

If you cannot measure it you cannot improve it  
Lord Kelvin

| energy efficiency workshop series |

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Energy and persistence alter all things.  
Benjamin Franklin

Two Day National Workshop on **ENERGY EFFICIENCY IN REFRIGERATION AND AIR-CONDITIONING** | October 6 + 7, 2005 'Surya', Munnar, Kerala (1600 m above MSL) | Learn how to optimise your Refrigeration and Air-conditioning system to save energy and earn more profit | 40 seats; act fast to reserve; visit [www.energyprofessional.in](http://www.energyprofessional.in) for updates on the event.

**society of energy engineers and managers**

No. 1 B, Vidyanketan, Sreekanthaswaram, Trivandrum 695 023, Kerala, India

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**Optimise for Profit** | Energy Efficiency Workshop Series | **seem** Society of Energy Engineers and Managers - the first professional body of Energy Managers in India, intend to organise skill up-gradation programs for Energy professionals in India by conducting a series of national level workshops on Energy Efficiency, highlighting the Best Practices, Performance Evaluation and Criteria of Selection of following systems. ■ **HVAC and Refrigeration system** ■ Boiler and furnace system ■ Steam and condensate system ■ Compressed air system ■ Pumps and Fans ■ Fluid piping system ■ Cooling tower system ■ Process systems ■ Electrical systems ■ Motors ■ Lighting system ■ Transformers ■ Energy efficiency in buildings ■ Renewable / Alternate energy system ■ Building Energy Management Systems.

Workshop Series 1 | **ENERGY EFFICIENCY IN REFRIGERATION AND AIR CONDITIONING**

**Aims**

Presentations by Experts from manufacturing, practicing Engineers, Consultants and Energy auditors, this two day workshop will focus on:-

- Thorough examination of the basics of refrigeration and air conditioning
- Issues faced by practicing engineers, energy managers and auditors in achieving energy efficiency in Refrigeration and Air-conditioning system.
- Best Practices and BEE testing codes for performance evaluation
- Covers practical applications in industries and buildings
- Provide solutions to attain optimum energy usage in Refrigeration & Air-conditioning system
- Experience sharing by practicing energy auditors and managers

**Who Should Attend** ■ Plant/ facility engineers, utility engineers, energy auditors and corporate energy managers

**When & where** | October 6 + 7, 2005 'Surya', Munnar, Kerala (1600 m above MSL)

**Reference Materials** Well-prepared reading materials; technical handbooks, engineering reports, publications & manufacturers' literature would be available for use and consultation.

**Registration: 5<sup>th</sup> October 2005** | 3.30 pm to 4.00pm at **seem** Circle, Kochi; 4.30 pm - Travel to Munnar and Stay

**Course Content, Schedule & Faculty** (tentative)

**6<sup>th</sup> October 2005**

Spot registration : 9.00am to 9.30am  
Inaugural session : 9.30am to 10.30am

Tea (10.30 am to 10.45 am)

**Program Overview** : Er K Madhusoodanan, Course Co-ordinator

**Technical Session 1** (10.45 am to 1.15 pm) | **Moderator** Mr K M Dhaharan Unnithan, Joint Director, Energy Management Centre **Refrigeration and Air-conditioning System Overview** (10.45 am to 12.00 noon)

- Quick review of the theory and fundamentals ■ System components and auxiliaries
- Discussions

**Air-conditioning Load Calculations** (12.00 noon to 1.15 pm)

- Heat Transfer, Building Thermal Envelop ■ Infiltration, Building insulation requirement, R values, U values ■ Solar load, shading devices, Heat storage of material
- Discussions ■ Lunch (1.15 pm to 2pm)

**Technical Session 2** (2 pm to 3.45 pm) | **Moderator** Mr N V Ravi, BSES Kerala Power Limited **Vapour Absorption Systems** (2 pm to 2.45 pm) ■ Li-Br / Ammonia-Water systems ■ Waste heat utilisation ■ Case studies & Discussions | **Best Practices and Performance Evaluation of HVAC and Refrigeration System** (2.45 pm to 3.30 pm)

- BEE Best Practice Manual ■ BEE Codes ■ Refrigeration & Air-conditioning system- Performance Evaluation ■ Discussions ■ Tea (3.30 pm to 3.45 pm)

**Technical Session 3** | **Energy Efficiency, Saving Opportunities, Latest Trends & Case Studies** (3.45 pm to 5.15 pm) | **Moderator** Mr R K R Pillai, Chief Manager, Kochi Refineries Limited

- Split and Window air conditioners (3.45 pm to 4.30 pm) ■ Packaged and Chilled water systems (4.30 pm to 5.15 pm)

**7<sup>th</sup> October 2005**

**Technical Session 4** (9.30 am to 12.50 pm) **Energy Efficiency, Saving Opportunities, Latest Trends & Case Studies** | **Moderator** Mr C Jayaraman, Vice-President, SEEM (Manager, Kochi Refineries Limited) ■ **Industrial Refrigeration** (9.30 am to 10.10 am)

- Heat insulation (10.10 am to 10.50 am) ■ Tea (10.50 am to 11.05 am) ■ Humidification system (11.05 am to 11.45 am) ■ Building energy management system (11.45 am to 12.10 pm)
- Variable speed drives (12.10 noon to 12.50 pm) ■ Lunch (12.50 to 1.35 pm)

**Technical Session 5** (1.35 am to 4.00pm) **Auxillaries** | **Moderator** Mr Christy K Abraham, Kerala State Electricity Board ■ **Cooling Towers** (1.35 pm to 2.15 pm) ■ **Pumps** (2.15 pm to 2.45 pm) ■ Tea (2.45 pm to 3.00 pm) ■ **Fans** (3.00 pm to 3.40 pm)

- Valedictory session 3.40 pm to 4 pm

**Local site visit: 8<sup>th</sup> October 2005** forenoon and then drop to Kochi by around 5 pm | For details on local trip, hotel accommodation for accompanying persons, etc., please visit [www.energyprofessional.in](http://www.energyprofessional.in) | **Fees: Rs 7500/-** per participant inclusive of travel to Munnar from Kochi and back; boarding and lodging, course material, etc. This may be paid as **DD** favoring **Society of Energy Engineers and Managers** payable at **Trivandrum**. Registration closes on **September 20<sup>th</sup>**

**Speakers** Armecc Cooling Towers | Dr.Ashok Kumar S., Professor, CET | Battiboi | Bluestar | Coolflo Fans | Dinesh A V, Devki Consultants | Encon Fans | FEDO | GEM Cooling Tower | Grundfos | Johnson Controls | Jothi Basu S, CPRI | Kirloskar Copeland | L.G | Larsen & Toubro Limited | Parag | Sudhirkumar R, CPRI | Thermax | U.P Twiga Fiberglass Limited | Voltas | York

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