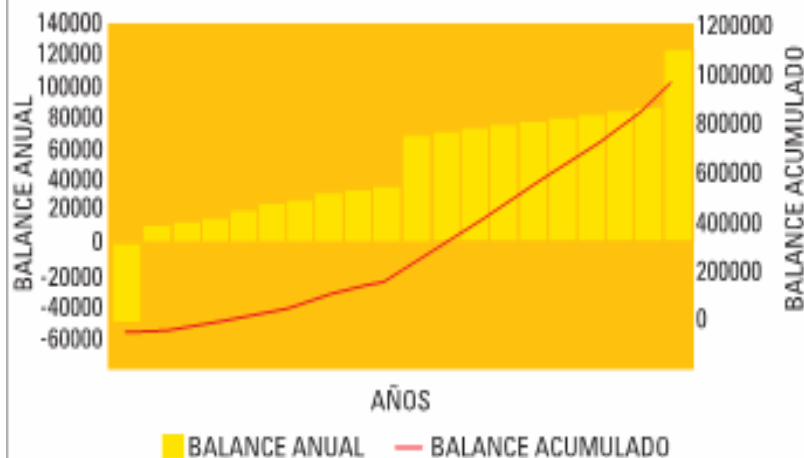
MONTHLY ENERGY RESULTS: SOLAR DELIVERED ENERGY, GROSS DEMAND, SOLAR FRACTION



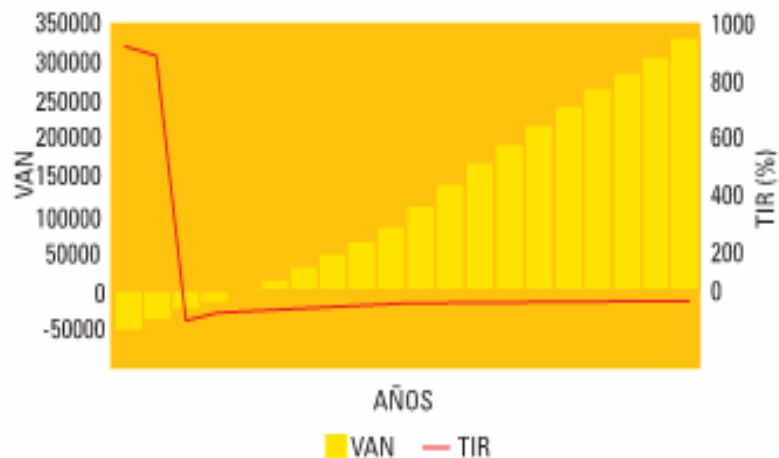
MONTHLY ENERGY RESULTS: RADIATION, SOLAR