

A monthly newsletter of  
*Indian Association of Energy Management Professionals*

# THE URJA WATCH

December 2009, Vol. II/Issue 18

*It is about "Conscience Keeping on Energy Matters"*

## ENERGY EFFICIENCY AND POLLUTION CONTROL

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#### **Editorial Board**

*S. Subramanian (Editor)*

*S.K. Sood, Amit Gupta, R.V. Ramana Rao, S.K. Panigrahi*

**Reporters:** *Vikas Apte – Regulatory affairs, D.K. Agrawal, Jaipur*

**Website:** [www.iaemp.org](http://www.iaemp.org)  
[tellsubi@gmail.com](mailto:tellsubi@gmail.com)

**Editor Contact:**

#### **Contributors to this issue:**

*Nagarajan Ravishankar, Sundaresan Subramanian, T.N. Agrawal*

## From the Editor's Desk...

### Integrating Energy and the Environment

The ways in which we produce and consume energy have profound environmental consequences. Energy related emissions contribute to pollution of air, water and soil while also posing risks to human health, nature and biodiversity.



With rapidly growing demand for energy, there is need to build more power plants, and eventually there will be more pollution. Energy efficiency is without doubt the quickest, most pragmatic and cost-effective approach for reducing greenhouse gas emissions, as well as improving air quality, particularly in populated urban areas.

In many parts of the world, pollution control is increasingly getting linked with energy efficiency technologies based on tightening environmental regulations and global concerns on environmental protection, health and safety. Target areas for pollution control include water/waste water, recycling, hazardous wastes, NO<sub>x</sub>, SO<sub>x</sub> and particulates.

It often proves to be a profitable investment to integrate energy efficiency and pollution control measures. For example, adopting cogeneration systems at sugar plants helps to augment power supply while at the same time making an economic use of bagasse – the polluting and problematic waste from crushed sugar canes. In fact, at one time, when the sugar markets were in doldrums, some of the sugar plants sustained by selling power to the local utility than by selling sugar!

In industry, the biggest reductions in emissions in the short term will come from measures to run processes more efficiently. About 40 percent of electricity is consumed by industry, and two-thirds of that is used by electric motors. Variable speed drives (VSDs), which regulate the speed of a motor, can reduce their energy consumption by 50 percent in many applications. Such energy efficiency benefits would eventually include avoiding the need for new polluting power plants.

Many existing pollution problems require an integrated approach with energy projects for their solution. But, it's not happening because of several reasons.

The fragmented and disjointed structure of our energy efficiency and environmental policies poses a significant barrier to designing and implementing integrated strategies for the nation. The two important portfolios of energy and environment are governed by two independent ministries each having its own plans and priorities. Faced with multiple goals, policy makers often lack knowledge on what generic approaches and instruments could help them address the twin-issues of energy efficiency and pollution control.

Lack of financial and technical resources, and limitations in the ability of firms, particularly small and medium-sized enterprises, to access and absorb technological information are also barriers to full use of available mitigation options.

With little incentives and inspiration, most energy-users prefer to adopt a passive attitude, making it difficult to integrate energy efficiency and pollution control measures.

All said, nothing prevents institutions and corporations to adopting innovative approaches to integrate energy efficiency and pollution control projects. For example, wastewater could be treated and recycled thus cutting costs in buying water and reducing energy consumption for water pumping and distribution.

In sum, there are a number of reasons why a coordinated approach to energy efficiency and pollution control makes sense. Energy efficiency projects could be used to generate marketable credits for emission reductions. Another way energy and pollution control efforts can be linked is through requiring companies to invest in renewable energy projects.

Integrating energy efficiency and pollution control measures is a real 'win-win' situation. On one hand energy efficiency projects cut energy consumption and costs; and on the other, such projects contribute to mitigating pollution leading to improved environment and public health. For the country, better integration of energy and environmental schemes represents a great opportunity that may be captured at short-term, net cost savings.

With Season's Greetings,

Energetically,

S.Subramanian  
Editor

# LETTERS TO THE EDITOR

## **Accelerate Renewable Energy**

Thank you for sharing the URJA WATCH Nov. 20, 2009 issue. I enjoyed reading the environmental concerns addressed in this issue. I was very pleased with the comments "Low-Carbon Diet for Power Consumers" by Mr. Subramanian.

