

HEMP News

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A monthly newsletter on "Home Energy Management Programme" of IAEMP

Editorial

Stoking a revolution



K. Jayalakshmi

It's ripe time for making a killing on the energy front with all kinds of players promising all kinds of savings and eco-claims. This is also a time for some radical thinking and action.

We have seen from the latest debacle in the Gulf of Mexico that the fossil fuels we refuse to give up could mean big trouble. Just imagine the dimensions of the spill - at around 60,000 barrels per day, all the oil lost so far could have powered a total of 38,000 cars, 3,400 trucks and 1,800 ships for a full year!

Yet, the world's appetite for coal and oil is poised to grow, and with good encouragement. An International Energy Agency study shows how total global subsidies to fossil-fuel energy amount to \$550 billion a year, about 75 percent more than previously thought. Truly, as IEA economist Faith Birol terms it, fossil fuel subsidies are the 'appendicitis of the global energy system'. Meanwhile, Greenpeace states that existing technologies can help provide 95% renewable electricity by 2050 without affecting economic growth.

The energy industry today is an exciting place to be. No wonder there are so many players, big and small, some with expertise and many with none. As governments and individuals with good intentions fumble for good advice and guidance, the role of an organization like IAEMP becomes very crucial.

Newspaper reports gloss over success stories, often missing the point. Many times, conflicting stories only serve to confuse the reader. It is here the HEMP group of experts can step in and carry the message home more effectively. So many experts are available in this single pool. Sustained efforts will see a day soon when on the energy front, a consensus will arise that 'when in doubt, just contact IAEMP'.

As we have started to witness, lot of learning and sharing has begun with queries, opinions, and discussions of technical issues and socio-economic issues a part of the daily banter. Having a group of people, who are not only experts but also share a concern for the planet and sustainability, is a decided advantage. Together like a flock of geese that fly together for enhanced uplift and range, sharing responsibilities jointly, this is one organization bound by a common interest that gives it an added edge in a highly commercialized world.

How does one penetrate the large home energy arena? And, soon? A good idea would be to approach community leaders (not political) like the headmaster of a school, or the general practitioner or a priest and sell the idea of home management. Like some member organizations have done, organizing competitions could also be a crowd-puller. But dealing with the home segment, things must be kept at a simple level.

From sharing to spreading to innovating is a gradual, but sure process. Looking at the various (energy) problems faced by an individual at home or at work, HEMPians can be leaders of an energy revolution in the nation. You can bring about a change in attitudes, habits and lifestyle that directly impact the energy used by a household. Simply persuading one commuter who takes an automobile to work to adopt the bicycle can mean an average reduction of 2000 pounds of carbon emissions annually! Of course, bicycles are of no use if there are no lanes for them. But, by building opinion and influencing individuals, the sleeping civil society can be nudged awake.

This is not just a tall claim. It can happen and very soon, if the flock moves ahead, together.

ACTIVE SPARE BURNER HEAD CONCEPT TO SAVE LPG

By : S. ASHOK*

A swap in time saves much LPG and money!

In the LPG stove, the gas burner head has to be treated as a consumable. Even if the color of the flame is blue, by swapping the burner head when required there is a huge potential for LPG saving.

We need to focus on the LPG wastage happening in generating the useful heat flame and the heat transfer from flame to the vessel. We need to condition, monitor and keep the burner nozzle surface area clean on the inside and outside of burner head hole that is in contact with air. Both LPG saving and a lesser time for cooking can be achieved.

By replacing the burner head we can avail up to 10% savings depending on the condition of soot and restricted burner holes in the stove. Usually the house wife cleans the burner using a corroded rod or wire to pierce each hole and in the process make them still bigger, thereby increasing LPG consumption!

The idea of the Active Spare burner concept in the commercial LPG stove has worked well in hotels too and given savings of 5%.