FIELD ENERGY, SOLAR DELIVERED ENERGY



EsCo BALANCE ECONÓMICO



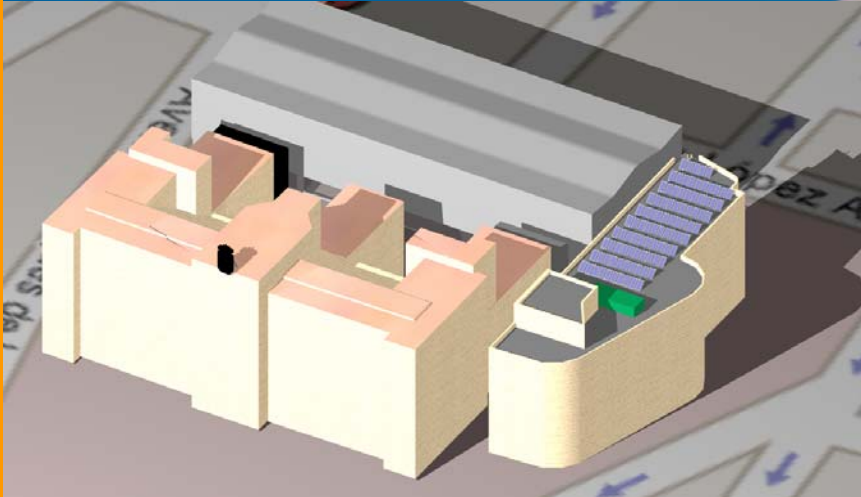
EsCo VAN/TIR

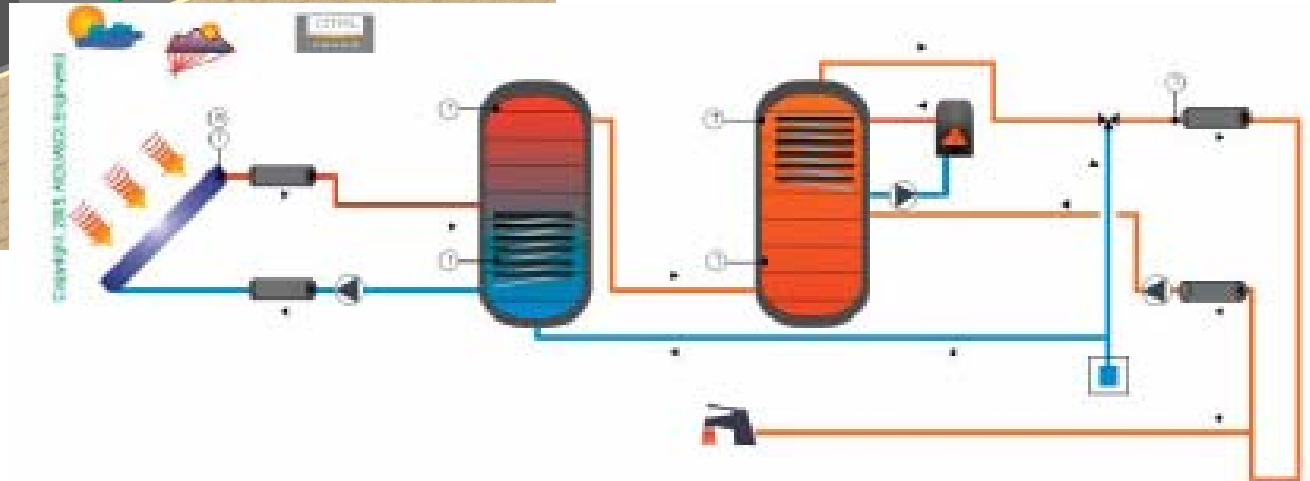
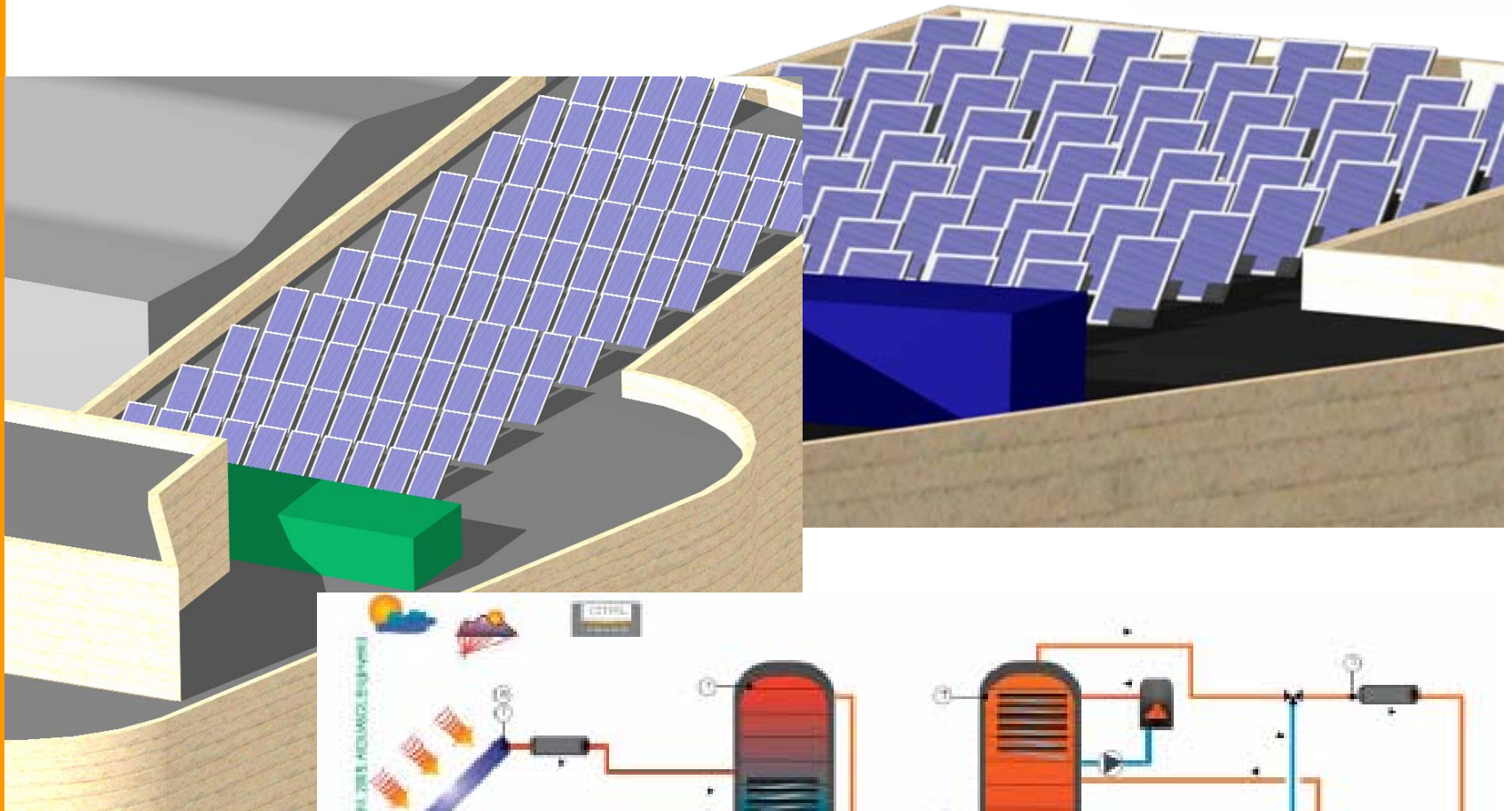