He has very well addressed the issue of India's contribution to the environmental problems. However, there is an urgent need to create awareness, provide solution and strategic plan to implement the renewable energy solutions. These plans should include accelerating the use of Renewable Energy (Solar PV and Thermal Solar, Solar lamps and pumps, Wind-power, Bio-mass, Bio-gas, and Hydro-power) and Energy Efficiency. Specifically we need to heavily subsidize Solar and Wind Power just like Japan, Germany and other European nations are doing.

Thanks again for sharing the URJA WATCH.

Darshan Goswami

*Project Manager*

*US Department of Energy, NETL, Pittsburgh, USA*

*(Ed. Note: This letter was forwarded by Mr. M.R. Menon, Manager-Business and Media, energy" manager who shared 'The Urja Watch' with Mr. Goswami.)*

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## **Energy and Environmental Concerns**

*Open letter to Hon'ble Jairam Ramesh, Minister of Environment & Forests, GOI.*

Dear Sir,

Steps announced by you to meet the emission reduction target include legislation for mandatory fuel efficiency standards for all types of vehicles by 2011. However for reducing energy intensity by improving energy efficiency, the legislation already exists in the form of 'Energy Conservation Act', which is still not implemented since 2001 for reasons best known to GOI. This amply demonstrates the futility of legislation for mandatory fuel efficiency. If such trend continues what will happen to the voluntary objective of cutting carbon emissions 25 % by 2020?

After enacting the EC Act, GOI is feeling the need of amending the Act by introducing concept of energy certificate for incentivising 'energy efficiency'. Does this imply that EC Act did not include the concept of energy efficiency? Why should there be double standards for treatment of 'fuel efficiency' & 'energy efficiency'?

Secondly, it is to bring to your notice that 'climate change disaster' occurs due to impact of global GHG emissions and not on the value of per capita emissions (PCE). Nature is not going to evaluate PCE before wrecking global havoc which will hurt poor the worst. PCE has been useful only to avoid accountability of legally binding emission cuts. India is sixth largest producer of Global emissions and so PCE entitlements can not be extended in perpetuity. Several developed countries are faced with negative population growth and in some countries, high 'Human Development Index' (HDI) are coupled with low PCE, which gives skewed reference point. The poor in poor countries are the worst victims of pollution and climate change. With new economic opportunities, it makes sense to control emissions & reduce poverty instead of hiding behind the veil of voluntary domestic commitments without international accountability. It is time to put an end to voluntary commitments and dreams of self-regulations by moving backwards for several years.

Thirdly about revealing of hidden secrets: In India, 55 Crores people are living without electricity & 70 Crores people are using bio-mass as primary fuel for 80 % of their energy needs. How could these compelling constraints transform into decline of energy intensity by 17.6 % during 1990-2005? Just as, non availability of electricity to rural areas, saves the utility from the bother of load shedding due to power shortage, similarly without setting any targets since 1990, how the reduction in carbon emissions could be achieved? It will be amazing to know when GOI, with 'Business As Usual', took voluntary actions for reducing carbon emission and energy intensity without setting targets ? Full transparency is essential that this analysis is shared with common people to assure them that voluntary actions proposed are not at the cost of 66 % bottom deprived constituents.

Regards,

G.G.Dalal, Mumbai

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# **Sources of Pollution And Their Effects**

By Ravishankar Nagarajan

Pollutants commonly are classified according to the part of the environment primarily effected by them either by air, water or land. Sub grouping depends on characteristics of the pollutants themselves: chemical, physical, thermal and others. Many pollutants affect more than one resource. The substances that pollute the atmosphere are either gases, finely divided solids, or finely dispersed liquids aerosols. Five major classes of pollutants are discharged into the air: Carbon Monoxide, Sulphur Oxides, Hydrocarbons, Nitrogen Oxides and particulates.

The principal source of air pollution is the burning of fossil fuels e.g. coal, oil and derivatives of the latter, such as gasoline-in internal combustion, engines or for heating or industrial purposes.