Existing Practice

Our practice is to use the LPG domestic stove for years and during its lifetime we do not change its burner head. Instead, for my three-year-old stove, I bought a spare identical burner head for Rs.50/- only and swapped with the existing burner alternatively every month depending on usage. This gave me LPG savings of 10% averaging over the past six months as the LPG cylinder refill date has been extended by 10%.

Generally in the kitchen with this new burner head on the old stove, the housewife also can find the time to clean the other burner head leisurely, thoroughly and effectively. Later it can be dipped and rinsed for an hour or so in a solvent like kerosene and a soft brush used to clean the scales with suitable detergent, keeping it ready to re-use later.

Existing Practice on the commercial LPG stove

The commercial LPG users like hotels, hospitals, etc now clean their LPG burner kit by removing from the stove and rinsing in used cooking oil and then burning the burner with a blow torch after long intervals of many months. This Destructive Cleaning procedure decreases the efficiency of the burner in the long run with the soot not getting removed instantly.

An easier and more efficient method would be to buy an Active spare burner head & burner and swap the same alternatively every week/ fortnight and soak the used burner in solvent for few hours and the rest of the process mentioned above. The hotel which consumed 100 cylinders a month did this exercise of Spare burner Swap & cleaning and was able to get LPG savings of 5 % monthly over three months.

OBSERVATIONS

On viewing any old burner with a lens, we can see that the holes on the top of burner head are of the same size, but on the inside of burner head, the holes had reduced in size with soot protruding inside the hole.

Yet, in spite of the above condition, only blue flame is seen all along with the old burner. That often gives a wrong notion to the housewife, that everything inside is in the efficient mode. But the soot on the inside holes of burner do not allow free flow of gas.

Where the inside and outside surface areas of burner holes is corroded, out of size, and soot partially choking the LPG path, we can make substantial savings through swapping.

For any form of energy, transmission loss is less while the distribution loss is always more. In a gas stove, gas from cylinder is transmitted up to the nozzle behind the LPG knob and the transmission loss is less. But the distribution loss is more as it starts only at the 140 holes at the standard burner head where in LPG + air pre-mixture is utilizing the ambient surrounding air to catch flame.

LPG stove burner head as Consumable

The authorities need to educate the public that the burner head is a consumable even if flame is blue. This info may seem trivial but can be used to make consumers more aware of energy conservation through fuel savings!

It is easy and quick for the LPG consumer to retrofit new burner head in his old stove rather than replacing the total stove later. This swapping will give instant & visible savings to consumer while also affording national LPG savings.

This above case study may be one of the many cases faced by PCRA. The exercise must be done in many brands of stoves and at the urban and rural house holds in all the regions so as to propagate the same among the masses.



*Mr S.ASHOK is a BEE certified Energy Auditor based at Coimbatore.

Please visit his site www.energymeasuretosave.com for more details on LPG saving ideas.

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Typical Check List for Conservation of Energy & Resources in 'Hotels'

BENQUETS

- 1) Switch off all lights/AC when function room is not in use.
- 2) Use minimum lights during set up.
- 3) Do not use ice cubes for water chilling/drink chilling etc.
- 4) Operate bar/conference AC only when bar/conference room is in operation.

KITCHEN

- 1) Provide task lighting where higher illumination is required. Reduce the lighting level in rest of the areas.
- 2) Reduce frequency of door opening for cold storage, deep freezer with better planning.
- 3) Very strictly monitor operation of hot food counter, salamander, griller, etc.
- 4) Ventilation/exhaust fan to be on timer operation only.
- 5) Put off all unnecessary lights during night/lean hours.
- 6) Ensure running hot water is not used for thawing meat/poultry/fish products as this wastes considerable energy/water.
- 7) To ensure taps are not left ON and bring leaky taps to the attention of maintenance.

PERSONNEL

- 1) Ensure lights and fans are not left continuously ON in staff areas.
- 2) To exercise water economy in staff areas especially running water during shaving/bathing operation.