4/ ST-ESCOs agreements “on-going” in Murcia

1. The 1st Agreement was signed with the Public Entity “**Health Department**” on 22nd, March-2007
2. This consists in developing a 200 m² solar thermal installation to “Morales Meseguer” hospital. This installation is providing heat water for 400 beds. Technical specifications were published in Jan-07’. Solar plant is start working by the middle of July.
3. The 2nd Agreement will provide heat water to semi-olympic swimming-pool of the **University of Murcia**. The detailed study has been developed and will be bid for by the university administration.

Proyecto piloto ST-ESCOs en hospital Morales Meseguer de Murcia





ST-ESCOs **Hospital Morales Meseguer** main subjects (1):

- The solar collector area is 200 m²
- Solar thermal collector required specifications are: C_{profit} (0,80) and C_{losses} (3,5)
- Accumulation is 15.000 liters
- Estimated annual production is about 128.000 kWh,t.
- % Solar fraction: 46%
- Warranted consumption by Client according to the signed "Demand monthly profile"
- Warranted solar results by ESCO is 100.000 kWh,t.
- Operation period of 15 years
- Annual economical savings for Hospital is 3,5%.

ST-ESCOs **Hospital Morales Meseguer** main subjects (2):

- Special insurance conditions were negotiated with the company, that provides a warranty to cover when 2 months of “non-production”.
- End-user pays 5,6 cent€/kWh the first year
- Actualisation is 1% more than Annual prices increasement
- Invoicing mode is as follows: “each month ARGEM is issuing the invoice considering the programmed kWh. At the end of the year, it will be a regularisation invoice”. By this, ESCO and End User can know how much is invoiced and to planify “cash-flow”.

