



# Solar Thermal in Tropical Climate for Cooling and Heating



NEW

PDUs to be awarded by Professional Engineers Board, Singapore

**Date** : 22 August 2014

**Time** : 9:00am – 5:00pm

**Venue** : SEAS Training Centre at Park Mall  
9 Penang Road, #08-02  
Singapore 238459

Singapore is a small city-state without natural resources such as oil and natural gas. Fortunately, we are blessed with plenty of sunshine throughout the year. When adopting a renewal solar energy system, a large scale solar thermal (LST) system helps to reduce the use of fossil fuels and improves the building environmental performance.

A LST system, which converts the Free & Sustainable Solar Energy from the Sun to produce energy in the form of (Solar Thermal) Heat, is designed to provide energy input directly to meet the local consumer's energy requirement. Hence, a LST system helps not only to reduce the reliance on the conventional energy inputs, ie. electricity and natural gas, but could also be independent & enjoy security from any future dramatic changes in oil prices.

Singapore is also a land scarce country and the optimization of available spaces is of utmost importance when evaluating the adoption of the most technologically feasible and economically viable renewable energy system. Apart from being more efficient in harvesting solar energy as compared to other alternatives, a LST system is very simple to operate and has a long operating life requiring minimum maintenance thus making a LST system an attractive renewable system that is able to optimize the use of space in Singapore. A LST system will also make the building unique and further enhances the owner's Clean & Green image.

Apart from various attractive project financing schemes from banks & other international financial institution at competitive rates, aspiring LST system end-users could tap into the alternative Energy Service Contracting (ESCO) option that offer minimum upfront investments. An ESCo is structured as a service that not only reduce operating costs & transfer risk but also allow building owners to concentrate attention on their core activities.

Many aspiring LST systems owners find themselves poorly prepared when requesting system proposals and evaluating offers, as they might have little or no prior experience of LST systems and what levels of payback and incentive schemes apply. Hence, two experienced Solar Thermal industry professionals are invited to clear your doubts.

## Objectives

At the end of the programme, participants will understand:

- the fundamentals of Solar Thermal technology
- the difference between Solar Thermal and Solar PV technologies
- the possibilities and limitations of Solar Thermal applications on Industrial & Commercial buildings
- the economics and payback of Large Scale Solar Thermal (LST) systems
- how to specify and evaluate LST project proposals

## Target Audience

- Facilities/Utilities/Energy Managers
- Building owners
- Developers
- Architects
- Contractors
- Government agencies

## Programme Outline

The one-day workshop will comprise a mix of presentations and interactive discussions:

### 1. Technical Topics

- Introduction and overview of Solar Thermal Technology and Large Scale Solar Thermal System
- Comparison large scale vs small scale, flat plate vs tube
- Comparison between Solar Thermal and PV – relevance to land scarce country like Singapore
- Applications: Commercial & Industrial, ie. Domestic Hotel Water, Solar Cooling, District Heat/Cooling, Process Heat

### 2. Project Evaluation

- Economics and LCOE/ROI analysis
- Project Financing
- ESCo
- Identifying and evaluating projects
- Maintenance requirements and programmes

### 3. Q&A Session & General Discussions

Organized by:



Supported by:



Sustainable Energy Association of Singapore (SEAS)

9 Penang Road, #08-02 Park Mall Singapore 238459 Tel: +65 6337 9886 Fax: +65 63376658 www.seas.org.sg

## About SEAS

Sustainable Energy Association of Singapore (SEAS) an industry association launched in 2006, today has 160 members in the area of Energy Efficiency, Solar, Wind, Biomass, Carbon and Clean Energy Financing. SEAS aims to be the voice of sustainable energy industry and promote the business of its member companies.

Today, SEAS is also specializing in running trainings, courses and conferences only in the area of sustainable energy. SEAS aims to be the one stop, information and training provider, in the area of sustainable energy. Our trainers and lectures are not only highly qualified academic professionals but also industry specialists and professionals that are successful and sought after practitioners in the area of Sustainable Energy. Majority of Key Qualified Personnel(KQP) and Accredited Energy Services Companies are members of SEAS. They have, as a group successfully executed a multitude of energy projects with varying complexities both locally and regionally.