## **Water Pollution**

Water pollution includes the accumulation in oceans, lakes, streams, and ground water of substances that are either directly harmful to life or that have harmful secondary or long term effects. The principle sources of water pollution are sewage, industrial waste, garbage and refuse, and agriculture fertilizers, pesticides and herbicides. Any body of water has a capacity to absorb or break down introduce materials and sewage and some organic industrial waste `are broken down naturally by microorganisms into forms in which they are useful to aquatic life. But if the capacity of a body of water to dissolve, disperse or recycle is exceeded, all additional substances become polluted.

## **Types of water pollution**

### **Oil Pollution**

Oil pollution is one of the highest publicized forms of Ocean Pollution. The majority of oil pollution is from spills or leakages of oil that originate from land or rivers, which in turn flow to the sea. The more direct form of oil pollution occurs when ships transporting the substance leak or crash.

### **Toxic Wastes**

Toxic waste is the most harmful form of pollution to marine creatures and humans alike. Once a form of toxic waste affects an organism, it can be quickly passed along the food chain and might eventually end up as

seafood, causing various problems. Toxic wastes arrive from the leakage of landfills, dumps, mines and farms.

Sewage and industrial wastes introduce chemical pollutants such as PCB, DDT, and Sevin. Farm chemicals (insecticides and herbicides) along with heavy metals (e.g., mercury and zinc) can have a disastrous affect on marine life and humans alike.

### **Soil Pollution**

The term “soil pollution” does not have a very precise meaning. This is because there are different types and degrees of pollution and the people have varying standards by which the judge pollution effects. Soil pollution mainly involves the deposition on land of solid wastes such as cans, bottles, plastic containers, paper, and used cars that cannot be broken down quickly or, in some cases, at all. Aside from recycling, disposal methods include concentrating such materials in landfills, burning them in incinerators, or dumping them in ocean. The term land pollution also includes the accumulation on land of toxic chemicals (in solid or liquid form) produced by industry and of radioactive wastes from nuclear processing facilities.

Massive mountains of solid wastes are disposed each day by our consumer society. It is estimated that about 10 billion tones of solid wastes are produced every year in the world and are dumped into the surroundings. Solid wastes are an integral part of our life as they devour our precious landscape spoiling the aesthetics of the surroundings.

**Sources of Soil Pollution:** Sources of Land pollution are many. Land or the soil pollution stems principally from the following:

- Indiscriminate disposal of solid wastes
- Mining or ore processing etc.
- Contamination of soil with man-made chemicals, and
- Improper land use and planning.

### **Effects of Soil Pollution**

The effects of land pollution are numerous, interrelated and of adverse consequences on the entire ecological system. Land pollution caused by indiscriminate disposal of solid and semi-solid wastes, particularly in the urban areas besides presenting unsightly scene, poses a grave threat to human health. Huge piles of garbage at the disposal sites and littered around in the towns remains a dwelling place for flies, bacteria,



mosquitoes and other harmful insects. The atmosphere in the vicinity of disposal sites of wastes is affected by the obnoxious smells and pathogens emitted or produced in the process of decomposition of garbage which eventually is a cause of intestinal and respiratory diseases in human beings. Presence of explosives, highly toxic substances, plastic and diseased culture etc. In the solid wastes put the health and safety of sanitary workers at risk which may ensure from occupational diseases, contact with the toxic materials in the course of collection, transportation and disposal of solid waste. The adverse economic effects of solid wastes, too, are far reaching.

The squandering of limited and non-renewable mineral resources such as copper, zinc, lead and tin etc. disposed of and indiscriminately dumped in solid wastes- beyond recovery inevitably produce a disruptive economic impact.

### **Air Pollution**

Air pollution is a particular problem in urban areas, where the ultra violet rays in sunlight combine with hydrocarbon and nitrogen oxide to form photochemical smog. On a somewhat wider scale,  $\text{SO}_2$  a nitrogen oxide from the burning fossil fuel can combine with atmospheric water vapor to form acid rain which is damaging to water, forest and soil resources. As a result of the increased consumption of fossil fuel, levels of carbon dioxide in the atmosphere have risen steadily in the 20<sup>th</sup> century and show signs of increasing atmospheric temperature worldwide owing to the greenhouse effect.

