GOBIERNO DE ESPAÑA
MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

Solar Concentra

PROTERMO SOLAR

SECRETARÍA TÉCNICA

*DESCRIPCIÓN DE EMPRESAS Y PROYECTOS SHIP**

*SOLAR HEAT FOR INDUSTRIAL PROCESSES

Análisis de Situación v1.0

GRUPO DE TRABAJO DE MEDIA TEMPERATURA

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE
INDUSTRIAL SOLAR

COMPANY HEADQUARTERS	SCOPE OF ACTIVITIES	# OF EMPLOYEES
Freiburg, Germany 	EPC COMPANY	11 - 50

LIST OF PROJECTS

Solar Process heat for Paint Shops
Steam Heating; RAM Pharma
Solar Refrigeration by Absorption, MTN
Solar Refrigeration by Absorption, ESI in Seville
Solar Cooling of stadium for FIFA World Cup, 2022
Solar Cooling in manufacturing of Beverages

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Oil & Chemical, Metal & Automotive, Pharma, Cooling, Paper, Textile, Food, Beverages

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PROJECT NAME:
Steam Heating; RAM PHARMA

INDUSTRIAL SOLAR
renewables onsite

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	392 M^2	Process steam at 160 ºC; 6 bar	Pharmaceuticals; Drying and sterilization processes

18 LF – 11, Linear Fresnel Collector
Thermal capacity: 223 kWh
Solar Fraction: 30 – 40 %

PROJECT LOCATION – Sahab, JORDAN

INSTALLATION YEAR - 2015

OTHER INFORMATION

Cut fuel consumption by 42 %
84 tons of CO_2 emission reduction per year

PROJECT NAME:
Solar process heat; ECO + PAINTSHOP. DURR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	132 M^2	Superheated water at 220 ºC; 13 bar	Process heat for drying in the automotive paint shop

6 LF – 11, Linear Fresnel Collector
Operating temperature up to 400 ºC
Best suited for rooftop installation

PROJECT LOCATION - Bissingen, GERMANY

INSTALLATION YEAR - 2012

OTHER INFORMATION

Pilot Project
Reduce Energy Consumption by 30%

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PROJECT NAME:
ECO + PAINTSHOP; DURR

INDUSTRIAL SOLAR
renewables onsite

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	8000 M2	Superheated water at 200 ºC	Process heat for drying in the automotive paint shop

LF – 11, Linear Fresnel Collector
Operating temperature up to 400 ºC
Best suited for rooftop installation

PROJECT LOCATION - MOROCCO

INSTALLATION YEAR - 2012

OTHER INFORMATION

Thermal Peak Power: 4.5 MW
Solar Fraction: 25 %

PROJECT NAME: Solar Refrigeration by Absorption;
DATA CENTER COOLING, MTN

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	484 M2	Water at 180 ºC; 9.5 – 13.5 bar	Cooling; powering a double-effect LiBr/H2O absorbtion chiller

22 LF – 11, Linear Fresnel Collector
Thermal capacity: 272 kWh
Peak Cooling Capacity: 330 kWh
Cost: 350,000 €

PROJECT LOCATION – Johannesburg,
SOUTH AFRICA

INSTALLATION YEAR - 2014

OTHER INFORMATION

DNI: 2300 kWh/m2/a
70,000 € yearly savings in energy bill
Enough electricity to power 35 houses

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PROJECT NAME:
Solar Refrigeration by Absorption, ESI

INDUSTRIAL SOLAR
renewables onsite

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	352 M2	Pressurised Water at 180 ºC; 16 bar	Cooling; powering a double-effect LiBr/H2O absorbtion chiller for air-conditioning

16 LF – 11, Linear Fresnel Collector
Thermal capacity: 180 kWh
Peak Cooling Capacity: 174 kWh
Cost: 594,000 €

PROJECT LOCATION – Sevilla, SPAIN

INSTALLATION YEAR - 2007

OTHER INFORMATION

Demonstration Project
DNI: > 1800 kWh/m2/a
During peak irradiation periods 1/3 of the total cooling power supplied