- 3) Washing operation in staff cafeteria to be monitored. dish washing in continuous running hot water to be avoided.

WATER USAGE

- 1) No overflow of Cooling Towers.
- 2) No overflow of Water Tanks.
- 3) Restriction during Back Wash Operation of all Filters, Swimming Pool, Candy filters, Water body filters, Jacuzzi filters.
- 4) No overflow of Softener / Laundry hot water tanks and under ground sump
- 5) Nil gland leakage in Hot water / Cold water / Water lines.
- 6) No mal operation of Flush valves, Flush timings, Urinal in public areas.
- 7) No leakage in taps in Kitchen and other areas.
- 8) Review wash programmers for laundry to reduce energy/water consumption.

HOUSEKEEPING

- 1) Ensure BBQ / Lobby etc, corridor are not hose cleaned.
- 2) To be vigilant of any mal function of flush/taps and inform maintenance at once.
- 3) Mops not to be cleaned in running Hot/cold water in sinks.

HEATHCLUB

- 1) Keep Jacuzzi heater temperature at 33deg.c.
- 2) Switch on Sauna/steam only when required.
- 3) Operate A.C. depending on occupation/usage.

GARDEN

- 1) Provide leak proof outlets for sprinkles lines.

- 2) Minimize usage of fresh water and use grey water
- 3) Keep shut off valves for all water hoses.
- 4) Keep sprinklers pumps "on" only when in use.

LOBBY

Switch off the Lights during day time for the following areas:

- 1) Center coffer lights
- 2) Spots above carpet
- 3) All table lamps
- 4) Planter lights

MAINTENANCE

- 1) Ensure proper operation of Temperature Controllers.
- 2) Ensure proper operation of timers for path way lights and corridor lights.
- 3) Switch off external lighting after midnight and 6.00 am as required with increase in day light.
- 4) Optimize lighting in sub station, laundry, boiler rooms, plant rooms, A.H.U rooms, etc.
- 5) Ensure proper capacitor bank operation to reduced M.D.

HOUSEKEEPING

- 1) Ensure that all lights are switched off when room is not in use.
- 2) Balcony lights to switch off when morning service is given.
- 3) Pantry light to be kept off expect when pantry is in use.
- 4) Business center/public area lighting to be switched off after night cleaning.

High on Waves

Let my life go on as it is,
In the direction it yearns to follow
Keep your knowledge, your philosophy, your spirituality,
Your science, your social conduct, your religion.
Let my life flow splendidly as a child's,
Let me fly like the birds,
Let me remain innocent and unknowing.

I don't need your knowledge.
I love to roam in the jungle.
Let me sing with the birds, don't stop me.
Let me laugh in the flaring garden of life.
Let me run amongst the rustling leaves.
Let me glimpse nature at sun rise,
Let forest leaves, spring water, clear air sustain me.

Keep your civilization, your pride, your reputation;
Let me go wherever I want to
Far, far away, beyond the horizon
Where earthly rays do not penetrate
Where worldly ways can not reach.