### **Types of Air Pollution**

Air pollution is indication of disturbances to the composition of compounds in the atmosphere, as it may be summarized as shown:

- Excess emission of gases/vapors into atmosphere
- Saturation of chemical compounds/particulates
- Rate of dissipation < (smaller than) rate of absorption through various cycles (i.e. carbon and nitrogen cycle)
- Emergence of new chemical reactions of reactive and non-biodegradable compounds.

Following are some of his common pollutants occurring in the air:

**Gases Pollutants:** The sources of gaseous pollutants are the vehicles, industries, manufacturing processes and even agricultural activities. Combustion of fossil fuels release oxides of Sulphur and nitrogen.  $\text{SO}_2$  is released even from petroleum refineries and nitrogen oxides are produced

from the power generators carbon monoxide is another harmful gas released during combustion.

Agricultural activities are responsible for air pollution, to some extent. Because of spraying and dusting, organic phosphates and chlorinated hydrocarbons are added. Ammonia produced from fertilizer factories and from cold storage systems is added to the air.

**Particulate pollutants:** The particulate pollutants include dust from crushing and grinding due to road mix plants and the construction work. Silica particles and asbestos particles, fibers from textile mill are other particulate pollutants, particulate fluorides; lead particles are still other pollutants of this class. Pollen grains and the spores when produced in excess also act as natural pollutants.

**Smog:** The mixture of smoke and fog together produced smog ('smo' from smoke and 'g' from fog). It is actually fog carrying carbon particles. Smog is the result of heavy traffic on the highways.

**Photochemical oxidants:** These pollutants are the secondary pollutants.  $\text{NO}_2$  and hydrocarbons react with each other in presence of light. The major oxidants are ozone and peroxyacetyl nitrate [PAN].

#### **Control Measures:**

- 1) Tall chimneys of factories help to discharge pollutants at the highest altitudes.
- 2) Automobiles should be checked regularly for their efficiency as regards complete combustion of fuels.
- 3) Green vegetation around the industry seems to be a good solution to reduce pollution. Trees act as biomonitor for the problem of pollution..
- 4) Setting chambers, bag filters, wet collectors; gas absorbers are some of the equipments useful in the control of air pollution.
- 5) If the use of a raw material produces more pollution, a suitable one should replace it. For example, the use of a fuel containing less percentage of Sulphur.
- 6) Modification in the equipment can pose less pollution problem. E.g. instead of using open hearth furnace, oxygen furnace is used to reduced pollution.

## **How to Merge Environmental and Business Interests?**

We have to eliminate pollution at the source through:

- Product reformulation.
- Process modification.
- Equipment redesign.
- Recycling and reuse of waste materials.

We have to establish a Steering Committee, Coordinating Committee representing engineering, manufacturing and R & D Department, site head as Chief Officer and the Environmental, Health and Safety group to focus on eliminate pollution and identify projects

### **Eliminate or reduce a pollutant**

Benefit the environment through reduced energy use or more efficient use of manufacturing materials and resources

Save money – Through avoidance or deferral of pollution control equipment costs, reduced operating and materials expenses, or increased sales of an existing or new product.

The steering committee must adopt a 3-pronged approach with targets.

- Reduction of solid waste. TARGET: 50% reduction from Bench Mark.
- Reduction of releases in water. TARGET: 90% reduction from BM.
- Reduction of air emissions. TARGET: 90% reduction from BM

