

FROM THE PRESIDENT
Prof. Dr. Madhusudan Bhattacharyya

Dear Members,

By the time this volume of Journal is likely to see the light of the day, the festive season will be over. Therefore I convey my heartiest greetings for *shuva Bijoya, Maharam, Dipavali, X-mass* to all of you & your families, our wellwishers and patrons. Festive days over, comes the New Year, 2016. A very happy, peaceful and prosperous 2016 is all I pray for all of you.

I question myself whether vast resources are justifiably spent by the nations on warheads while nearly half of the world populace is reeling under starvation.

Below please find the ninth installment of write-up from our Engineer Illiterate friend, which has got the Editor's nod for publication.

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Friends, I am not sure whether expeditions to Mars at astronomical cost are justified. Be that what may, I like you to notice a news report as published in the Statesman, 29 September, 2012, if you have by chance skipped it.

“Curiosity finds evidence of water on the Red Planet..... we can interpret the water was moving about 3 feet per second, with a depth somewhere between ankle and hip dip..... the imagery shows an alluvial fan of material washed down from the rim streaked by many apparent channels..... . The abundance of channels.....suggests, flows continued or repeated over a long time, not just once or for a few years.we have found our first potential environment.”

A Billion Dollar question peeps in mind. Was there really some civilization like ours on Mars in the remote past, which had been totally wiped out due to some natural catastrophe? Is the finding posing the gravest challenge, threat rather, to this beautiful planet of ours? Do the powers that be and the peoples of the globe listen?

Down the memory lane I hover in the eighties, some 30/35 years back. This pygmy had to vent his ire at the first meeting of the ‘Task force for capital goods in Electronics Industries in India’ when after a short lecture, the Secretary of the department announced, So the agendised items have the approval of the Task Force. (Incidentally, a 300 page agenda book was circulated 10/15 minutes ahead of the meeting). I inquired, What resolutions we are adopting? Even small things like line testers, low capacity ammeters/voltmeters and such other small items are to be imported? was my reaction. Secretary retorted, So is desired by our P.M.

I said politely but assertingly, Look I have got my identity, I am an Indian, representative of

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a reputed university and engineer by education, I am not habituated to act as somebody's rubber stamp. If you get the resolution passed, please record my dissent note. Extremely irritated Secretary tried in vain to push the resolution through. Hence for nearly two years following, meetings were convened at different cities in India along with some plant visits. I stuck to my point all along which in order to be sorted out a small committee of four/five task force members was mooted, this fool being inducted therein; the committee would visit different countries and submit a report. All wellcomed the proposal.

I being an ardent advocate of import substitution (eventually by then I already made import substitution of quite a few machines, as also a number of parts of imported machines), came to the conclusion that I was given a chance to visit foreign countries at state expense so that I was obliged to agree with *import all*, even those being manufactured here in India.

Excuse me Sir, from the committee please. I see little how the foreign trip is related to what we are transacting. I felt a sigh of relief.

My only satisfaction : the committee was not formed and wasteful expenditure for the luxurious foreign trip could be averted.

However whatever report was submitted to the government finally is not known to me till date since I was denied a copy of the final report sent inspite of my written request.

Probably the young prime minister got his wish honoured!

After the last Durga puja, electricity is playing musical chair. The authority has thousand and one excuses for power failure, the people are used to them. A commandant asked one of his subordinates, Why didn't you open fire to slay the enemies?

He chuckled and said, Sir I have so many reasons.

Cite a few of them.

First, Sir, I had no loaded firearm with me. Second Sir.....

Stop stop, shouted the commandant, and get lost.

Hire and fire! That you may follow for lower class workers in unorganized sectors. What about the power authorities?

