

A monthly newsletter of

Indian Association of Energy Management Professionals

(www.iaemp.org)

THE URJA WATCH

July 2008, Issue 1

It is about “Conscience Keeping on Energy Matters”

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Editorial Board

S. Subramanian Sunil Sood R.V.Ramana Rao Amit Gupta

IAEMP supports DATACENTRE 2008 – 15 July, Mumbai & 17 July, Bangalore

(<http://www.tfci.com/datacenter08/index.htm>)

President's Message

“Having Vision is not just about seeing what is visible but also what is not visible and the capacity to realize such a vision is known as leadership”



Dear Friends,

There are many things unique in our association. We have a unique slogan, “Conscience Keepers to nation on energy matters”. We have a unique time bound mission to make our country energy independent by the year 2022 to coincide with platinum jubilee year of our political independence. We were the first to link an important mission with a historical date. We also have a unique vision document in place. Above all, we have our unique members who are endowed with the unique desire to contribute selflessly.

The only thing missing was a unique newsletter, which could blend with our mission. “The Urja Watch” will fill that void. I am very much thankful to Dr. S. Subramanian for agreeing to be the editor of this unique newsletter. I happened to have met him more than 12 years ago when he was the Chief Executive of the first ESCO Company in India INTESCO- Bhoruka Ltd. IAEMP is really fortunate to have him as editor of our newsletter. On behalf of all of us, I would like to extend warm thanks to him for his kind gesture. Let us all support him by sending relevant, innovative and informative contributions. Mr R.V.Ramana Rao has already agreed to extend the necessary help. I request more members to please come forward.

Once again I thank Dr. Subramanian and wish him all success.

Best Regards,

(Sunil Sood)

President, IAEMP

From the Editor's Desk

The Energy Challenge: Who Cares?

Greetings and welcome to the first issue of "The Urja Watch". I am thankful to the IAEMP President Mr. Sunil Sood for providing me a splendid opportunity to edit this monthly newsletter. Having worked in the energy field with many successes (and failures too!), I cherish the thought of volunteering to IAEMP.

For long, many businesses have viewed energy efficiency as a public image issue that adds little to the bottom-line of the corporate balance sheet. To some enterprises, energy efficiency was not a priority and they just did not care about it. Not anymore. Ever-increasing energy costs, fast-changing global perspectives, consumer activism are all pushing up corporate responsibility.

'Going Green' is a buzz word these days. Leaps in technology around the globe are making energy management a lot more attractive to businesses from the view point of return on investment.

How do we meet growing demand for energy? As conscience keepers on energy matters, IAEMP cares about using energy judiciously and exploring alternatives. So do many other organizations and millions of consumers who are impacted by spiralling fuel costs and continuing energy shortages.

Over the last few years, IAEMP has been actively engaged in attracting the attention of both public and private sectors on critical issues related to energy (mis)management. Utilizing its talented membership, IAEMP serves as a catalyst to accelerate activities that promote energy efficiency all round.

This newsletter will help to enhance IAEMP's ongoing efforts to improve the energy scenario in the country. It will serve as a medium of information on a variety of topics including accomplishments, events, innovative ideas, and technologies.

I invite readers to contribute articles and share your views. Your support will help to make this newsletter a visible and powerful tool to address the energy challenge.

In closing, I must thank Mr. K.V. Ramana Rao for his support in bringing out this first issue and contributing an excellent article on the impact of transformer losses in Andhra Pradesh.