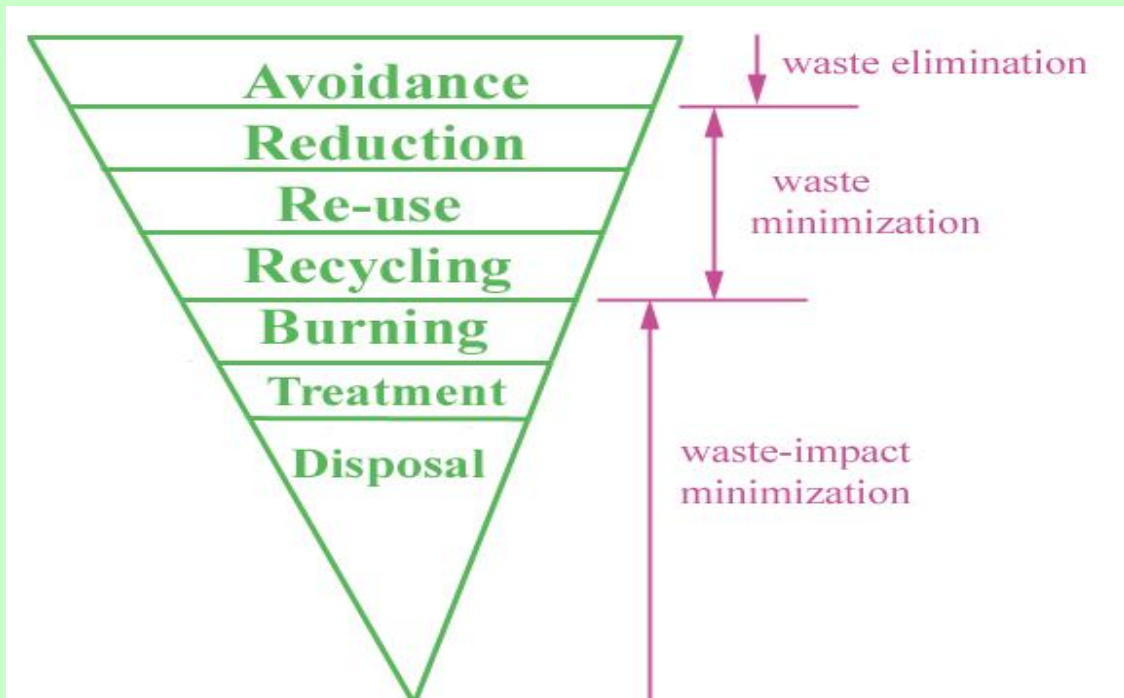
### **Pollution prevention**

Rule of priorities according to the U.S. Environmental Protection Agency.

1. Avoidance (search for an alternative)
2. Reduction (dematerialization, fewer defects, better tools)
3. Re-use (capture and reuse as is; example: solvent)
4. Recycling (capture and reprocessing; ex: metal)

5. Energy recovery (burning at least to get the energy)
6. Treatment (hopefully down to benign products)
7. Safe disposal (last resort)

This ranked list is often presented as an inverted pyramid to emphasize the priorities.



**References:**

- <http://moef.nic.in/index.php>
- <http://www.tnpcb.gov.in/pdf/nep2006e.pdf>
- <http://www.tnpcb.gov.in/objectives.html>
- <http://www.energymanagertraining.com>
- <http://www.ansys.com/industries/chemical-process.asp>

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*"About the contributor: Mr. Nagarajan Ravishankar is a Chennai-based BEE Certified Energy Auditor with projects experience in Petro-chemicals, Fertilizer Industries and others. Presently he is involved in Energy Management Training & Development of Employees. He can be reached at [ravishankar\\_nagarajan@yahoo.com](mailto:ravishankar_nagarajan@yahoo.com)"*

# **ENERGY SAVING OPERATION OF DUST COLLECTION SYSTEMS- A Case Study**

(A Case study available on the internet is reproduced here)

Lots of hoods are used for sucking dust contaminated air to a dust collector. However, all of them are not necessary to be used at one time if working condition is considered.

There is a need for providing "Energy saving operation system" to run the dust collection system economically. In the following paragraphs an outline of such a provision is explained.

A damper with an air-cylinder is installed at each dust hood. and each damper opening is detected by a limit switch.If a limit switch detects the "damper opening". the total necessary gas volume which is a summation of gas volume required to the hoods which are open at that time, is calculated by a computer.

The signal is transmitted to an inverter so that the fan rotation is adjusted to a certain number which is optimum at the moment.

Actual gas volume is obtained by measuring the dynamic pressure using a "Digital Monitor" which measures the dynamic pressure in the outlet duct by using a pitot tube. The total gas volume is feedback controlled by the inverter so that the gas volume becomes as close as the one calculated by the computer.

Generally total gas volume is controlled by changing the opening ratio of damper. but inverter control instead of damper control gives us energy saving. Effect of energy saving is shown in Fig.1.The flow sheet of the system is shown in Fig.2.

The following is an example of an actual installation:

- 1) Number of hoods- 11
- 2) Number of combination of opening and closing dampers - 40 ways  
i.e. the number of cases of treating gas volume
- 3) Preset gas volume of fan when all 11 dampers are open -240 m<sup>3</sup>/min
- 4) Fan motor kilowatts - 22 KW

The average gas volume after implementation of the suggestion was 150 m<sup>3</sup>/min which resulted in power consumption of average 10 KW, therefore there was about 55% electricity saving.

