

"We are passionate about solving the world's energy needs with our ingenious products."



**ABSOLICON**  
S O L A R   C O N C E N T R A T O R

ABSOLICON • 2012

## Bomans Lackering's processes powered by solar

PAGE 4

## Sweden's first solar power plant

PAGES 8-9

SOLAR THERMAL TECHNOLOGY

inter solar award

2011

WINNER

- Absolicon X10 PVT
- Kombination Photovoltaik Solarthermie
- Gleichzeitige Erzeugung Strom und Wärme
- Hoher Wirkungsgrad

- Absolicon X10 PVT
- Combination of photovoltaic and solar heating
- Simultaneous generation of electricity and use of heat
- High efficiency



# Wins solar industry's Oscar

PAGE 2



## Royal interest in solar energy

PAGE 2



## Installation in Chile expands

SPREAD



## Indian collaboration finalized

PAGE 7

# We have the technical solution to the world's energy problems

**H**i there, this magazine is a way of showing those of you with an interest in Absolicon what we're doing these days. We're a company built on the understanding that solar energy is the only source of energy that can independently fulfill mankind's energy needs and that concentrated solar energy is an important part of the solution to the world's energy problems.

**Absolicon has developed** unique expertise in building solar energy systems and can realize the vision of renewable energy that so many of us have. During the past 12 months, we've concentrated on completing reference installations. We can now present an impressive portfolio of installations in various areas – for hospitals, hotels, industry and district heating networks. Moreover, we have installations in different climatic zones on three continents.

**We're now prepared** to begin selling our products on a global market. This has required major effort by all – open-minded customers, patient investors, industrious suppliers and skilled staff. We're now adapting our organization and turning outwards.

**I was at a primary school recently** and talked about solar energy. The children were fully convinced that today's energy systems with coal and oil are wrong

and they didn't understand why everyone wasn't using solar energy instead. When I tried to explain that major investments are necessary and that it takes time to change an old system, the children showed no understanding. "If you know what needs to be done, you should just do it," as one eight-year-old boy put it.

**But, it costs to sell** in larger projects, and the time between the first contact and delivery is long. The Swedish projects have often taken two years from when the customer gives the go-ahead until the completed field is in place. Planning, financing, applications, building permits, negotiations – they all take time.

**"CONCENTRATED SOLAR ENERGY IS AN IMPORTANT PART OF THE SOLUTION"**

**Despite this, we have** progressed rapidly in going from technical ideas to full-scale installations. During 2011, we had a market share of 20 percent for all solar heating in Sweden in larger installations.

**We're now moving** from projects of a few hundred square meters to tendering projects of thousands or tens of thousands square meters. We've even signed agreements to build solar collector factories in Germany and India (see the article below).

**Welcome to Absolicon!**



Joakim Byström  
Founder



Future Absolicon factory? There is great interest in manufacturing Absolicon's solar collectors, says Johan Sandberg, ceo.

## Preparing for Absolicon factory

**Plans are ready for an Absolicon factory in Germany. When the solar energy industry grows, Absolicon will invest in licensed manufacturing of solar concentrators in various markets as a complement to exports from Sweden.**



There is great interest in manufacturing Absolicon's solar collectors. The office in Härnösand receives new queries each month, primarily from Asia. Absolicon has signed two cooperation agreements; one with a German company and one with Bergen Group in New Delhi, India to obtain the rights to manufacture Absolicon's products.

"In the agreements we combine a license to our patents and the right to use our brand with Absolicon being part owner of the factory,"

explains Johan Sandberg, ceo.

By demanding partial ownership of the factory, Absolicon gains control over how growth will develop, which is particularly important in large markets like India. The factories that are planned are more automated than the current Swedish production plants, which will make manufacturing much cheaper.

"Our partners in both Germany and India have already invested millions in terms of preparation,

and we expect that the first licensed-manufactured solar collectors from both India and Germany will roll out in 2013 as well".

Preparing the factory buildings has been very resource-intensive, but when the concept is well established, several interesting markets will be waiting.

"In the future, we see regional production facilities in all large markets. The next step would be to set up factories in the USA, Mexico and Chile", reveals Johan Sandberg.



This magazine on concentrated solar energy is published by Absolicon Solar Concentrator AB. The articles may be freely reproduced as long as you cite the source. Contact Absolicon for imagery.