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PROJECT NAME:
Solar cooling of Stadium for FIFA World Cup, 2022

INDUSTRIAL SOLAR
renewables onsite

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	1400 M2	Pressurised water at 200 ºC; 16 bar	Cooling; powering a double-effect LiBr/H2O absorbtion chiller

LF – 11, Linear Fresnel Collector
Peak Thermal Output: 700 kWh
Max optical efficiency for DNI: 62%

PROJECT LOCATION – Doha, QATAR

INSTALLATION YEAR - 2010

OTHER INFORMATION

Model Stadium Project
DNI: > 1800 kWh/m2/a
The chiller produces water cooled to 6°C
Provide 5 hours of cooling

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PROJECT NAME:
Solar Cooling in manufacturing of Beverages

INDUSTRIAL SOLAR
renewables onsite

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	120 M2	Pressurised water at 160 ºC	Beverage; powering a NH3/H2O absorbtion chiller providing process cold for winery

LF – 11, Linear Fresnel Collector
Peak Thermal Output: 84 kWh

PROJECT LOCATION – Grombalia, TUNISIA

INSTALLATION YEAR - 2008

OTHER INFORMATION

DNI: 1800 - 2600 kWh/m2/a

AGENDA

1. Industrial Solar
2. **Aalborg CSP**
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Solar Concentra

COMPANY PROFILE
AALBORG CSP

AALBORG CSP - Changing Energy

HEADQUARTERS

Aalborg, Denmark

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

51 - 200

LIST OF PROJECTS

CSP integrated with a biomass ORC plant for combined heat and power generation
Solar district heating system in Taars, DENMARK
District heating in Thisted, DENMARK

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Combined Heat & Power generation
District Heating

PROJECT NAME: Biomass ORC plant for combined heat and power generation

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	26,929 M2	330 ºC	Electricity Generation & District Heating

40 rows of 125m parabolic troughs
Power Output: 16.6 MWt

PROJECT LOCATION – Brøndersle DENMARK

INSTALLATION YEAR - 2016

OTHERº INFORMATION

High temperature used to produce electricity
Waste heat sent to district heating circuitº

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PROJECT NAME:
Solar district heating system in Taars, DENMARK

AALBORG CSP - Changing Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector with Flat Panel Collectors	10,011 M2	Water at 98 ºC	District Heating

Aperture area/CSP: 4,039 M2
Aperture area/Flat: 5,972 M2
Power Output: 6,082 MW annually

PROJECT LOCATION – Taars, DENMARK

INSTALLATION YEAR - 2015

OTHER INFORMATION

31% of the annual district heating plant's energy demand
Consumer prices reduced by 15%
23,000 tons of CO2 / 20 years

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Solar Concentra

PROJECT NAME:
District heating in Thisted, DENMARK

AALBORG CSP - Changing Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	830 M2	Water at 140 ºC	District Heating

144 m Parabolic shaped mirrors
Power Output: 500 MW annually

PROJECT LOCATION – Thisted, DENMARK

INSTALLATION YEAR - 2012

OTHER INFORMATION

Water is directly or indirectly pumped to the district heating pipelines

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. **NEP Solar**
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE
NEP SOLAR

HEADQUARTERS

Zurich

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

2 - 10

LIST OF PROJECTS

Cheese Production; Emmi Dairy
Coffee Cream Production; Cremo SA
Milk Processing; LESA Dairy

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Dairy Products
Milk Processing

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Solar Concentra

PROJECT NAME:
Coffee Cream Production; Cremo SA

NEPSOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	580 M2	Water at 170 ºC for high temperature; 125 ºC for low temperature processes	Dairy Products; Milk Processing and coffee cream production

