

**FROM THE PRESIDENT**  
**Prof. Dr. Madhusudan Bhattacharyya**

Dear Friends,

You must have received a copy of our Journal Vol. 85 No. 3 & 4; please feel free to suggest for its betterment. Still we are not in a position to publish it quarterly, principally due to non-availability of quality papers. Many of you are working in various concerns, so why not forward case studies you are deftly solving, for publication? Comments on published papers are welcome. Various reputed institutions from all over India have subscribed to our Journal, more in the pipeline. The editor hopes, our Journal will go digital shortly.

The centenary of your (our) institution is hardly three years away; Your suggestions for a befitting centenary celebration are most welcome.

Since this volume (86 No. 1 & 2) is likely to hit its dispatch in June 2016 end, I like this opportunity to wish you a charming and peaceful festivity season, September to December, 2016

Below is given the tenth instalment of write up from our Engineer Illiterate friend.

\* \* \* \* \*

**Tenth instalment from the Engineer Illiterate**

Suddenly I am tormented about the definition of honesty. I know not whether at this age of marvellous advancement of science and technology we are capable of quantifying honesty. I look forward to the knowledgeable peoples to enlighten me in this aspect.

The connotation of honesty in different occasions may be a little different in details; but applied to a human being, it means he has always acted to his conscience! Is it feasible at all? And in politics? Let the political giants opine. To this little soul, it is even very difficult to live in a smaller society (i.e., family) always complying with one's *Vivek* (conscience). Once I was asked to draft my character certificate; I failed in spite of my best effort. Vice Chancellor drafted one in no time, smiled and said, I realise yours....., self certification is a big hypocrisy for commoners like us. A great soul does not suppress the truth and that's why their influence on society is ever dazzling. But they have never ruled a country hitherto.

But Sir, in our country all the honest people run the wheels of administration of the governments, state and centre.

Bhattacharyya

A piece of melancholy smile flashed.

Do you think other countries are different? All saints are there in the administration? Of course, saints are often under scanner for immoral acts.

That's no consolation, says my *Vivek*.

I come to know from a news item, 'Gaps in new gas price formula', (Source : Kotak Institutional Equities, The Telegraph, 28.10.2014) that the energy demand is estimated to be 250 billion KWh in 2020. This to be generated needs 845 million tonne of oil equivalent (mtoe) whereas total estimated amount of 447 mtoe will be domestically available i.e. rest (845 – 447 = 398) mtoe to be imported. That means India's energy dependence on imports will almost double by 2020. This is a grim picture for our economy. I calculated the fuel consumption per MWh. **To my astonishment I find that 3.38 tonne of oil equivalent is needed per MWh generation. This is absurd.**

**[ $845 \times 10^6$  toe  $\div$   $250 \times 10^6$  MWh = 3.38 toe/MWh]** To the best of my knowledge, in thermal power stations coal requirement is 0.6 to 0.8 tonne per MWh depending on the quality of coal; of course some small amount of oil is needed at starting of a boiler. It is to be noted that the calorific value of coal is nearly half that of oil. **It will be apparently evident that indigenous fuel available would adequately be surplus than our requirement for power generation.**

I therefore sent a letter to The Telegraph for necessary clarification from Kotak; neither the letter found a small space in the letters to the editor column nor any clarification I have received to date.

**This illiterate engineer will be happy if Govt. of India would take cognizance of the matter. I desire much to have any clarification from any quarter regarding the point raised. Let me be corrected if I am wrong.**

Irrespective of fuel surplus (!) or fuel shortage, austerity measure must be taken to delay anthropogenic extinction of life forms on the planet we live in.

- (a) Try to run the power stations at maximum efficiency.
- (b) Motivate people towards using lesser power guzzling appliances.
- (c) Educate people to use electricity where barely necessary,
- (d) Encourage industries (households also) to generate more and more wind, solar and biomass power and power from such other renewable sources in large scale, small scale as well in isolated locations for community usage.
- (e) Practise electricity-economy in public institutions to encourage individuals to follow.