**Editor:**  
Joakim Byström

**Editorship:**  
Sara Boström

**Photographers:**  
Kristofer Lönnå, Daniel Roos, Anders Elisasson, Absolicon

**Print:**  
Mittmedia Print, 2012

### Visit Absolicons website!

You can visit Absolicon's website at [www.absolicon.com](http://www.absolicon.com). At the site, you can read more about our products and calculate how much you can save by using solar energy in your operations.

### Absolicon Solar Concentrator AB

Phone +46-611-55 70 00 | Fax +46-611-55 72 10  
[www.absolicon.com](http://www.absolicon.com) | [info@absolicon.com](mailto:info@absolicon.com)  
Skype: absoliconsolar

# Absolicon wins Solar Energy Industry Award



The Oscar of the Solar Energy Industry 2011 has been presented to Absolicon for Absolicon X10 PVT. The winner of the prestigious prize was announced at the world's largest solar energy exhibition, Intersolar in Munich.

"We have worked hard for many years to optimize our product and are happy to be awarded for our work," says Bengt Thomaeus, Absolicon.

The company from Sweden had their own stand at the world's largest solar energy exhibition. The prize was awarded at a ceremony that has been named "The Oscar of the Solar Energy Industry". The prize is given in three categories and rewards groundbreaking products within solar energy sector.

"We were honored to be nominated. To actually win the prize here in Munich

is an fantastic experience and we have got a lot of interest for our unique solar collector".

The Absolicon X10 PVT generates both heat and electricity and is developed to supply energy for large buildings like hospitals, hotels and industry – a fast growing solar market both in Europe and the rest of the world.

"Many of the visitors here at Intersolar are installers looking for new products and we have many requests already for installations world-wide," says Bengt Thomaeus.



Absolicon's Bengt Thomaeus, at the company's booth at Intersolar. The exhibition is an important meeting place for Absolicon and the company also exhibited in 2012.

## Royal interest in concentrated solar energy

Solar energy was on the agenda for day two of the visit by Crown Princess Victoria and Prince Daniel to Vasternorrland. Absolicon was one of the exhibitors at a mini-exhibition, and one of the visitors at their booth was Prince Daniel.

"Prince Daniel has a lot of experience in risk capital and we had an interesting conversation," says Joakim Bystrom from Absolicon, who advised the royal couple to supplement their wood pellet heating system at Haga castle with solar collectors.

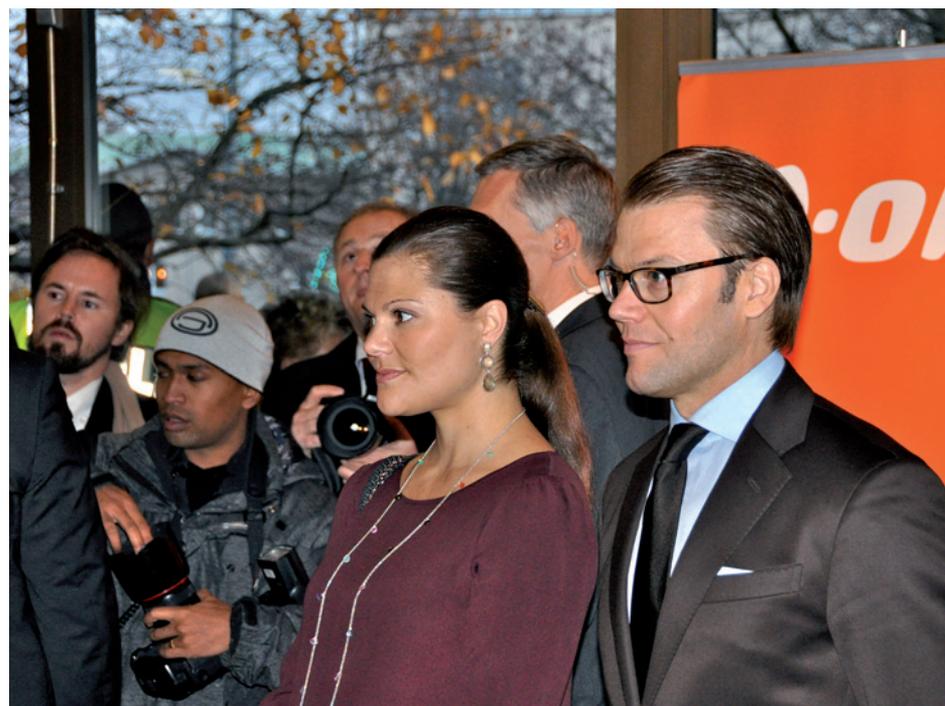
Absolicon's own solar collector converts solar energy into both electricity and heat. There were demonstration systems on display at the Sweden Green Tech Building in Stockholm, at Harnosand's Energypark, the Skule Naturum in Kramfors and at the County Hall for Vasternorrland.