PolyTrough 1800;
Parabolic Trough Collector
Thermal Production: 330 kWh
Investment: 700,000 €

PROJECT LOCATION – Fribourg, SWITZERLAND

INSTALLATION YEAR - 2013

OTHER INFORMATION

Reduction in 25,000 l of fuel oil per year
65 tons of CO_2 emission reduction per year

PROJECT NAME: Cheese Production ; Emmi Dairy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	627 M2	Water at 140 - 180 ºC	Dairy Products; General process heating

PolyTrough 1800;
Parabolic Trough Collector
Thermal Production: 84 kWh
Investment: 300,000 €

PROJECT LOCATION – Saignelégier, SWITZERLAND

INSTALLATION YEAR - 2012

OTHER INFORMATION

DNI: 1060 kWh/m2/a
Reduction in 30,000 l of fuel oil per year
79 tons of CO_2 emission reduction per year
Fuel costs have fallen by more than 42% in first 2 years

PROJECT NAME:
Milk Processing; LESA Dairy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	115 M2	Thermo-Oil at 200 ºC	Dairy Products; General process heating

PolyTrough 1200;
Parabolic Trough Collector
Thermal Production: 67 kWh
Investment: 252,000 €

PROJECT LOCATION – Engadin, SWITZERLAND

INSTALLATION YEAR - 2011

OTHER INFORMATION

Reduction in 7,000 l of fuel oil per year
18 tons of CO_2 emission reduction per year
Proves the potential of the technology in the alpine region

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. **Abengoa Solar**
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE
ABENGOA SOLAR

HEADQUARTERS

Seville,

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

1500+

LIST OF PROJECTS

Frito Lay, a division of PepsiCo
A copper mine operated by Minera El Tesoro
Federal Correctional Institution, Colorado
Federal Correctional Institution, Phoenix
Kraft Foods in Brazil

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Food
Mining
Domestic heating (Prisons)

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Solar Concentra

PROJECT NAME:
Federal Correctional Institution, Phoenix

ABENGOA SOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	1580 M2	Pressurized hot water 100ºC;	Domestic hot water heating; Maintaining a constant temperature of 85 ºC

Parabolic Trough PT1
Installed thermal capacity: 1.2 MW

PROJECT LOCATION – Phoenix, U.S.

INSTALLATION YEAR - 1999

OTHER INFORMATION

Reduction in the use of natural-gas by more than 50 percent per year
Hot water storage tank allows 24x7 hot water supply serving around 1200 inmates

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Solar Concentra

PROJECT NAME:
Frito Lay, a division of PepsiCo

ABENGOA SOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	5056 M2	Steam at 249 ºC; 20.7 bar	Food; heating the oil to fry potato chips

Parabolic Trough PT1
Installed thermal capacity: 2.8 MW

PROJECT LOCATION – Modesto, California,U.S.

INSTALLATION YEAR - 2008

OTHER INFORMATION

Reduction in emission of 771 tons of CO2 annually; the carbon cost of generating the needed energy in a coal-fired plant

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PROJECT NAME:
Federal Correctional Institution, Colorado

ABENGOA SOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	2110 M2	Pressurized hot water 100ºC;	Domestic hot water heating; Maintaining a constant temperature of 85 ºC

Parabolic Trough PT1
Installed thermal capacity: 1.2 MW

PROJECT LOCATION – Colorado, U.S.