Fig.1 EFFECT OF ENERGY SAVING BY INVERTER CONTROL

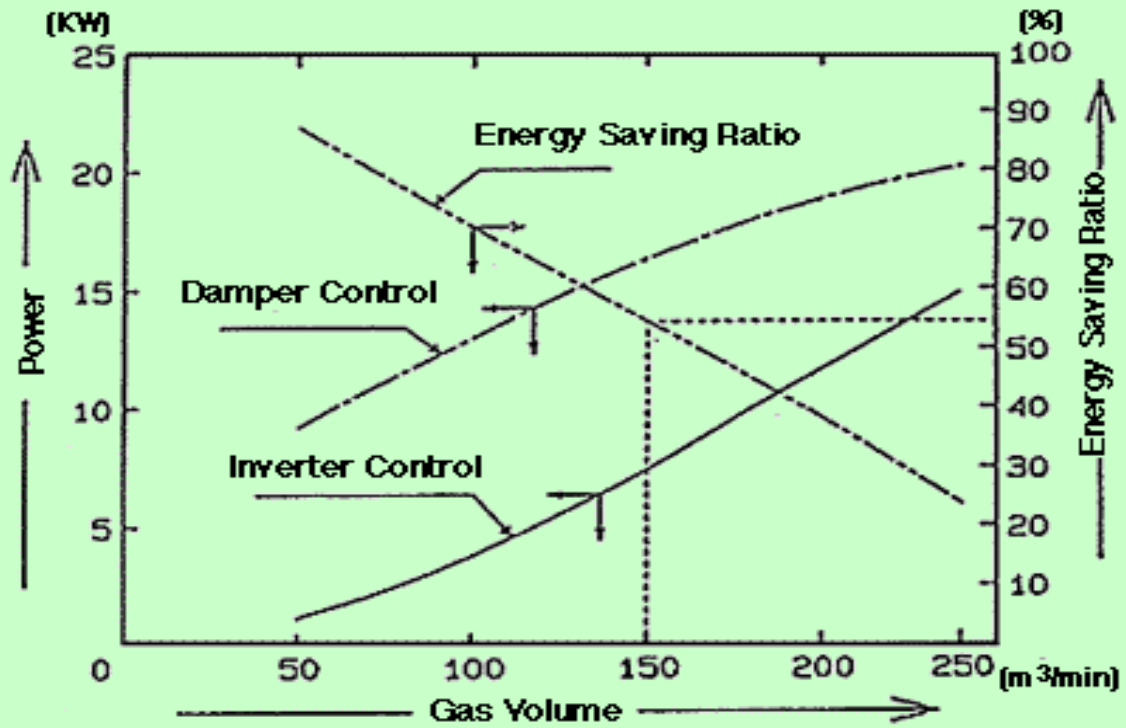
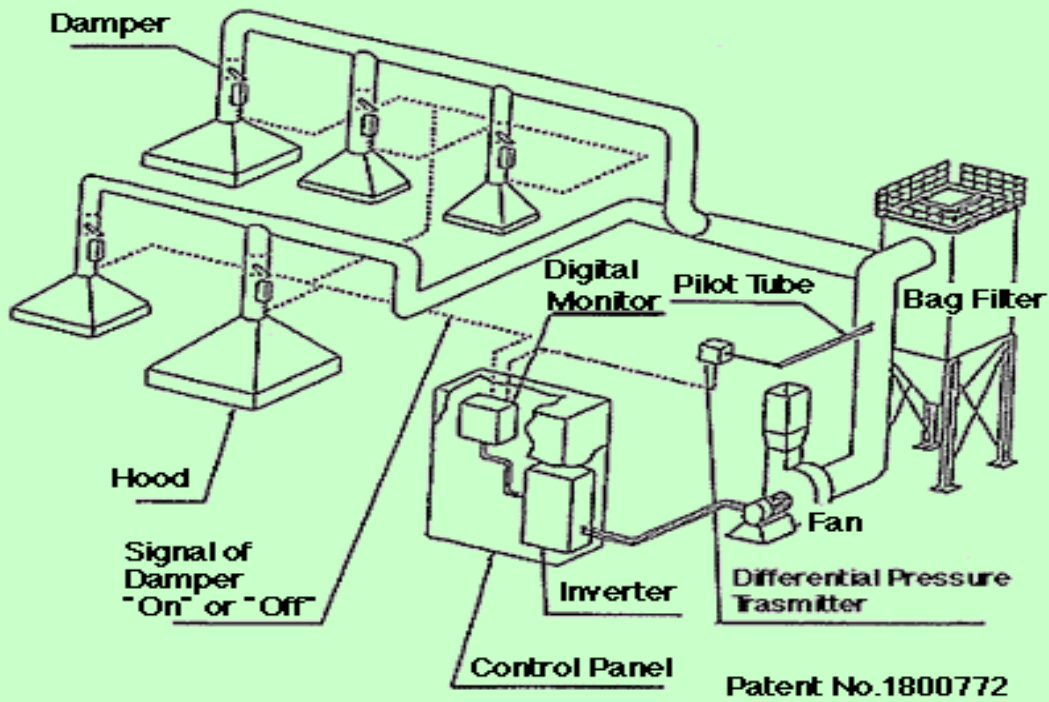