## About the Trainer

**Mr. Harald Blazek** has been with SOLID since 2008 and is currently in charge of Strategic Business Development & Marketing. SOLID is currently one of the leading system integrator for Large Scale Solar Thermal (LST) installations and has worldwide experience in designing, installing & commissioning LST systems adapted to local climates that have not a single failed system in more than 250 installations during the past 2 decades. Harald has over 7 years experience as a speaker on different international conferences and also held various trainings on Solar Thermal topics in Europe & Africa. He has also recently completed a six-month stint in Singapore as the Head of SOLID's Research & Development Team which jointly established a Solar Thermal research laboratory with Energy Research Institute @ Nanyang Technological University (ERI@N).

**Solar Thermal in Tropical Climate for Cooling and Heating**  
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### Registration Form

- Yes! I would like to register for this programme.  
 I am unable to attend but please put me on your mailing list.

	Early Bird (Registration with payment made on/before 25 Jul 2014)	Normal Fee (Closing Date: 15 Aug 2014)	Group Fee (Closing date: 15 Aug 2014)	No. of Delegates	Fee Payable
<input type="checkbox"/> SEAS Member	S\$374.50	S\$502.90	-		
<input type="checkbox"/> Non Member	S\$502.90	S\$642.00	S\$428.00		

- \* Fees are inclusive of GST.
- \* Fees include refreshments, lunch and programme collateral.
- \* Enjoy group discount for 4 or more delegates registered at the same time from the same organization and same billing source.
- \* Only one type of discount scheme is applicable at any one time.
- \* Please print and complete additional sheets where necessary.
- \* Important: Walk-in delegates will only be admitted on the basis of space availability and with full payment made on site.

### Participant's Details

- Name (\*Dr/Mr/Mrs/Ms): \_\_\_\_\_ NRIC: \_\_\_\_\_  
Designation: \_\_\_\_\_ HP No: \_\_\_\_\_ Email: \_\_\_\_\_
- Name (\*Dr/Mr/Mrs/Ms): \_\_\_\_\_ NRIC: \_\_\_\_\_  
Designation: \_\_\_\_\_ HP No: \_\_\_\_\_ Email: \_\_\_\_\_
- Name (\*Dr/Mr/Mrs/Ms): \_\_\_\_\_ NRIC: \_\_\_\_\_  
Designation: \_\_\_\_\_ HP No: \_\_\_\_\_ Email: \_\_\_\_\_

### Organization's Details

Company Name: \_\_\_\_\_  
Company Address: \_\_\_\_\_  
Postal: \_\_\_\_\_  
Contact Person's Name (\*Dr/Mr/Mrs/Ms): \_\_\_\_\_  
Tel: \_\_\_\_\_ Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

### Administrative Information

#### Registration and Payment

Please complete the enclosed registration form and forward it together with your **cheque at least 7 days before the commencement of the programme to**

**Sustainable Energy  
Association of Singapore**  
9 Penang Road  
#08-02 Park Mall  
Singapore 238459

Crossed cheque should be made payable to  
**"Sustainable Energy  
Association of Singapore"**  
Application will close on **15 Aug 2014**

#### Cancellation

SEAS reserves the right to change programme venue, cancel or reschedule the programme if necessary or warranted by circumstances beyond our control.

There will be no refund of fees for withdrawal. However, if the registration participant is unable to attend, a representative may be allowed to attend at no extra cost. Please inform us of the changes by fax or via email 3 days before the commencement of the programme.

#### Confirmation of Registration

Confirmation of registration will be given 5 working days before the commencement date via email. Registration is confirmed only upon receipt of payment.

If you do not hear from us  
**Please contact Ms Sherlene Lim at:**  
**Tel: 63379886**  
**Email: training@seas.org.sg**  
**Fax your registration form to 63376658**