"We are halfway between the development phase and large scale production," says Joakim Bystrom, who later had dinner with the royal couple at the Residenset castle in Harnosand.

At the mini-exhibition at Technichus in Harnosand several creative entrepreneurs from different parts of Vasternorrland participated by demonstrating new and exciting industries. Technichus is a popular science environment that uses playfulness and experimentation to promote entrepreneurship and interest in technology among children and youth.



Prince Daniel visited Absolicon's booth during Crown Princess Victoria's visit to Vasternorrland in Sweden.



The royal couple was loyally followed by photographers.



Joakim Byström demonstrates solar energy technology for Prince Daniel of Sweden.



*The solar collectors from Absolicon were installed on the factory roof and power a portion of the company's chemical processes.*

# A lift for Bromans Lackering Concentrated solar energy for the industrial sector

**Absolicon's first installation for the industrial sector is up and running. The solar collectors were installed on the roof and power a portion of the company's chemical processes.**

Industry's demanding processes are subject to increasingly stricter environmental requirements and rising energy prices. These developments are putting pressure on the industrial sector to find reliable new energy solutions for future production.

## LARGE AMOUNTS OF HOT WATER

As a subcontractor for the Swedish telecom industry, Bomans consumes large quantities of energy for the electroplating chemical baths used to gold plate component enclosures. When Bomans wanted to make its operations more eco-friendly, the solution was ten solar collectors from Absolicon.

"With increasing energy costs, more

and more industries will be considering solar energy to power their processes," predicts Absolicon's ceo Johan Sandberg.

Bomans Lackering was also able to take advantage of the government's solar electricity subsidy for the installation.

## A KEY MARKET

"The industrial sector is a key market for us," says Johan Sandberg.

"Energy from the sun is not just environmentally friendly, it's also free. This means that investments in solar energy reduce the uncertainty factor in terms of a plant's future energy costs. This makes it easier to make decisions when investing in new, energy-demanding operations."



*The solar collectors are shown here being lifted into place.*

- • • • •
- **INSTALLATION FACTS**
- Location: Stockholm, Sweden
- Number of solar collectors: 10
- Size of installation: 100 m<sup>2</sup>
- Heat production: 40 kWp
- Electricity production: 10 kWp
- Mounting: Roof installation
- Installation date: October 2011
- • • • •

# Climate-smart technology

**A field of 40 solar collectors provides the Stodehuset aquatic center with heat and electricity. The installation heats the water for both the indoor and outdoor pools.**

- • • • •
- **INSTALLATION FACTS**
- Location: Sundsvall, Sweden
- Number of solar collectors: 40
- Size of installation: 400m<sup>2</sup>
- Mounting: Ground installation
- Electricity production: 40 kWp
- Heat production: 360 kWp
- Installation date: May 2012
- • • • •

The client is Sundsvall Energi, and the installation replaces a large part of the center's oil consumption. By using solar energy, Stodebadet hopes to offer warmer pools and expanded opening hours. The client received solar power subsidies for the installation.

"It feels very exciting for us at Sundsvall Energi to be involved in the new, climate-smart technology," says Mats Bäck, head of development at Sundsvall Energi.



*Elisabet Strömqvist, county council commissioner on the Västernorrland County Council, shows the solar collectors on the hospital roof.*

# Investment benefits hospital in two ways

**As the sun rises over the nearby straits, a humming sound can be heard from the roof at the community hospital in Harnosand, Sweden. This is the sound of four solar collectors, aligning towards the sun to generate the day's electricity, heating and cooling for the radiology department two floors below.**

The installation was performed by the Foundation for Research on Concentrated Solar Energy and the Västernorrland County Council. The investment is part of an EU project for promoting demonstration plants using new energy technology.

"We use a lot of energy so we also have to take responsibility," says Elisabet Strömqvist, county council commissioner on the Västernorrland County Council. "The investment benefits us in two ways – we save money and spare the environment."