Fig.2 FLOWSHEET OF ENERGY-SAVING OPERATION SYSTEM



# **A “win-win” example of integrating environmental and energy projects.**

## **Challenge**

In 2002, Portland State University (PSU) started a project for the environmentally friendly modernization of its buildings in order to reduce long-term costs and contribute to environmental protection.

## **Solution**

In the framework of the project, an internationally known company supplied a water treatment system that allows the efficient use of rainwater. The system's components ensure a consistently high water quality level. The treated water was only used for flushing toilets, but with a few additional treatment steps potable water could be produced. The control technology used for this purpose regulates the water supply, controls rainwater use within the building, optimizes interior air quality by means of automatically adjustable windows and monitors the function of the emergency systems.

## **Results**

- PSU has been able to reduce its water consumption by 40 percent compared to previous years.
- Overall energy consumption is 45 percent lower than standard values set by the government for public buildings (Oregon Code).

Since the energy bill for the University's 50 buildings easily reaches the million-dollar range, this sustainability strategy is not only environmentally friendly, but also economically sound – a typical ‘win-win’ situation!

*(For illustrative purposes, this is a small example of a successful project extracted from the archives of the editor )*



## **Important BIS Codes/Standards on Pollution Control**

IS 4167 : 1980 Glossary of terms relating to air pollution
IS 10179 : 1982 Code of practice for control of air pollution in petroleum refineries
IS 11304 : 1985 Code of practice for control of air pollution in iron and steel plants
IS 12002 : 1987 Code of Practice for Control of air Pollution in Cement Plants
IS 12112 : 1987 Code of practice for control of air pollution in refractories industry
IS 12185 : 1987 Code of practice for control of air pollution in integrated aluminium industries
IS 7022 : Part 1 : 1973 Glossary of terms relating to water, sewage and industrial effluents, Part I
IS 7022 : Part II : 1979 Glossary of Terms Relating to Water, Sewage and Industrial Effluents - Part II
IS 8032 : 1976 Guide for Treatment of Distillery Effluents
IS 8073 : 1976 Guide for treatment and disposal of steel plant effluents
IS 8682 : 1977 Guide for Treatment and Disposal of Effluents of Dairy Industry
IS 9508 : 1980 Guide for treatment and disposal of effluents of cotton and synthetic textile industry
IS 9509 : 1980 Guide for treatment and disposal of effluents of viscose rayon industry
IS 9841 : 1981 Guide for treatment and disposal of effluents of fertilizer industry
IS 10044 : 1981 Guide for Treatment and Disposal of Effluents of Petroleum Refining Industry
IS 10495 : 1983 Guide for treatment and disposal of effluents of wool processing industry



# Green Quiz

*Many of us talk about the environment but how much do we know about it. The editor has compiled this quiz to self-check your knowledge on environment. See answers on the next page.*

**1.** Talking about gas emissions, which is the most prevalent greenhouse gas in the earth's atmosphere?

- A. Carbon dioxide
- B. Methane
- C. Ozone
- D. Water vapour

**2.** About 70% of the Earth is covered by water. How much of it is potable?

- A. Over 20%
- B. Between 10% to 20%
- C. About 5%
- D. Less than 1%

**3.** Which of the following countries gets the largest share of electricity from renewable sources?

- A. Australia
- B. Austria
- C. Iceland
- D. Norway

**4.** China and the U.S. are known as biggest emitters of greenhouse gases. Which three of the following countries make up the top five emitters?