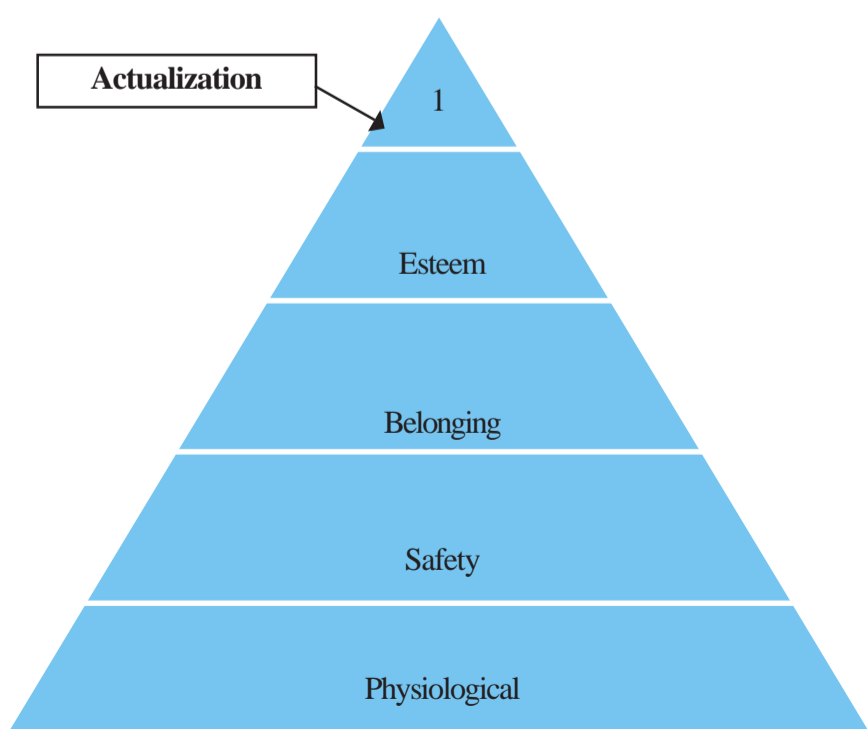
Don't bind me by your social rules.
Don't influence me with your religions,
Don't drag me down with your conventions.
Leave me alone.
Let me be.

Lift consumes more electricity while coming down!

If you thought that the lift consumes less energy while coming down, think again! Here are the findings of a study carried out by Mr A.S.Bavanandan. He can be contacted at aiyabava@yahoo.co.in for further details on the study.