INSTALLATION YEAR - 2010

OTHER INFORMATION

Reduction in the use of natural-gas by more than 50 percent per year
Hot water storage tank allows 24x7 hot water supply serving around 1000 inmates

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PROJECT NAME:
Kraft Foods in Brazil

ABENGOA SOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	633 M2	Steam at 110 ºC;	Food; Cleaning and pasteurization of fruit juices, cookies and deserts

Parabolic Collectors: 48
Parabolic Trough PT1

PROJECT LOCATION – BRAZIL

INSTALLATION YEAR - 2012

OTHER INFORMATION

Supplies hot water

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PROJECT NAME:
A copper mine operated by Minera El Tesoro

ABENGOA SOLAR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	16,742 M2	Max operating temperature of 250 ºC;	Mining; Solution heating for the copper electro-extraction process

Parabolic Trough PT1
Installed thermal capacity: 10 MW

PROJECT LOCATION – Atacama desert, C

INSTALLATION YEAR - 2012

OTHER INFORMATION

Thermal energy storage tanks allow 24x7 heat delivery
Reduction in Diesel fuel consumption by 55%
Eliminates 10,000 tons of CO2 annually

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. **Absolicon**
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE
ABSOLICON

HEADQUARTERS

Harnosand,

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

11 - 50

LIST OF PROJECTS

Solar Energy driving chemical process; Bomans lackering
Hemab Energy Park; District Heating and Electricity
Heat and electricity for district heating network
Solar energy on hospitals; Harnosand
Solar cooling in a Hospital; Spain
Sundsvall Energy Company

TYPE OF CUSTOMERS – INDUSTRY SECTORS

DISTRICT HEATING
CHEMICAL INDUSTRY
HOSPITALS

Hemab Energy Park; District Heating and Electricity

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	244 M2	T10: up to 90 ºC T160: up to 160 ºC X10PVT: up to 75 ºC	Connected to local district heating Network

#Parabolic Collectors: 20
Absolicon T10 and X10PVT
Heat Production: 80 kWp
Electricity Production: 20 kWp
8 T160

PROJECT LOCATION – Harnosand, SWEDEN

INSTALLATION YEAR - 2011

OTHER INFORMATION

200 M2 of X10PVT;
8 T160 with 44 M2 installed in 2016

Solar Energy driving chemical process
Bomans lackering

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	100 M2	160 ºC	Hot water chemical bathing for gold plating

#Parabolic Collectors: 10
Absolicon T10, T160 and X10PVT
Heat Production: 10 kW
Electricity Production: 10 kW

PROJECT LOCATION – Stockholm, SWEDEN

INSTALLATION YEAR - 2011

OTHER INFORMATION

Roof Installation

Heat and electricity for district heating network

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	200 M2	75 ºC	Connected to local district heating Network

#Parabolic Collectors: 20
Absolicon X10PVT
Heat Production: 80 kWp
Electricity Production: 20 kWp

PROJECT LOCATION – Smedjebacken, SWEDEN

INSTALLATION YEAR - 2012

OTHER INFORMATION

Heat and Electricity produced sold to other industrial business

Solar energy on hospitals; Harnosand

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	36 M2	NA	Hospitals

#Parabolic Collectors: 5
Absolicon T10 and X10PVT
Heat Production: 14 kWp
10,000 kWh / year
Electricity Production: 2.6 kWp
1500 kWh / year