**"WE USE A LOT OF ENERGY SO WE ALSO HAVE TO TAKE RESPONSIBILITY."**

## DEMONSTRATING NEW ADVANCES

The facility was commissioned in April 2010 and is a part of the Cleantech Demonstration Area, a collection of unique environmental technology installations that was designed to receive visitors. The objective is to

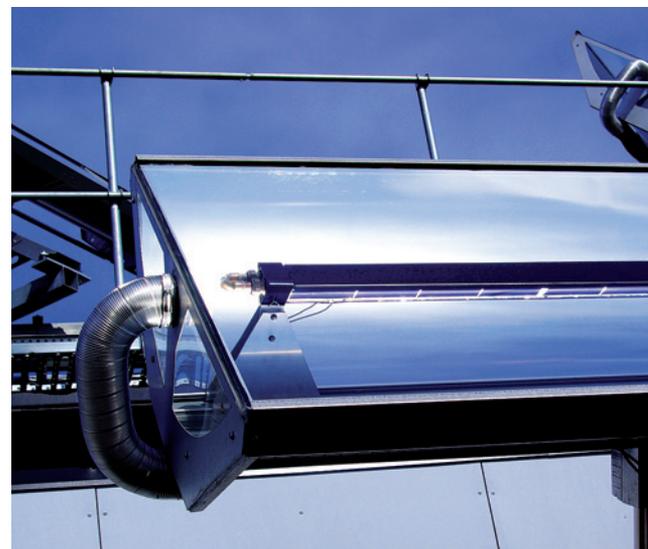
develop methods for showcasing and spreading new environmental technologies.

"The environmental engineering branch is still young, but has major potential," says Elisabeth Strömqvist. "I personally feel that it's important to showcase new technology. It inspires people and demonstrates that there are ways to reduce our harmful impact on the environment."

## SHOWROOM

The solar energy facility has a showroom. The heart of the system that converts heat to cold is here, and it has attracted more than 20 ambassadors and several senior government officials.

- • • • •
- **INSTALLATION FACTS**
- Location: Harnosand, Sweden
- Number of solar collectors: 5
- Size of installation: 36 m<sup>2</sup>
- Mounting: Galvanized steel on roof
- Heat production: 14 kWp
- Electricity production: 2,6 kWp
- Installation date: April 2010
- • • • •
- The installation at the community hospital is one of five plants that are part of the Cleantech Demonstration Area (website [cleantechdeomo.com](http://cleantechdeomo.com)).
- • • • •





# Hikers can now comfortably spend the night in a stunningly beautiful Hotel in wilderness produces own

**The vast national park in Chile needed energy. The solution turned out to be concentrated solar energy. The latest order is the third in a collaborative project for the supply of electricity and heating to the remote hotel facilities constructed in the region.**

**F**or visitors who hike in the national parks, our solar energy plants will mean hot water and electricity for their hotel rooms,” says Cesar Ibarra at Absolicon.

**“WITH THE HELP OF THE SUN, EACH BUILDING CAN PRODUCE ITS OWN ENERGY.”**

### THREE PROJECTS

Collaboration with the Chilean project has been under way for more than two years and engineers from Absolicon have been on-site to help with the initial installations. Three separate solar energy plants now supply energy to the national park’s remote hotels. The client is the foundation that owns Patagonien

National Park in Chile.

”The foundation wanted to invest in solar energy technology that would be easy to upgrade as the technology develops,” says Cesar Ibarra. ”Our solar collectors turned out to be a very good solution, both now and for the future.”

### NEW TECHNOLOGY

Solar energy is rapidly growing in the world, and in Germany, 4 percent of all electrical current now comes from solar cells; that’s 20 TWh per year. In countries



*One of three installations in the beautiful national park in Chile.*

such as Chile, the new energy technology is expected to revolutionize energy production.

A solar energy plant generates both electricity and heat, and in some markets, there is also the opportunity of being well

compensated for the electricity fed out to the grid.

”With the help of the sun, each building can produce its own energy,” says Cesar Ibarra. ”We see major benefits with concentrated solar energy.”



# ul national park own energy



The installations provide visitors with access to hot water and electricity, even when they spend the night in the region's most remote hotels.



The latest Absolicon order is the third in a collaborative project for the supply of electricity and heating to the remote hotel facilities constructed in Patagonien National Park in Chile.