You follow what I say, not what I do—this is the practice hitherto in vogue. **Governments**

From the President

**must realize that an ounce of practice is worth a tonne of oration.**

There is a general misconception about austerity drive. Cutting down the expenditure? No. Judicious use of resources meaning thereby the superfluous expenses be trimmed. Who will decide? Certainly, there are some about which there can't be two opinions. Like?

Office cars, are they not grossly misused? That these are openly done in broad daylight and known to the authority who seems to have tacit support since it treads the same path.

Pool cars, rather than personalised cars, if used can curtail huge amount of liquid (gaseous) fuels and this is possible with a little programming. Mass-transit system is much better.

VIPs moving with cavalcade of cars are seen by the public who wonder how costly their lives are when public in general can be gleefully left to the mercy of violent riots even. VIPs needing such security should make least movement to the benefit of the nation in several ways. Why don't they take to IT solutions wherever feasible?

I clearly remember one incident which led me believe that higher-ups never default. It is extreme hot weather in May/June sometimes in late seventies; there is acute power shortage and I am to deliver a talk on energy audit to the officers of a reputed public undertaking dealing in liquid fuels. I reach the office at 10 a.m. as the lecture is scheduled from 10.15. I am led to wait in the CMD's chamber. After a few minutes I start shivering in cold; room temperature is hardly  $12^{\circ}\text{C}$  when the ambient temperature is  $30^{\circ}\text{C}$ . The chamber, truly a minihall with six (eight?) window airconditioners on. On the top of it, there are nearly 10/12 fans running in full swing. The room is illuminated with adequate number of fluorescent tubes. I am the only occupant of this hall trying to fight out the rage of biting cold. Loosing the battle outright, I come out of the room; I get a thermal shock. I wait for a few minutes and then in an adjoining room I meet CMD's secretary.

She says, My boss is in an urgent meeting.

When is he expected back?

Say an hour.

Then I will be frozen. But my appointment with him is at 10 in the morning.

That I know, she says. You better wait in our waiting room. It is comfortable.

I am annoyed not because I am made to wait but for where I have come to deliver lecture on energy audit. I feel like leaving the place, hell with the programme.

But then I think of a live demonstration of energy wastage; I don't want to forego this opportunity to my advantage.

I start my talk with what I have seen and how I was literally trembling. I am sure that next time they won't invite me for their company-programme; I am mentally prepared for it, so no

Bhattacharyya

disappointment.

I clearly reminisce an incident which left a permanent and indelible impression about the behavioural pattern of our administrators towards ordinary citizens. I would be delighted to know that I was wrong.

It was such a torrential rain when I alighted at Delhi airport at six in the evening. The airport and its surroundings were underwater. I somehow reached the arrival bay; quite a long time it took me to collect my suitcase off the conveyor belt. Then I searched for the car outside. No sign, even no taxi in the booths. A few cars were there and they started leaving the place one after another. I looked helplessly and rang up Bangabhavan; I was told that they had sent a car, probably it failed to wade through waters. One non-Bengali gentleman overheard my telephonic conversation; he bade me, Good evening. I also, but added, This evening seemed to me inauspicious.

He smiled and said, Why good and bad are relative. Come with me, I am also going to Bangabhavan.

I was so mentally upset that I forgot even to thank him for his kind offer. He was my saviour that evening. Even after three/four decades the memory is so sweet! I am sorry I can't show him my gratitude now as I have forgotten his identity who took me out of despair that evening.