PROJECT LOCATION – Harnosand, SWEDEN

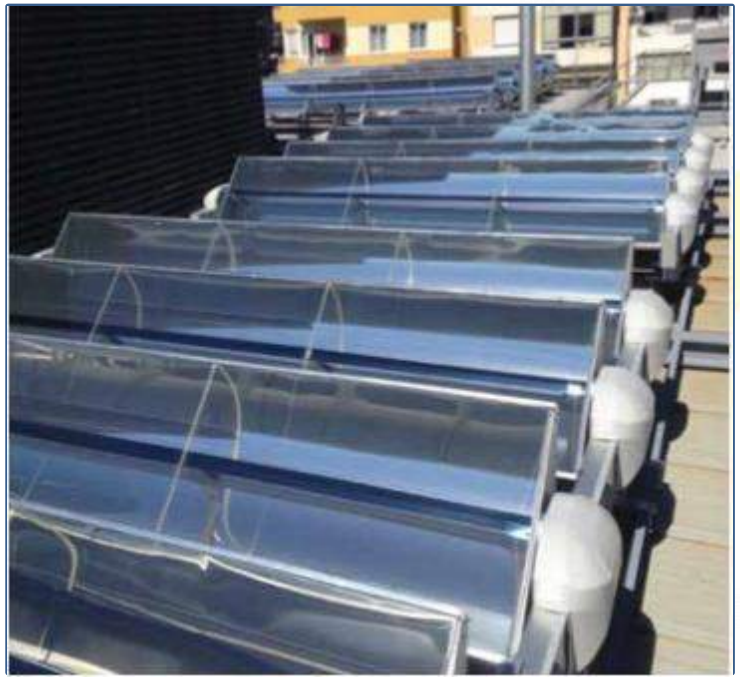
INSTALLATION YEAR - 2010

OTHER INFORMATION

Generate electricity, heating and cooling for the radiology department

Solar cooling in a Hospital; Spain

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	127 M2	NA	Hospitals



#Parabolic Collectors: 21

PROJECT LOCATION – Orense, SPAI

INSTALLATION YEAR - 2015

OTHER INFORMATION

The cooling processes will be more efficient higher the temperature is used

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Solar Concentra

Sundsvall Energy Company

ABSOLICON SOLAR CONCENTRATOR

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	400 M2	NA	Heating Purpose

#Parabolic Collectors: 40
Absolicon T10, T160 and X10PVT
Heat Production: 360 kWp
Electricity Production: 40 kWp

PROJECT LOCATION – Sundsvall, SWEDEN

INSTALLATION YEAR - 2012

OTHER INFORMATION

Heating of the pool as well as the energy requirement of the facility

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. **Solarlite**
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE
SOLARLITE CSP

COMPANY HEADQUARTER

Duckwitz, Germany

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

11 - 50

LIST OF PROJECTS

TRESERT Tri Generation (electricity, heat, refrigeration)
Parabolic trough power plant for a fish farm

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Combined Heat & Power generation
Agriculture, forestry and fishing

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Solar Concentra

PROJECT NAME:
Parabolic trough power plant for a fish farm

solarlite
plugged to the sun

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	440 M2	Max Operating temperature of 250 ºC	Agriculture, forestry and fishing

Parabolic trough collector SL 2300
Thermal Output: 220 kWh

PROJECT LOCATION – Woltow, GERMANY

INSTALLATION YEAR - 2007

OTHER INFORMATION

Constantly maintain the temperature in the fish breeding tanks to 26 ºC

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PROJECT NAME:
TRESERT, Tri Generation(electricity, heat, refrigeration)

solarlite
plugged to the sun

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	928 M2	NA	Generation of electricity, heat and refrigeration

Parabolic trough collectors
SL 2300, SL 4600
Thermal Output: 500 kWh
Electric Output: 50 kWh

PROJECT LOCATION – Phitsanulok, THAILAND

INSTALLATION YEAR - 2011

OTHER INFORMATION

Raise awareness of green technologies in the Southeast asian region
180 tons of CO_2 emission reduction per year

AGENDA

1. Industrial Solar
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3. NEP Solar
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5. Absolicon
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COMPANY PROFILE
FRESNEX

HEADQUARTERS	SCOPE OF ACTIVITIES	# OF EMPLOYEES
Wiener Neustadt, Austria 	EPC COMPANY	2 - 10

LIST OF PROJECTS	TYPE OF CUSTOMERS – INDUSTRY SECTORS
Demo Project; Ecotherm, Austria	Research & Development

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PROJECT NAME:
Demonstration Project; Ecotherm

FRESNEX
The perfect focus!