Best regards,

S. Subramanian

Editor, The Urja Watch

Calendar of Events

- Energy Efficiency Conference July 14-15, Melbourne, Australia
(<http://www.marcusevans.com/html/eventdetail.asp?eventID=14044>)
- Renewable Energy India 2008 EXPO August 21-23, 2008, New Delhi
(<http://www.renewableenergyindiaexpo.com>)
- World Energy Engineering Congress (WEEC) October 1-3, Washington, D.C.
(<http://www.aeecenter.org/weec>)
- India Energy Conferennce- Oil, Gas & Alternatives October 3-4, 2008, New Delhi
(<http://www.teriin.org/iec>)
- Green Energy Summit 2008 October 16-19, 2008, Bangalore
(<http://www.greenenergysummit.com>)
- Greenbuild International Conference & Expo November 19-21, Boston, USA
(<http://www.greenbuildexpo.org/Register>)

Members Speak

F.T. Kanpurwala from Ahmedabad has offered the following suggestion:

Presently most of the auditors conduct energy audit of Electrical appliances of the unit and submit the report to the authorities without considering the most important Thermal facilities, which has a very huge potential of energy efficiency and conservation. Thus this also needs to be covered in a complete audit.

My suggestion is that if a combined Energy and Environmental Audit report is prepared which shows direct effect of energy conservation and energy efficiency measures implemented by the unit in terms of savings of fuel, reduction in CO₂ emissions, reduction in fresh water consumption, reduction in effluent generation by implementing waste minimization techniques or cleaner production techniques, reduction in noise and light pollution, improving the safety and occupational health aspects and such important parameters, it shall serve the ultimate goal of our association. The next report prepared after a year of the same unit should reflect data of the previous year achievements and present year's target. Let the unit also get benefit in terms of finances in some way so that more and more units shall get motivated in this way.

I request all of you to think on this matter seriously and make this as a positive suggestion to BEE in order to achieve their so-called mission. It shall be a great step by our association in generating an image, which not only shall control BEE in taking indiscriminate steps but also help them achieve what they strive for!

What do readers think about this suggestion?

E-mail your views to the Editor, 'The Urja Watch' at: tellsubi@gmail.com

Article of the Month

Energy Losses in Power and Distribution Transformers - A Scenario in Andhra Pradesh

by Er R.V.Ramana Rao

The APEPDCL (Andhra Pradesh Eastern Power Distribution Company Ltd.) was formed in the year 2000 to serve as an independent distribution entity covering 5 districts of northern coastal Andhra Pradesh.

To extend power supply for the 5 districts, electricity is drawn from the existing grid substations of 220/132 KV in the respective districts. The 33KV supply is extended from these substations to 33/11 KV HT substations and further distributed to consumers through 11KV feeders and distribution transformers of 11KV/430V of various capacities.

Power and distribution transformers play a key role in transfer of voltages from grid level to distribution. Mismanagement and improper utilization of these transformers result lead to huge energy losses in the distribution system.

Typical capacities of power transformers connected in the 33/11 KV substations are 8MVA, 5MVA, 3.5MVA, and 1.6MVA. Capacities of distribution transformers are typically 500KVA, 250KVA, 165KVA, 100KVA, 63KVA, 25KVA, and 15 KVA.

With the above configuration, the APEPDCL has connected approximately 5317 nos. of three-phase and 2429 single-phase distribution transformers of various capacities in its distribution network in Visakhapatnam circle alone.

Over 60% of these distribution transformers are in the 100KVA capacity, around 20 % of 250 KVA capacity and the balance in other capacities. This article discusses the energy losses in 100 KVA transformers as they constitute the highest percentage of distribution transformers.

About 30 % of these 100 KVA transformers are rewound more than 3 to 4 times in their life time. Another 30 % are rewound once or twice and are in service for the last 5 to 10 years. About 30 % continue to work without rewinding for the last 5 years and balance around 10% are new in service for the last one year or so.

Energy Losses in 100KVA Transformers

Out of 20 transformers received in the laboratory from repair bay after rewinding, test results in two transformers were verified at random. The losses as measured in these two units were:

Transformer No.	1	2
No load losses:	385 Watts	560 Watts
Full load losses:	1760 Watts	3173 Watts

...Continued from page 4

In the case distribution transformers, it is noted that the primaries are always kept charged as long as they are connected in the system whether there is load on secondary side or not. That means no load losses have to be considered even when the transformer secondary is not loaded.