5/ REAL CASES: ST-ESCOs projects

- **Club de Tennis de Sabadell** solar plant is working efficiently.
- **HOSPISOL Programme.** 13 Hospitals from the Region of Castilla y León have developed solar thermal project with the ST-ESCOs formula for heat water supply.
- **Hospital de Reus** solar plant in Catalonia has been concluded and is now working.
- **Barceló hotels** with more than 300 buildings is studying how to incorporate ST-ESCOs formula.

Sabadell Tennis Club



General Presentation

The Sabadell Tennis Club, near Barcelona, decided to reduce their energy bill by installing a solar thermal system. The system began to operate on January 2006, covering part of the hot water demand and giving support to the swimming-pool.

Technical Aspects

Measures:

- Design and construction of the solar plant
- Financing via a state-owned corporate entity and direct subsidies
- Operation management

Results:

- Yearly hot water demand (DHW + swimming pool) : 720,5 MWh
- Collector area: 348 m²
- Expected yearly energy production: 868 kWh/m²

Contractual aspects

The ESCo (Pasch y Cia), contracted Aguasol Ingeniería for the design of the solar plant, and the system was installed by Fototerm. The duration of the contract is 12 years, and at the end the plant becomes property of the end user, without any payment for this concept. The contract includes a minimum consume for the end user around the 85 % of the expected energy production. The billing is made monthly via a fixed quantity, and at the end of the year the result is compensated in agree with the real consume.









RESULTS: solar thermal plants

Hospital Comarcal de Medina del Campo



























6/ ST-ESCOs Conclusions

- “Know-how” transferred from Austria and Greece to Spain, is being done by distributing ST-ESCOs guide. Lots of companies of the center of Spain are thinking about other applications like district heating or solar cooling.
- The new Regulation and obligation related to solar thermal collectors installations in Spain gets into force new models ST-ESCOs.
- The main Spanish actors were involved in our EU project. Contacts with all the actors have been successfully as all of them are willing to try this new way of energy business.

6/ ST-ESCOs Conclusions

- ST-ESCOs pilot agreements have been signed; and some of them are being prepared by private companies helped by ARGEM that provide some Contract models, technical specifications and financial knowledge.
- The different experiences are being published in our magazine "ARGEM Informa", a monthly bulletin consulted by more than 4.000 people in Spain.
- Right now, ARGEM is also preparing a Technical Guide of good practices when installing solar thermal energy that will be provided to installers before this summer holidays.

6/ ST-ESCOs Conclusions



 Contacto  Web oficial

Información general
Socios participantes
El catálogo de ESCO's
Actos - noticias
Boletín informativo
Instalaciones modelo
Estudios de viabilidad
Marco - Legislación
Guía - pautas
Forum
Herramientas de Software
Sitios de interés

El objetivo del proyecto es promover la creación y desarrollo de empresas piloto de servicios de venta de energía solar térmica con alto potencial de replicabilidad - ST-ESCOs, y por ello acelerar el crecimiento del mercado solar térmico en Europa. Uno de los principales objetivos del proyecto es preparar detalladamente varios casos potenciales, e intentar implementarlos en la práctica.

Las ST-ESCOs, vendiéndose la energía solar (y no la planta solar) a un precio competitivo y realizando la operación y mantenimiento de la planta se pueden eliminar completamente barreras tales como: el coste inicial de inversión elevado, los dudas de la fiabilidad y resistencia de las instalaciones solares y, por tanto, abrir el camino para una rápida expansión de las instalaciones solares térmicas en Europa en todos los sectores potenciales (residencial, servicios e industrial), tanto particulares como públicos.

El proyecto aspira a definir y fomentar el sector de ST-ESCOs realizando los siguientes trabajos:

- Elaboración de un **análisis de condiciones de mercado**, **identificando el potencial** y los sectores más prometedores para las acciones.

Con el apoyo de
  Europe

ARGEM is believing that ST-ESCOs project is a fantastic solution to promote Solar Thermal Energy all over Europe.

WE CONTINUE WORKING FOR ST-ESCOS 2ND PART



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Thank you very much for your attention...

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ATHENS, 6th June 2007