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Fresnel Collector	200 M2	Solar Steam at 200 ºC; 10 bar	Research & Development

54 mirrors with dimension
Length: 2.8 m; Width: 100 mm

PROJECT LOCATION – Wels Campus, AUSTRIA

INSTALLATION YEAR - 2016

OTHER INFORMATION

Able to integrate with the existing conventional steam generator

AGENDA

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Solar Concentra

COMPANY PROFILE
SRB ENERGY

SRB

HEADQUARTERS

Valencia

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

11 - 50

LIST OF PROJECTS

District Heating: Geneva Airport
Solar Cooling: RNB
Industrial Heating: Colas Swiss Holding

TYPE OF CUSTOMERS – INDUSTRY SECTORS

District Heating and Cooling
Chemical; cooling
Construction

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Solar Concentra

PROJECT NAME:
District Heating: Geneva Airport

SRB

TYPE OF TECHNOLOGY

Parabolic Trough Collector

GROSS COLLECTOR AREA (M2)

1139 M2

TEMPERATURE (ºC)

Thermo-oil at 130 ºC

INDUSTRY SECTOR

District Heating and Cooling: Heat the Airport terminals; Through an absorption machine, for cooling of the terminals in summers

UHV collectors
Yearly cooling energy production : 300 MWh
Yearly heating energy production : 70 MWh

PROJECT LOCATION – Geneva, SWITZERLAND

INSTALLATION YEAR - 2013

OTHER INFORMATION

Combination of solar collector and UHV technology
Reduction of 160 tons of CO_2 per year

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Solar Concentra

PROJECT NAME: Solar Cooling: RNB

SRB

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	650 M2	Water & Propylene Glycol at 100 ºC	Cooling: Using absorption machine to produce cold water at 7ºC

UHV collectors
Yearly cooling energy production : 413 MWh

PROJECT LOCATION – Valencia, SPA

INSTALLATION YEAR -

OTHER INFORMATION

Combination of solar collector and UHV technology

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Solar Concentra

PROJECT NAME: Industrial Heating: Colas Swiss Holding

SRB

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	80 M2	Thermo-oil at 180 ºC	Heat asphaltic bitumen storages

UHV collectors
Installed thermal power: 50 kW

PROJECT LOCATION – Geneva, SWITZERLAND

INSTALLATION YEAR - 2010

OTHER INFORMATION

Combination of solar collector and UHV technology
Reduction of 7 tons of CO_2 per year

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. **SUNCNIM**
10. Soltigua
11. Inventive Power
12. Rackam
13. SunVapor

COMPANY PROFILE – SUNCNIM

HEADQUARTERS	SCOPE OF ACTIVITIES	# OF EMPLOYEES
La seyne-sur-Mer, France 	EPC COMPANY	11 - 50

CHARACTERISTICS	LIST OF PROJECTS	TYPE OF CUSTOMERS – INDUSTRY SECTORS
Fresnel Collectors; Dimensions: 67m x 18m; 900m2 of mirrors; Unit peak power: approx. 500kWth/module; water or saturated steam from 1 to 120 bars;	A 350 kW demonstration project in south of France based on Fresnel collectors. eLLO, a 9 MWe solar power plant with 4 hours full load equivalent storage located in south of France in Eastern Pyrenees	Designs and builds turnkey Solar power systems for steam and electricity generation to reduce fuel consumptions of its customers in food, paper, mines, textile and chemical sector

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. **Soltigua**
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12. Rackam
13. SunVapor

COMPANY PROFILE – SOLTIGUA

HEADQUARTERS	SCOPE OF ACTIVITIES	# OF EMPLOYEES
Gambettola, Italy	EPC COMPANY	11 - 50

CHARACTERISTICS

More than 25 solar projects across 4 different continents
Technologies available: Frensel collectors, FLT and Parabolic collectors, PTMx
Max Temperature attainable: 280 ºC for PTMx and 320 ºC for FLT

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Claims:

Industry	Process	Temperature [°C]
Food and beverages	cleaning pasteurisation sterilisation drying cooking	80 - 150 80 - 110 130 - 150 130 - 240 80 - 100
Plastic	extrusion and drying	150 - 180
Chemical	heat treatments boiling distillation drying	150 - 180 95 - 100 110 - 300 150 - 180
Paper	bleaching and drying	130 - 180
Textile	washing heat treatment bleaching dyeing	80 - 100 80 - 130 60 - 100 100 - 160
Industrial cleaning	steam washing	150