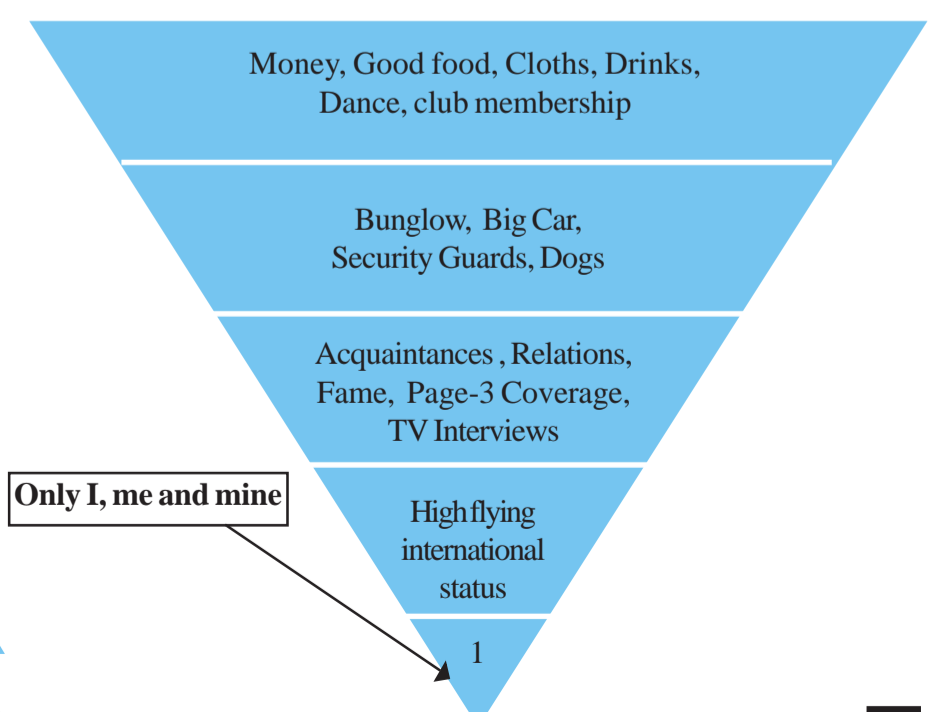
CASE STUDY OF LIFT OPERATION

Description	Observation
Lift	Provided with VFD / PLC Control / 22kw Motor
Voltage	411 / 411/409 V
Current	Lift Going <i>UP</i> / <i>DOWN</i> R = 9 / 20 AY = 8 / 19 AB = 8 / 19 A
Frequency	49.24 Hz
Power factor	<i>UP</i> / <i>DOWN</i> 0.70 / 0.90
Power	kw Lift Going <i>UP</i> / <i>DOWN</i> 4 - 5 / 12 - 13
Audit Comments:	<p>1. <i>Since power consumption is more while Lift is coming Down, it is suggested to use the stairs while coming down atleast from 1st 2nd & 3rd floor.</i></p> <p>2. <i>One lift operating during lean hours with 1 hr/day to be stopped</i></p>
Energy Saving Potential:	Restricting the time of Lift operation for going down(by self discipline) = 12 kW x 1 hrs x 250 Days x Rs.4.30 / unit = Rs.13,000 / year (3,000 kWhr / year)
Expected KVA Reduction	Marginal
Investment:	Nil



Maslow's Hierarchy of Needs

Today's Hierarchy of Greeds



By : Sunil Sood

How useful are the "Power Savers"

(Group discussion in iaemp yahoo group)

The discussion was initiated by Puneet Diddi when he posted the following mail in the iaemp yahoo group:

Today, I had got a call from a representative of a company for the promotion of an Energy Saver device, which we can be plugged in the socket and this device shall save 30% energy. I asked him on what principle this device works. He was not able to explain.

So, I want to ask from the respected members, if this kind of device really works??

In the following paragraphs the responses are being reproduced without editing

I think, it is a simple capacitor, which improves power factor, reduces current and people are taken in. Even one very big and reputed company, while advertizing its capacitors in very good magazine, propagated 30% saving by installing capacitors. It was wrong.

-Er.R.K.Aggarwal

This is nothing bur capacitor. It reduces the cable losses and can save only if

the losses are high. You can check the losses by measuring the voltage at your meter terminal and at any plug point in your house. In case the losses are high then capacitor (of requisite rating) may help. You can buy one from the market and give it a try. In such case also check cable condition and loading. The losses can be high if your cable is damaged, in such case you need to change the cable. The losses can be high if the cable is drawing higher than rated current. In such cases you may go for larger size cable.

- Ravindra Datar



If we look carefully to the wordings of such claims, it becomes clear. for example, it says 30 % saving in energy. True, if load current is reduced by PF improvement, cable losses may become 70 % of original losses and saving can be 30 %. that is 30 % of original losses. now losses can be 3 - 4 % of load, cable losses can not be higher than this else the cable gets overheated and may burn. so saving can be 30% of 4%, about 0.12%.

The device, simple capacitor will be effective for motor loads like fridge, AC and tubelights with wound chokes, which operate for long hours.

- BS VAIDYA

The device is nothing but capacitor for power factor improvement. Contrary to the claims, power consumption actually increases, because with the improvement in power factor, current reduces, and due to reduction in IR drop(voltage drop) higher voltage is available for the domestic load, which now draws higher current.

- S. Khandekar

People normally fall pray to such advertisements. Without using their brain they accept the advertisements, whether it is an electrical saver or a face cream ad which guarantees change of skin colour from black to white, and people by these products and get no results, they only have mental satisfaction that they are using these products. Multinationals are spending crores of rupees just on advertising the products, and that's why it is said, "Advertisement is the best tool to sell the product which are worthless".

Whether it is face pack, hair oil, or any such product, even you don't use throughout your life, nothing will happen, but still people fall prey to such ads, that's the way of life.

-ULHAS VAJRE

These are big cheats. Within house there is hardly any cable lengths where you can save line losses. These capacitors reduce current by improving power factor. All these companies demonstrate you the current before and after by putting a tongue tester on the mains wire and people get impressed to see reduction in current, believing that they will be saving power.