Absolicon's engineers have been in Chile to help with planning and installations. Together with local tradesmen and the national park foundation, they have built and commissioned three solar energy plants.



The solar collectors being lifted into place and installed. The small field generates energy for the hotel, which can offer comfortable accommodations to its guests.



- • • • •
- **INSTALLATION FACTS** •
- 
- Number of solar collectors: 10 •
- Size of installation: 100 m<sup>2</sup> •
- Mounting: Roof installation •
- Electricity production: 5 kWp •
- Heat production: 45 kWp •
- Installation date: January 2012 •
- 
- • • • •

## Indian collaboration produces results

**Absolicon's first installation in India produces electricity, heating and cooling for a hospital. The plant was built in collaboration with an Indian solar energy company.**

A 100 m<sup>2</sup> solar collector installation ensures that the hospital in Mohali has both electricity and hot water. The system is installed on the roof. Half of the 100 m<sup>2</sup> installation utilizes a Absolicon X10 PVT system that generates electricity and heat. The other half is equipped with Absolicon's T10 model for higher temperatures, which can be connected to a solar cooling unit for the hospital's air conditioning system. The client is the Bergen Group, a company that has become Absolicon's partner in the Indian market. The plant was commissioned at a ceremony on April 22, 2012.



Rahinder and Rahinder from the Bergen Group visited Absolicon's main office. Johan Nilsson and Pär Thomaeus showed them the installation at Hemab Energypark.



Study visit at Harnosand Energypark. From left: The ambassador's advisor Daniel K. Kottut, Joakim Bystrom, Absolicon, Thomas Q Nilsson Harnosand Municipal Council and Ms. Purity W. Muhindi, Ambassador from Kenya.

## Visit of the Ambassador of Kenya

**Sustainable development in eastern Africa means making big investments in solar energy. When the ambassador from Kenya visited Vasternorrland for two days, the Absolicon X10 solar power plant was one of the most well-received study visits.**

Despite being the middle of winter, heat is produced at Harnosand's Energypark. This sunny winter day was perfect for a study visit and the ambassador Ms. Purity W. Muhindi showed great interest in Absolicon's solar collectors. Joakim Bystrom was on site to provide more information about the installation.

"Africa is an exciting market for us. This is the second time that we have met the ambassador and have demonstrated our technology," explains Joakim Bystrom.

The purpose of the ambassador's visit in Vasternorrland was to generate business contacts and foster an exchange of knowledge to help foster development in Kenya.



Despite being in the middle of winter, heat is still produced by the sun's ray hitting the solar collector's reflectors.



## First solar power plant

**Welcome to Harnosands Energipark! This is the site of Sweden's first solar power plant for electricity and heating to be connected to the local district heating network. The plant has solar collectors from Absolicon that generate heat for the district heating network and electricity for the electric power grid, directly from the sun.**

## Installation turns thermal

**Harnosand's folk high school is strengthening its environmental profile and investing in a solar energy system by entering a unique agreement with the municipal energy company, Hemab, to feed excess heat to the district heating network. "The agreement with Harnosand folk high school is a significant milestone in the development of district heating in Sweden," says Marcus Tärnvik, business area manager at the district energy company Hemab.**

The energy company has decided to call the business deal the "Harnosand model", which means that customers can sell solar energy during the summer at a good price. Hemab wants to promote the development of small-scale energy production. Almost one year ago, the Harnosand Energipark was created, where plants for electricity and heat production can be built, tested and find a market for their energy.

"But with this type of deal it was more interesting for us to invest in a separate plant," says Eduardo Gran Villanueva-Contreras, Director of the Folk High



- • • • •
- **INSTALLATION FACTS**
- 
- Location: Harnosand, Sweden
- Number of solar collectors: 20
- Size of installation: 200 m<sup>2</sup>
- Heat production: 80 kWp
- Electricity production: 20 kWp
- Installation date: June 2011
- 
- • • • •



*The plant has 20 solar collectors that generate heat for the district heating network and electricity for the electric power grid directly from the sun.*

# for heat and electricity

**W**ith this initiative, the municipal energy company can offer its customers environmentally friendly energy at the same time as new environmental technology gains a natural place for demonstrations. The installation is constructed at ground level and is a part of the energy company's investments in small-scale energy technology.