Case 1: If transformer No.1 is connected to the system for 7000 operating hours per year (excluding the time for break downs in feeders and substations and due to other interruptions), at 75% average loading in a day, total energy loss is 11270 kWhs / year. The cost of energy lost is Rs. 45080/- (cost of energy taken at Rs. 4/per unit). The cost of a new 100 KVA transformer is about Rs. 65000/- and the simple pay back period is one year five months (The calculations pertain to only one transformer).

Case 2: Assuming similar operating conditions for transformer No 2, the total energy losses would work out to be 16,982 kWhs, and the cost of energy to Rs. 67,928/-. The cost of new 100KVA is about Rs. 65000 /- and the simple pay back period would be about one year.

Average energy lost is calculated in two types of transformers as discussed above is 14110 kWhs per transformer per year. Total energy lost for all transformers (1600 being 1/3 of total number) is 2, 25, 76,000 kWh.

In terms of money, the loss of revenue is Rs. 9 crores and investment required to replace the 100 KVA transformers is about Rs. 11.2 crores. The simple pay back period is just a little over one year.

Energy losses in 33/11KV substations: It was noticed that power transformers in substations in the rural areas are under loaded and some times below 30% also. Due to political pressures many 33/11KV substations were erected to attract rural vote bank, though there is not much load. In such cases it was advised to isolate one transformer from the bus and shift the load to one transformer so that no load losses can be avoided at least in that particular transformer.

The no load loss in 3.5 MVA transformer is about 4.5 kW. The energy lost due to the no load loss alone is 38700 kWh per year and the cost of energy works to Rs.1,54,800. The no load loss in 5 MVA transformer is 6.4 kW. The energy loss in this case works to 55296 kWh per year and the cost of energy to Rs. 2,21,184.

There about 68Nos. of 33/11 KV substations in Visakhapatnam circle (district) of which about 30% are in urban area and 30% semi urban area and balance in rural areas. An average minimum loss of revenue in one 33/11KV especially in rural substations where the transformers are under loaded with one transformer either 5 MVA or 3.5 MVA isolated from the bus, is Rs.1,87,000 on account of energy loss of 47,000 kWh per year.

.... Continued from page 5

Limitations to my observations and calculations are as follows:

1. All the rewind transformers may not show the same amount of no load and full load losses. I have considered only two typical rewind transformers for the purpose of calculation of energy losses and their performance after rewinding when they are connected in the system. My prime idea is to show how the energy is lost due to the existence of rewind transformers in the system.
2. The energy losses in 33/11 KV substations depending upon the loading pattern of transformers and my calculations may not depict true values of losses. My emphasis is to indicate the energy losses in such situations with under loaded transformers.

The above position along with calculations had been brought to the notice of concerned authorities but no positive action has been taken, as there is no accountability at any stage of authority.

If the Energy Conservation Act is made mandatory for distribution companies, such huge losses of energy can be identified and plugged. The concerned authorities should understand the concept of energy efficiency and should be made accountable

The author of this article, Er R.V.Ramana Rao is a Divisional Engineer (Retd). APEPDCL, and a Certified Energy Auditor. For more information, e-mail: ramana1948@yahoo.co.uk

IAEMP Event

Interactive Workshop Feb 16, 2008, Bangalore On “Energy Conservation Building Code (ECBC)”

On February 16, 2008, amidst green surroundings of the Century Club, Bangalore, IAEMP conducted an interactive workshop on “Energy Conservation Building Code (ECBC)-2007”.

Participants included representatives of the Karnataka Renewable Energy Development Agency (KREDL), Petroleum Conservation Research Association (PCRA), and firms of Architects and Builders.

The interactive workshop provided an overview of ECBC-2007 and discussed among other things the content and applicability of ECBC in the country.