Our old members may remember when I started the idea of using digital energy meter for measurement that time few members also procured tongue testers. The idea was further picked up by Mr. Sood and now we distribute those energy meters to Life members. You may ask these company people to show saving using the energy meters and not tongue tester, they will run away.

Regards,

-Ajay Chandak.

35% savings is impossible but there are cases in Mumbai, where the persons have got savings up to 10% savings.

This generally happens because

1. The cables are grossly overloaded with inductive load, mostly ACs.
2. The cable length are very high (I have seen up to 150 M) from the meter at ground floor to office / flat at 10th or higher floor or even in industrial estate.

- Ravindra Datar

Beware, there are salespersons who can sell refrigerators to the Eskimos. Ignorant buyers derive more satisfaction with higher size boxes sold as energy savers. In the past I had come across one such box in the famous Salar Jung Museum.

There are so many small companies and establishments without an electrician leave alone an electrical engineer who could easily fall prey to such smart salespersons.

-RP Rammohan

My point of view regarding the power savers under discussion is as below:-

1. The power- saver under discussion is the one simply plugging in to the socket and it is mainly a capacitor which definitely will deliver reactive power and hence improve the power factor.
2. Improving total power factor by providing capacitors cannot improve the efficiency of the appliances and hence the losses in appliances cannot be reduced by using power factor improving capacitors.
3. The reduction will be only in the power losses in the cable where the reduction in current due to the power factor improvement.
4. At improved power factor the current drawn from the supply source will reduce and the reduction may be up to 20%. Hence, the current drawn from the supply source may be 80% of the original.
5. Power loss is I^2R ie. Proportional to I^2 , as the resistance R is constant. Hence the new power loss will be proportional to $(80/100)^2 = 64\%$ of the original power loss and energy saved (power loss saved) is $100-64 = 36\%$ of the original power loss.
6. The power loss in a domestic installation in the cables is very low may be below 3% of the total power consumption.
7. Hence the 36% of the total power loss (3%) in the cable will be only $3 \times 36 / 100 = 1.08\%$
8. The instruction by the manufactures to plug in the energy savers near the main switch. If the capacitor is connected near the main switch, the reduction in current will be from supply source up to main switch only and as the energy meter is located close to the main switch the energy saved (recorded in the energy meter) will be the reduction of power loss in the cable from the energy meter up to the main switch which is normally negligible.
9. As such the claim of 35% energy saving by the manufacturers of these energy savers is totally false.
10. As these devices are to be plugged in to the power socket and all the loads including lights are remain connected to the power supply source as before, there will be no reduction in voltage and hence no saving of energy consumption due to lower voltage. Instead due to improved power factor voltage may be increased and higher consumption will be the result.

- Johnny.P.A



I have not seen the parallel plug in type "energy savers".

They certainly are either a hoax or they have a fixed capacitor inside of a certain fixed rating which would improve a certain fixed load's power factor to a certain degree. Now all this is very dicey. No idea of existing power factor! No idea of load! and yet a capacitor is being installed.

Then there is the issue of life of such a capacitor. Dry type capacitor which must be being used here does not have a life of more than 1 to 2 years. In fact de-ration starts within 6 months. On top of it, here in Rajasthan we are not billed on KVAH in domestic loads. We are billed on KWH. Let me assure you there shall be no tangible drop in KWH consumption by using such a device, except a very very small and inconsequential energy saving due to drop in loss of the feeding cable.

So this product should not be on our purchase list.

The voltage reducing devices certainly save some power but here is the catch: They are more useful in saving power loss by correction of an over voltage existing in the system. If your line voltage is already low say 200V then don't expect much from this device. Also resistance heating devices such as geysers, ordinary ovens, room heaters will operate at a lower watt loading at lower voltage leading to longer operation time to attain the same temperature, leading to as much power consumption.

Air-conditioners, water pumps etc are designed to operate at 220V AC so they might not work well at a lower voltage.