"We want to contribute to development in renewable small-scale electricity and heating production," explains Hemab project manager Pär Marklund. Besides the field with Absolicon's solar collectors, there is a mini-windpower plant and

**"WE WANT TO CONTRIBUTE TO DEVELOPMENT IN RENEWABLE ENERGY."**

sun-tracking solar cells. There is also a well-visited showroom at the energy park where both school classes and guests from abroad can learn more about the future's technology.

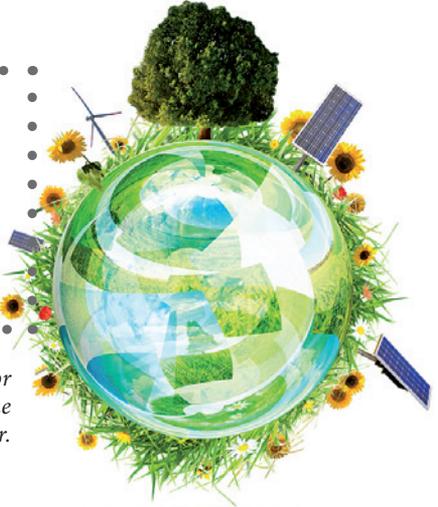
# energy into district heating

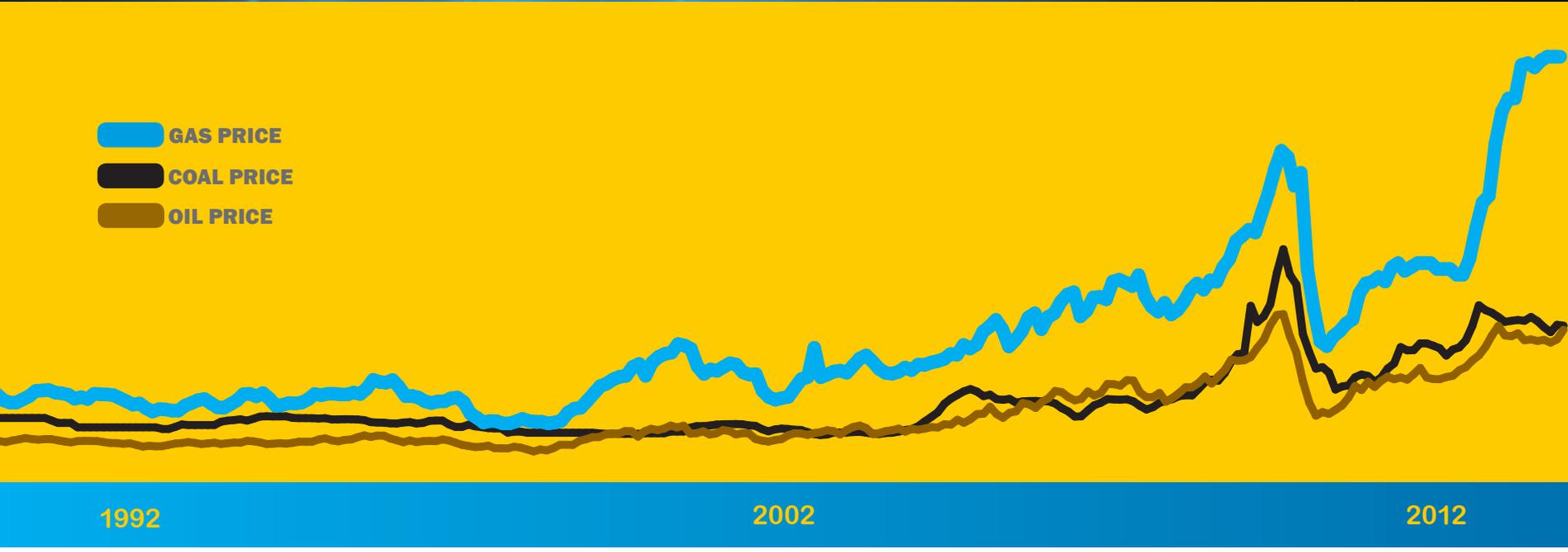
School. Now we will be self-sufficient in terms of heat during the summer months, in addition to being paid for the surplus heating. The folk high school estimates that the investment will be paid off within 12 years. "In addition to being a good investment, it also clearly helps our environmental profile," says the director the school. "For us as educators, it is important to be on the cutting edge. We want to support the global efforts to address the environmental and climate issues that were raised

during the UN's environmental summit, Rio+20, in June. The supplier of the solar energy system is Absolicon Solar Concentrator, who developed a solar collector technology that produces both heat and electricity. "The folk high school and Hemab are now models for what environmentally-friendly energy development in densely populated areas should look like," says Joakim Bystrom, Absolicon..