For more details on this workshop, please refer to the report uploaded to IAEMP files.

Some of the photos taken at the ECBC workshop are reproduced on page 7.



Photos at the ECBC-2008 workshop, Feb 16, 2008, Bangalore

Learners Corner – Questions/Answers...

This column is specially intended to encourage budding energy professionals so also others who are eager to learn or just curious to know.

1. Do the Thermal Energy Storage systems for HVAC applications really save energy?
2. What is the energy payback period of solar PV Systems?

Send your answers to: tellsubi@gmail.com

Welcome New Members ...

IAEMP extends a warm welcome to the following new members.

ORGANISATIONAL MEMBERS

M/s SCHNABEL DC CONSULTANTS INDIA PVT.LTD. (www.schnabelag.com)
Rep.by :

1. Ms. Shaheen Meeran, MD
2. Mr. Giulio Varvelli, MD
3. Mr. Johann Doleschal, Sr.Consultant
4. Mr. Ganesh Bhatt, Sr.Consultant
5. Mr. Sreekumar Kollara, Sr.Consultant
6. Mr. Varaprasad Nataraj, Sr.Consultant

ASSOCIATE MEMBERS

1. Mr. Sumesh P.J, Electrical Engineer, Tata Consulting Engineers, Mumbai
2. Mr. Sundhanshu Pandey, Asst. Engr.(Power Plant), Ginni Filaments Ltd.

Announcement...

Training for Domestic and Commercial Energy Auditors

This training module is made for those enthusiasts who desire to earn part-time or full-time through working in the field of energy audit while saving precious energy for the nation. The training is devised in such a manner, that you will be prepared to perform energy audit of home as well as small-scale commercial establishments such as restaurants, offices, malls, etc.

The training will be provided at IAEMP centres throughout India such as Bangalore, Bhopal, Hyderabad and other places.

Training Cost: Rs. 5,000/- (Payable to IAEMP,Bangalore)

What you will get:

1. Energy Audit Instrument (Costing about Rs.3000/-) that includes:

O Portable Single Phase Meter with capable of measuring and recording 6 days Kwh, Maximum demand Kw, Six month consumption, instantaneous watt and cumulative Kwh. Etc. The meter can measure upto 5.5 Kw.

O About 3m cable

O 15 Amps plug

O Board with socket and holder

2. Training Manual

3. Copy of IAEMP Vision Document worth Rs.500/-

4. Access to IAEMP reference library

5. Membership of IAEMP yahoo group

Please contact:

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6th Block, Jayanagar,

Bangalore-560082

Mobile: 09241778871 e-mail: sunilsolar@yahoo.co.in web site : www.iaemp.org

We Need Your Articles...

Do you have an area of expertise in energy management? Have you solved a difficult problem or have an interesting case study?

Share your knowledge with others and promote yourself too, by contributing an article to "The Urja Watch"- a monthly electronic newsletter of the Indian Association of Energy Management Professionals (IAEMP).

You may also tell us about upcoming energy-related events in your area. Be sure to mention the title of the event, organizers, dates, venue, city, and contact information to get more details of the event.

Please note the following points while making your submissions:

- Articles must be original, in electronic version, 500 words or less.
- Please include contact information (full name, title/organization, phone numbers, and email ID) with your submission.
- Articles should be in MS word, easily readable font, preferably Arial size 12.
- Please e-mail your article to Editor, "The Urja Watch" at tellsubi@gmail.com
- There are no deadlines for submissions. You may submit articles anytime.
- We reserve the right to edit, rewrite or reject any article.

We Need Your Feedback Too!

Please feel free to write your views and suggestions to the editor at:
tellsubi@gmail.com

Letters must include the writer's name, address, phone and email ID.

We appreciate your feedback and thank you for your support.

THIS SPACE IS RESERVED FOR ADVERTISEMENTS

(Please contact : sunilsolar@yahoo.co.in for advertisement tariff)

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