My luggage was taken to a two bedded room; one gentleman, quite young, was reading a magazine lying on his back cross-legged. He ignored the entry of a new boarder altogether in such a rough weather as it was raining heavily accompanied with gusty wind, which struck me as uncourtious. Anyway I straight entered the bath; the hot shower was so refreshing. I changed my dress and proceeded towards the dining hall. When I returned, it was a different gentleman. We gossiped for quite sometime. I learnt that he was an IAS of that year and joining his maiden appointment in New Delhi and that he would shift to his quarter the day after; he would be pleased if I put up with him for my stay at Delhi.

I immediately realised what made him change his attitude towards me. So status conscious they are. He had gone through the register of Visitors' Book while I was away dining.

That midnight one class IV staff knocked at my door mildly. I woke up and half opened the door.

Doctor Shab, please come to my quarter, my wife is seriously ill, she is restless and vomiting. I said, Look, I am not a doctor. What shall I do there?

You are a doctor Sir, it's in the register.

I tried to convince him that I was not a medical person, but to no avail.

From the President

Doctor *Shab*, you please come once, otherwise my wife will die.

I got totally confused. I decided to visit his place for his mental consolation.

Once my going to see his wife will make him happy, I thought.

A young lady with face nearly draped in *saree* came in the room. She wore a smiling face and seemed happy.

How long have you been married?

The man said, Only year before last.

Have you any issue?

No, Doctor *Shab*, the man replied.

I asked a few questions, checked her pulse for his satisfaction.

She these days, feels sleepy, has vomiting tendency and likes pickles which she avoided even a few days back. I am much worried about her.

Your wife is all right, no problem. You do one thing, you get her registered with a medical college.

Husband was puzzled.

No worry, probably you are going to be a proud father.

Husband's face exuded happiness. His wife was all smile through out.

He was going to pay me a visit fee.

I refrained him. May God bless you all.

However, he escorted me to my room back.

I still recollect he brought me a box of sweets during one of my subsequent stays at Bangabhavan; Doctor *Shab*, we have a son, a proud father with glittering face said.

Live happily ever. I prayed.

Back to nostalgic memory of a day in seventies last century when the whole of India was reeling severely from shortage of power. Then there were severe craze amongst different organizations, PSUs in particular, to organize awareness programmes on energy for their managerial staff. Such a programme was organised for Air India staff at Dumdum Airport.

Some twenty officers participated. The programme scheduled at 10.30 AM eventually started at 11.30; I was escorted from my residence and I reached the spot on time. I came to know that many of the participants were informed on the day, hence the delay. This signalled to me how serious the organization was about the programme.

I start the programme with an apparently unrelated question. Friends, do you consider your work place as your second home? If yes, half of my job is done.

The participants looked at me askingly.

Start energy saving the simplest way. Start from your home. Use fluorescent tubes in place

Bhattacharyya

of incandescent lamps; use electronic chokes. CFL and LEDs were not in Indian market then. Do you put on the lights and the fans when you need them barely? Fans should have electronic regulators which save energy while fans are not on full speed.

If you have A.C at home, it should be set preferably at temperatures  $5^{\circ}$  to  $6^{\circ}$  below the ambient temperatures. With the ambient temperature above  $30^{\circ}\text{C}$ , set the AC at  $25^{\circ}\text{C}/26^{\circ}\text{C}$ . Thermal shock during ingress into and egress from a.c. area will be bearable for this temperature setting. In such situation use of ceiling fan in combination with AC would be helpful. This will save power. Each degree rise in AC temperature makes about 4% saving in electricity bill.

Switch off the lights, fans and ACs of your exclusive work area when leaving the room for say more than half an hour; for central A.C., just switch off the lights and the fans, if any.

In a MNC I worked with, where nearly all the staff housed in a centrally air conditioned hall, used heavy sweaters, some mufflers in addition throughout the year to evade the bites of cold.

One remarked, How much energy is saved by putting off the light and fans, Sir?

A small amount no doubt. But drops of water make oceans. Rain also falls in drops, my friends.

I have not discussed anything of special equipment to start energy saving practice. Since this is an awareness programme, I am not dwelling into other technicalities of the subject.