- • • • •
- **INSTALLATION FACTS**
- 
- Location: Harnosand, Sweden
- Number of solar collectors: 20
- Size of installation: 200m<sup>2</sup>
- Mounting: Ground
- Installation date: 2012
- 
- • • • •

*The installation can be a model for future eco-friendly development in the energy sector.*





The chart shows price trends for the past 20 years for oil, gas and coal. Fossil fuels are becoming more expensive. At the same time increases the demand for carbon reduction.

# Solar energy is the solution to the world's

**Don't let solar energy just pass you by. There are now major opportunities to capture the rich and constant flow of energy from our closest star. Earth receives 15,000 times more energy each year from the sun than our entire global energy consumption. Solar energy is simply a superior energy bearer in a class of its own!**

**E**verything begins with the sun. Life on Earth, but also all renewable energy. The movement of the wind and the growing power of trees are examples of energy conversion from the rays of the sun. The sun is also the only energy source we have that can manage our energy needs by such a wide margin. The problem is in converting the sunlight into usable energy.

### MORE EXPENSIVE FUELS

The largest portion of mankind's present energy supply is energy from coal and oil.

Fossil fuels are becoming more and more expensive, and as different countries fulfill their commitments for reducing carbon dioxide emissions, the portion of renewable energy will increase within a few decades to represent the majority of the world's energy supply.

This transition is partly due to aging power plants being taken offline and not replaced with new ones, such as the nuclear power plants in Germany. But it is also due to the world's energy usage rapidly rising as living standards increase for billions of people in the

developing world, and these people will largely need their energy requirements covered by renewable energy.

### MAJOR TRANSITION

The transition that this will entail is much larger than many people have understood. There are large amounts of money being invested in new sources of energy – an estimated EUR 120 (USD 150) per person each year over the coming 20 years.

In Sweden, this means about EUR 1.20 (USD 1.5) billion annually. In

Europe, with 500 million inhabitants, the investment volume is about EUR 60 (USD 75) billion per year. For larger properties and industries, the transition means that energy consumers will receive a large portion of their energy from self-sustaining systems on their own roofs.

### NEAR-ZERO ENERGY

The EU's new building directives require "near-zero energy" for all new and renovated buildings as of 2021, which in most cases means that the buildings will

## First in the world with Solar Keymark certification

The SP Technical Research Institute of Sweden has issued Solar Keymark certification for Absolicon's PVT solar collector. It was the first time a solar collector with a concentration power of 10 was certified. With Solar Keymark certification, the solar collector is approved throughout the EU, and

in many countries the certification means entitlement to subsidies. Besides carefully measuring the solar collector's performance, it was also tested for tightness, wind loads and high temperatures.



## A bright calculation

Converting to solar energy is a long-term investment. Estimate your energy savings in our online calculator.

Website: [www.absolicon.com](http://www.absolicon.com)



# energy problems!

**"THE SUN IS THE ONLY ENERGY SOURCE THAT CAN MANAGE OUR NEEDS ."**

be self-sufficient with solar collectors on the roofs and facades. In Spain and parts of Italy, legislation has already passed that mandates installation of solar collectors for new construction. In industry, energy-demanding processes presently powered with oil or gas will require major efficiency measures. The energy needed will be produced in part by solar energy plants on factory roofs.

### SECURITY

The energy issue is also a matter of independence and security. Today's

energy systems, dependent on oil and raw materials, are vulnerable both from the financial and political perspectives. Energy prices can easily become pawns in political power plays. In this respect, solar energy can stand for stability and security.

### EFFICIENT ENERGY

Solar energy is necessary for being able to reduce the burning of fossil fuel. However, it will not be enough with just supplying more energy. At the same time we must learn to use energy more efficiently. Concentrating sunlight is a way of making use of energy from the sun more efficient. The technology offers several benefits and will play an important part in the future's sustainable energy solution.