AGENDA

1. Industrial Solar
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9. SUNCNIM
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MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

Solar Concentra

COMPANY PROFILE
INVENTIVE POWER

Inventive Power
Breaking new ground in Energy

HEADQUARTERS

Jalisco, Mexico

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

20 - 50

LIST OF PROJECTS

Buenavista Greenhouse
Dairy Plant, LACTO PRODUCTOS EL INDIO
Dairy Plant, La Doñita
Durango Dairy Company
Matatlan Dairy
Food Pellet Plant
Nestle Dairy Plant; Chiapa de Corzo & Lagos de Moreno
Lechera Guadalajara

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Agriculture
Dairy Products
Manufacture of Animal feeds

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PROJECT NAME:
Nestle Dairy Plant; Lagos de Moreno

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	245 M2	Water at 95 ºC	Dairy products; Pasteurization, heating water

Power Trough 110
Thermal Power: 137 kWh

PROJECT LOCATION – Jalisco, MEXICO

INSTALLATION YEAR - 2014

OTHER INFORMATION

Total Investment: 130,000 €
Energy storage volume: 5 m3
Backup heating system: Steam boiler fired by Natural gas

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PROJECT NAME: Buenavista Greenhouse

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	66 M2	Glycol at 80 ºC	Agriculture; Space heating: heating of production halls

Power Trough 110
Thermal Power: 36 kWh

PROJECT LOCATION – Jalisco, MEXICO

INSTALLATION YEAR - 2013

OTHER INFORMATION

Total Investment: 20,000 €
Energy storage volume: 2.5 m3

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PROJECT NAME:
Dairy Plant, LACTO PRODUCTOS EL INDIO

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	132 M2	Water at 95 ºC	Dairy Products; Process heating, preheating boiler

Power Trough 110
Thermal Power: 74 kWh

PROJECT LOCATION – Michoacán, MEXICO

INSTALLATION YEAR - 2012

OTHER INFORMATION

Total Investment: 44,200 €
Energy storage volume: 5000 m3

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PROJECT NAME: Dairy Plant (La Doñita)

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	40 M2	Water at 95 ºC	Dairy Products; Milk processing, pasteurization

Power Trough 110
Thermal Power: 22 kWh

PROJECT LOCATION – Guanajuato, MEXICO

INSTALLATION YEAR - 2014

OTHER INFORMATION

Total Investment: 18,000 €
Energy storage volume: 1500 m3

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PROJECT NAME: Durango Dairy Company

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	132 M2	Water at 95 ºC	Dairy Products; Milk processing, pasteurization

Power Trough 110
Thermal Power: 92 kWh

PROJECT LOCATION – Durango, MEXICO

INSTALLATION YEAR - 2013

OTHER INFORMATION

Total Investment: 40,000 €
Energy storage volume: 7 m3

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Solar Concentra

PROJECT NAME: Matatlan Dairy

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	66 M2	Water at 80 - 100 ºC	Dairy Products; General process heating

Power Trough 110
Thermal Power: 46 kWh

PROJECT LOCATION – Jalisco, MEXICO

INSTALLATION YEAR - 2013

OTHER INFORMATION

Total Investment: 23,000 €
Energy storage volume: 2.5 m3

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PROJECT NAME: Food Pellet Plant (Nutrición Marina)

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	178.2 M2	Water at 95 ºC	Manufature of prepared animal feeds; cooking

Power Trough 110
Thermal Power: 97.2 kWh

PROJECT LOCATION – Sinaloa, MEXICO

INSTALLATION YEAR - 2013

OTHER INFORMATION

Total Investment: 58,000 €
Energy storage volume: 7500 m3

PROJECT NAME: Nestle Dairy Plant; Chiapa de Corzo

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	224.5 M2	Water at 95 ºC	Dairy products; Pasteurization, heating water