Opening a door of a refrigerator too often is a bad practice, it adversely affects power consumption as also its longevity. Similar effect is there for AC, if ingress and egress is too frequent.

Friends, all activities consume some form of energy and cause pollution, though it may be thought as absurd at the first instance, but you look at small human activities like eating; it will be apparent that pulses, cereals, vegetables, fruits, etc. have to be grown. In this process fertilizers, pesticides, etc. will be needed.

Energy or mass can neither be created nor destroyed, i.e., there is change in form only. In thermal power stations (TPSs) fuels are burnt to produce heat used to raise steam which drives the turbogenerators which give electrical energy. Each transformation causes some pollution, though degree varying. Electrical energy can be conveniently transmitted to far away places with lesser loss and pollution.

You economize using stationeries, check up the wastage of tap water, even that amounts to energy saving at the end.

How Sir?

Simple, your reorganize your office to minimise paper work. That will lead to manufacture of lesser quantum of paper; i.e., lesser energy will be consumed for paper making. Similarly wastage of tap water in the chain effect will lead to use of more energy.

From the President

In fine, all persons, if motivated, can save energy by their small acts even.

No body, Sir told us that we are all soldiers against pollution–battle in such unequivocal terms.

Your lunch time is long over, don't curse me for your cold lunch. Should you allow me to delay your lunch by a few minutes more, I would make you familiar with a new term, **Total Energy Concept**.

Please Sir,

Total Energy Concept (TEC) means total energy received from a system minus the energy spent in maintaining the plant's horizontal and vertical support system. This is very difficult to conceptualize, not to mention the numerical calculations. To bring my point home take the case of wind energy (through windmill). It is propagated that renewable sources of energy like wind, water, solar, etc. are pollution-free.

This is far from truth. Yes, at the point of generation, there is practically no pollution. But the equipment and gadgets needed for harnessing the energy have to be manufactured, where considerable energy is spent. Even their maintenance needs some energy.

Why energy obtained from renewable sources can not compete with TPS as to cost despite the absence of fuel (consumption)? TEC is the clue. Hence the necessity of appropriate site selection.

I am of the opinion that the nuclear power fares poorly from this TEC. I doubt much that considering the social security and safety aspect the energy balance is even negative.

Continuously increasing power generation means more effective pollution. More generation seems a riddle to cope up greater energy demand in developing countries in particular.

So what is the solution, Sir?

I chuckle, '**Waste not, Want not**' practice will prolong the existence of life forms in the unique and beautiful planet of ours. Let good sense prevail amongst the nations.

My teacher Prof. R. K. Chakrabarti, 92+, should be profoundly happy in this planet, at least on one count. His prophecy while an M.P., I am fighting for the democratization of corruption has almost fructified. Sir, why not rejoice at the success of your mission?!

Who survives in India? One of my students, a chemical engineer was driven to a very premature death by the loan recovery-hunt of a nationalised bank to which he owed a small amount. Due to war-outbreak in the middle east countries, his order-consignments were returned which pauperized him. So he failed to pay installments. Even he died without proper medical treatment.

Bhattacharyya

On the other hand, loans of thousands of crores owed by big industries are structured, restructured, big amount infused and even waived while their owners continue living in profligacy.

When any student sought my advice about starting a small industry, I unfolded before him the pros (20%) and cons (80%) about the project. Still many started small industries; many also confided to me, Sir pros-content is hardly 5%. Those who have done well are unanimous, Honesty is for the *idiots* only.

My conscience is vocal. Are you an idiot?

Yes, I know that I am a confirmed **idiot**. But is **idiot = idiot?**

Then I fail to come to a conclusion.

20.02.2016

Sd/- Sadananda Satpathy  
Illiterate Engineer

\* \* \* \* \*

Once more I convey my best wishes and greetings to you all.

20.01.2016

Sincerely yours  
Sd/- Madhusudan Bhattacharyya