- A. India
- B. Indonesia
- C. Japan
- D. Brazil
- E. Russia

**5.** Climate change and greenhouse gas emissions have become big topics today. The Copenhagen meet reflects the global concerns on GHG emissions. Who was the first person who described a link between man-made emissions and a greenhouse effect?

- A. Joseph Fourier
- B. John Tyndall
- C. Svante Arrhenius
- D. Al Gore

## Answers to Green Quiz

- 1. D.** The largest share of the gases in the atmosphere is water vapour. It interacts with sunlight and contributes to global warming. Water vapour also forms clouds that help to reflect sunlight. The focus is, therefore, more on greenhouse gases that trap heat such as carbondioxide and methane.
- 2. D.** Although water is found in large quantities in oceans, it is too salty to drink. Water at the poles and in glaciers is frozen. Only less than 1% of water is fresh and potable.
- 3. C.** Iceland tops in getting the largest share of power from renewable sources – about 75% from hydroelectric and 25% geothermal. Norway is a close second getting about 99% from hydroelectric power.
- 4. A, B and D** Brazil and Indonesia have climbed in the rankings due to the inclusion of tropical deforestation – not just industrial activities.
- 5. C.** Although Fourier first proposed the idea of “greenhouse effect”, followed by Tyndall who proved it was real, it was Arrhenius who first linked industrial activity, especially burning coal, to rising levels of carbondioxide in the atmosphere.

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### Think!

*Every great mistake has a halfway moment, a split second when it can be recalled and perhaps remedied.*

*– Pearl S. Buck*

*A man must be big enough to admit his mistakes, smart enough to profit from them, and strong enough to correct them.*

*– John C. Maxwell*

*A man who has committed a mistake and doesn't correct it is committing another mistake.*

*- Confucius*

# IAEMP News

## Release of Newsletter on Home Energy Management

On December 13, 2009, Mr S.Khandekar, Vice President of IAEMP released the first issue of "HEM News" published on the occasion of the 'National Energy Conservation Day'.

Mr Vaidyanathan, Mr Pandey, Mr Bairagi and Mr Gupta and Mr Sunil Sood were present besides others. This will be a regular monthly newsletter on Home Energy Management Programme. They also distributed copies of the "HEM News" at the stalls in Energy-Enviro Exhibition.

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December 14, 2009

## HEMP Programme in Nasik

T.N. Agrawal reports from Nasik:

Today, on National Energy Conservation day, I had arranged a programme at The Institution of Engineers (India), Nasik under the banner of IAEMP which was attended by 50 participants. The programme included a Presentation on Home Energy Management for 60 minutes sent by Mr. Sood and modified to suit local needs.

I also added into it the Akshay Urja Song & Save Bijlee video clip of BEE.

There was also a product display for renewal energy appliances for home.

The programme was appreciated by all the participants.

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## UPCOMING EVENTS

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### EUEC 2010

#### 13th annual energy and environmental conference and expo.

Phoenix, AZ, USA

February 1-3, 2010

[www.euec.com](http://www.euec.com)

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## Share your experience

Do you have an area of expertise in energy management? Have you solved a difficult problem or have an interesting case study? Do you want to share a joke with others? Or just have a word of appreciation for this issue. Share your knowledge with others and promote yourself too, by writing to **The Urja Watch**.

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. If you are using material from external sources, please acknowledge them.
- ❖ Please include contact information (full name, title/organization, phone numbers, and email ID) with your submission.
- ❖ Articles should be in MS word, single spaced, with easily readable font, preferably Arial size 12. Photos should be of high resolution.
- ❖ Please e-mail your submissions to The Editor, “The Urja Watch” at [tellsubi@gmail.com](mailto: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 write your views and suggestions to the editor at: [tellsubi@gmail.com](mailto: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.

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