## Narec Solar Ltd - New Spin out company

In early 2012, Narec spun out its Photovoltaic Technology Centre (PVTC) and created a new company: National Renewable Energy Centre (Narec) - world leader in high efficiency solar cells that concentrate the sunlight and

is involved in several research projects. 15 employees have been transferred into the new company. Absolicon continues the cooperation after the spun out.

**Website:** [www.narecsolar.com](http://www.narecsolar.com)

Even more efficient installations

## Absolicon develops solar control unit

**Absolicon has built its own solar heating control unit to be able to offer its customers more efficient installations. Each plant has a website where energy production can be tracked day by day.**

Making the most of the sun's heat requires not just efficient solar collectors, but also pumps, valves and sensors that can guide the thermal energy to where it is supposed to go.

Traditionally, a solar heating system had simple pumps that started at full power when the sun shined and then stopped. But when the thermal energy is supposed to be fed into the district heating system or to power industrial processes, the temperature and flow need to be controlled with the utmost precision.

Initially, Absolicon purchased prefabricated solar control units, but they were expensive and lacked the functionality to precisely control the temperature.

"After speaking with a dozen suppliers, we realized that we had to develop our own standardized solar control unit to optimize functioning for our solar energy systems," explains Stefan Jonsson, engineer at Absolicon and the manager responsible for the solar control unit project.

Absolicon's solar heating control unit is based on the experiences from the large solar heating fields that have been constructed in Sweden in recent decades. It consists of a bottom section with two to four large, speed-controlled pumps, sensors, valves and heat exchangers, as well as a top section with all of the control electronics and electrical connections.

"By combining everything in one unit we can 'plug and play,'" says Stefan Jonsson.

Everything is ready. On the one side, it is just a question of connecting the pipes from the solar collector field and connecting the district heating network or an industrial process on the other side. Using the factory-built solar control unit, Absolicon can now offer customers fast and efficient installation. Each installation has its own website where production can be tracked day by day and where the system can be monitored by Absolicon's technicians.



**Solar collectors that concentrate light can provide a more energy-efficient solution. Important applications include industries, district heating and residential properties with high energy needs all year long. A major technological benefit is that the same system can produce heating, cooling, electricity and steam. In this way, each installation can be adapted to the customer's needs.**

# Energy from the sun – a brilliant idea



## Solar Thermal

Solar heating is currently used primarily for providing hot water for buildings, sports facilities and industries. A growing market for thermal energy includes district heating systems where Absolicon has installed several systems. Solar concentrator systems can generate higher temperatures than regular solar heating systems and are easy to integrate. There is less need for storage tanks at higher working temperatures, and the system requires smaller pipe installations.



## Process Heat

Industrial applications often require temperatures above 90 degrees Celsius. Absolicon can generate hot oil or hot water under pressure at up to 160 degrees Celsius during normal operations and up to 200 C for special applications. Because the light is concentrated, these higher temperatures can be generated throughout the year with very little heat loss. The solar collector is designed to withstand high pressure and each system is tested under pressure.



## Solar Steam

Steam is a common energy carrier in industry. Solar collectors that concentrate light can produce large amounts of steam that is supplied in the same way as a secondary steam boiler. The steam can also be used in subprocesses in the system or to run the solar cooling. Our system for solar steam is geared towards large installations, where the roof of the factory is used to produce a portion of the steam that is needed. Solar steam is normally between 120-160 degrees Celsius and up to 6 bar in terms of pressure.



## Solar Cooling

Solar heat can be used to run solar cooling equipment in order to generate cost-free air conditioning for a property. Solar cooling is a proven technology that can be combined with a gas or oil furnace as a backup. There are many different principles that are used to generate solar cooling from heat, but one rule is that the processes become more efficient at higher temperatures. Lower temperatures often work best in smaller systems, where large cooling systems should work at higher temperatures. The heat can also be cooled down using a cooling tower.



## Solar Power

Absolicon can produce electricity using photovoltaic cells with concentrated light. The PV cells are focused and generate 10 times more electricity than normal cells, thanks to the concentrated light. The electricity is converted to 230 V AC and fed into the electrical power grid. At the same time, the excess heat is taken and converted to thermal energy for hot water in the building or district heating. It's a patented solution, and with Absolicon's unique skill and competence, the solar collectors have a double function: electricity and heat.

**Absolicon's system with concentrated solar energy can provide heating, electricity and steam that can directly replace the use of costly fuels. Contact us for help with initial planning. Together we can find the best energy solution for your operations!**