Power Trough 110
Thermal Power: 126 kWh

PROJECT LOCATION – Chiapa de Corzo, MEXICO

INSTALLATION YEAR - 2014

OTHER INFORMATION

Total Investment: 100,000 €
Energy storage volume: 5 m3
Backup heating System: Steam boiler fired by LPG

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PROJECT NAME: Lechera Guadalajara

Inventive Power
Breaking new ground in Energy

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	245 M2	Water at 95 ºC	Dairy products; Pasteurization, milk processing

Power Trough 110
Thermal Power: 240 kWh
Total Investment: 160,000 €
Solar fraction: 40 %

PROJECT LOCATION – Jalisco, MEXICO

INSTALLATION YEAR - 2016

OTHER INFORMATION

Energy storage volume: 50 m3
Conventional heat source: Steam boiler fired by natural gas
Savings: 85,038 m3 of natural gas per year

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. **Rackam**
13. SunVapor

COMPANY PROFILE – RACKAM

HEADQUARTERS

Quebec, Canada

SCOPE OF ACTIVITIES

EPC COMPANY

OF EMPLOYEES

11 - 50

LIST OF PROJECTS

Silampos, Portugal

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Manufacturing

PROJECT NAME: Silampos, Portugal

TYPE OF TECHNOLOGY	GROSS COLLECTOR AREA (M2)	TEMPERATURE (ºC)	INDUSTRY SECTOR
Parabolic Trough Collector	450 M2	Thermo-oil at 180 ºC	Process Wash and Drying finished product

S10 Collectors
Installed thermal output: 67 kW

PROJECT LOCATION – Cesar, Portugal

INSTALLATION YEAR - 2014

OTHER INFORMATION

GHG Savings: 11 tons/year

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
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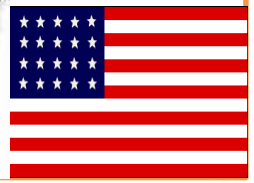
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. **SunVapor**

COMPANY PROFILE
SUNVAPOR

HEADQUARTERS

California, U.S



SCOPE OF ACTIVITIES

ENGINEERING & CONSULTING FIRM

OF EMPLOYEES

2

CHARACTERISTICS

Green Parabolic Trough collector focussing on cost-cutting
Use of wood instead of steel components

Can obtain operating temperature
up to 500 ºC

TYPE OF CUSTOMERS – INDUSTRY SECTORS

Food processing industry; need operating temperature
only up to 230 ºC
pasteurization, blanching and roasting

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PROTERMO SOLAR

SECRETARÍA TÉCNICA

*DESCRIPCIÓN DE EMPRESAS Y PROYECTOS SHIP**

*SOLAR HEAT FOR INDUSTRIAL PROCESSES

Análisis de Situación v1.1

GRUPO DE TRABAJO DE MEDIA TEMPERATURA

AGENDA

1. Industrial Solar
2. Aalborg CSP
3. NEP Solar
4. Abengoa Solar
5. Absolicon
6. Solarlite
7. Fresnex
8. SRB Energy
9. SUNCNIM
10. Soltigua
11. Inventive Power
12. Rackam
13. **SunVapor**

- Elianto S.R.L (http://www.eliantocsp.it/index.php/en/)
- Feranova (http://www.feranova.com/home/home.html)
- SolarEuromed (tiene pinta de haber desaparecido)
- CSP-F (http://www.cspfsolar.it/)
- Alsolen (https://www.alsolen-alcen.com/en)
- Hitachi Zosen (http://www.hitachizosen.co.jp/english/release/2013/04/000876.html)
- Zed Solar (http://zedsolar.com/)

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PROTERMO SOLAR

Muchas gracias por su atención