The only acceptable power saving is in lighting loads. So perhaps only those institutions, homes which have a large lighting load would benefit from such a device.

Small homes, I doubt if one should take the botheration of buying and maintaining such a device.

- Sudeep Sharma

We are missing one very important point and that is SAFETY.....

Household switches are designed for making and breaking resistive and inductive loads like fans, bulbs, gas discharge lamps, heaters etc. and are not rated for switching on and off the capacitive current which is always leading. Life of the switches reduces drastically and in worst case, if switches are of sub standard quality, can cause flash over and/or fire.

Some of you may have seen damage to the switches controlling tube light chokes fitted with a small capacitors, as was a practice a few years ago.

Energy Saving is magic word by which any thing can be sold at exorbitant prices.

Simple voltage reducing Auto transformers used to be sold at more than 300% profit earlier, in the name of Energy Saving Device. Because Govt. gave tax incentives for such devices!! mfg. used to calculate prices not based on actual cost but the payback period!!

-BS VAIDYA

Importance of statutory measures to promote energy conservation & efficiency in Homes

Sunil Sood

Realizing the need for statutory measures to encourage efficient utilization of energy, the Government of India had initiated drafting of a law sometime in the year 1999. The draft legislation was introduced as Energy Conservation Bill in the Parliament in the year 2000 and passed as 'The Energy Conservation Act, 2001. The Law came into effect from 1st March, 2002.

"The Energy Conservation Act, 2001" is defined as **"An Act to provide for efficient use of energy and its conservation and for matters connected therewith or incidental thereto."**

Thus it is clear that 'Conservation' and 'Efficiency' are separate concepts although closely related. What exactly we mean by energy conservation in simple language is that we intend to prevent unintentional wastages, unnecessary usage, and avoidable consumption of energy.

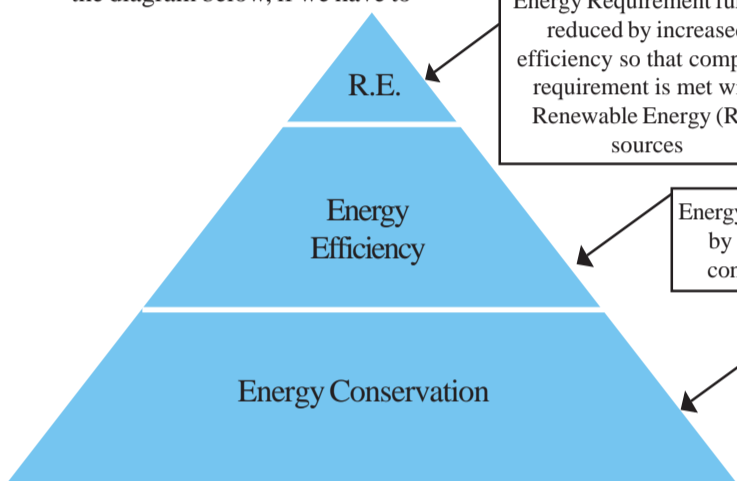
Energy conservation and Energy efficiency are presently the most powerful tools to realize our dream of 'Energy Independence'. As depicted in the diagram below, if we have to



Energy Requirement further reduced by increased efficiency so that complete requirement is met with Renewable Energy (RE) sources

Energy Requirement reduced by adoption of energy conservation measures

Business As usual energy requirements



entirely switch over to renewable energy in future, (A mix of Hydel, Wind, Biomass, and Solar) then we have to continue to use 'Conservation' techniques and 'Efficiency' as the foundation blocks. 'Unlimited Renewable Energy' is just a wishful thinking. Whatever form of energy we use today, or tomorrow; it has to have the support and backing of "Conservation" and 'Efficiency'

There are many provisions in the EC Act, 2001 which need to be effectively implemented to promote energy conservation and efficiency. I will elaborate on 2 such provisions:

1. Need for Government Directives to encourage conservation

This point is related to the section 18 of E C Act, 2001. The provision of the referred section is reproduced below:

Power of Central Government or State Government to issue directions

The Central Government or the State Government may, in the exercise of its powers and performance of its functions under this Act and for efficient use of energy and its conservation, issue such directions in writing as it deems fit for the purposes of this Act to any person, officer, authority or any designated consumer and such person, officer or authority or any designated consumer shall be bound to comply with such directions

This section could have been very effectively used by the Central Government and the State Governments to promote energy conservation by preventing gross misuse of energy in Govt departments/ public sector units. The directive coupled with some sort of incentive/penalty provisions and establishment of accountability would have done wonders. It is surprising to note that very few state governments have used this provision in the Act and that too only to ban use of Incandescent lamps in the offices.

2. Need for total ban on use and manufacture of in-efficient appliances/ products

This point is related to the section 14C of E C Act, 2001. The provision of the referred section is reproduced below:

- Prohibit manufacture or sale or purchase or import of equipment or appliance specified under clause (b) unless such equipment or appliances conforms to energy consumption standards;

If we have to promote efficiency, we must not feel shy or guilty to ban the manufacture and use of inefficient items like Incandescent bulbs, resistance type regulators, electro-magnetic ballasts etc.. Indian Electrical markets are flooded with cheap but highly inefficient local brands. The govt needs to come out with a compensation package to shut down all such manufacturing units.

The successful example of phasing out of Ozone Depleting Substances in a systematic manner is before us. We need to learn from this. When we can plan Special Economic Zones by displacing and compensating the farmers, why can't we do the same with the manufacturers of spurious and inefficient electrical goods?

It can be done in a phased manner starting with use of such gadgets in 'A' class cities and gradually banning manufacture and use of all such items. As an immediate measure, the issue of new licenses for all the identified items must be stopped.

HOW DO I SAY IT?

B.R. Sathyakeerthi

When there is nothing whatever to say, no one knows better than our politicians and bureaucrats how to say it. Seriously speaking, I have always admired this quality of our politicians and bureaucrats. They can touch your heart, your soul and your mind with their oratory and diplomatic skills without actually helping us in any manner whatsoever!

But the same is not the case with me. I have always found it very hard to express my feelings, my opinions, my desires and my intentions using the right words, delivering them in the right way and with the right body language. In the school and college, we weren't taught anything about it. How I wish, they could do with little less of History, little less of geography or even little less of Mathematics and taught us how to say what we wanted to say, more effectively.

Over a period of time, I have realized that it is not what you say which is important but how you say it. But how do I say to people who simply do not want to listen? You can wake up a person who is really sleeping but what to do with those who fake sleep? How to wake them up? My blood pressure shoots up when I see so much wastage of resources in our country where every seventh child sleeps hungry, when I see lot of non-sense on TV or when I read rubbish in my daily newspaper. How do I express my anguish then? How do I say pl. don't do it to me. My hands get tired of working on remote switching channels. My eyes complain of strain, my ears of pain. How do I say them I don't need you 24 hours. Leave me alone. Let me be.

How do I say to the Babus and Bureaucrats, you are paid for the job quite handsomely. You have got to do your job. You have got to do it right and got to do well within time? How do I say to them that you are not doing a favour to me?

How do I say to the public pl. don't spit out from the moving vehicle? Please don't throw garbage on the street. How do I tell the street sweeper please don't burn garbage, it spoils my morning walk. How do I say to the big Car owners that your car has taken my space, my oxygen and now it wants to grab my food in the name of Bio-diesel production? How do I say to my office colleagues who smoke in 'Non-smoking zones not to do that as it is morally and legally not correct.

I also want to learn how to praise people who are doing good work. How to thank people who are unknown, unheard and unsung but they are around busy making a positive change in the life of many. How do I say them that I appreciate it .At the right time in the right manner.

I have always wanted to learn this art. Is there any one to teach me? No politicians or bureaucrats please!

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