They are all covenanted officers, either drawn from administrative services or through political or bureaucratic pull. They can't be removed as such, but can be transferred to other posts, at times to higher ones even. This state of affairs in PSUs and other government wings is the order of the day. New commissions, various regulatory bodies, new seats of learning, etc. are created with scant regards to enormous drainage out of public exchequer. Who cares? Nobody to dare since that amounts to challenging those in authority which often culminates in brutal tragedy of whistle blowers. The authorities are unmoved as the burden of inefficiency shall be passed on to the general populace. Who eats the pie and who clears the bins!

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Power is back after enjoying a respite of a few hours, ready to hibernate any time again. So much of fuel saving with attendant reduction in pollution! Shall not the environmentalist rejoice?!

It was mid 1999; I just returned from a lecture class. Dr. Ghosh, a colleague of mine, is waiting in my chamber, probably for a refreshing chat at the day-end.

Pankaj, bearer, enters, Sir one gentleman is waiting for you, he is in the library.

Bring him here.

The gentleman, later I know he is hailing from Chennai, a director of a reputed MNC, says, I have come with a technical problem.

Yes Mr. Sundaram.

I am not in a hurry, you seem tired, take some rest and then we can discuss the problem.

Ok, would you like tea or coffee.

I don't mind any.

After the tea-phase, he says, Speed reducer units for a cooling tower of a power plant around Kolkata are behaving erratic. Many of them functioned for a short period as low as 15/20 days even. Our customer has been complaining about the malfunctioning of the reducer units.

For this you have come to such a distance!

We have already consulted three reputed institutes, got a lot of advices, but the problem is where it was.

What do you want from us? I quip.

Practical solution, he retorts.

I don't know whether we will succeed. We have to visit the spot.

No problem Prof. Satpathy. These are operating in a thermal power station at the suburb of Kolkata, Budgebudge. We will arrange your visit. We supply a lot of equipment to the company on a regular basis, we have our site office there also.

You have to remit the consultancy fee prior to our visit; may be we are unable to solve your problem. In that case your money is wasted.

No risk, no gain, Mr. Sundaram says smilingly.

After a few days, we are escorted to the site; quite a few failed reducing units are lying, two or three dismantled. We see spiral gears have been used in the reducer units, some gears are lying with broken teeth. We note the wear of the teeth non uniform and breakage took place at the narrower tooth thickness end.

Let's go to your running cooling tower platform; the motor and the reducer unit (90 HP, 120 rpm) are installed through direct coupling. The base plate seems to vibrate with irregular frequency.

How long has this unit been in operation?

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About a fortnight.

Have you any plan to change the lubricant?

No, we top up only.

I add, Depending upon the finish of the gear teeth, you have to totally change the lubricant after certain running-in period of the gears during which burrs get dislodged from the gear tooth profile; if you don't change the lubricant after taking out the contaminated lubricant fully (with time the lubricant gets contaminated with initial burrs and subsequent worn out particles) the spent up lubricant acts as an abrading medium. Anyway, normally the manufacturer of gear reducer units guides the customer about when to change the oil at least for the first time as it depends predominantly on the finish of the gear teeth.

We have not been guided by our supplier; we check the oil level, and add fresh lubricant when needed.

Let's forget it. Any way how can we assess when to change the lubricant? I will give you a demonstration. It's very simple and will serve the purpose for practical cases. (The precise test is done by Ferrography involving costly instrumentation not available here at Kolkata, I am sure). Can you fetch me three pieces of transparent plane glass sheet as used in window panes, the thinner the better? Also arrange for samples of small amount of lubricant (say 150/200 ml) of virgin lubricant, lubricant from a broken speed reducer and the running one by bottom tapping.

The sun is about to set. I hold a glass slide slightly inclined to the horizontal say about 10° , pour the virgin lubricant on the upper end of the slide slowly. It trickles down leaving a thin film of lubricant on the glass; Practically the colour of the oil smeared glass surface is as transparent as the glass.

Then the same procedure with other samples with fresh glass slides is followed. The oils before pouring are stirred well with a stick, this is very vital.

Colour of oil film of lubricant from failed reducer unit is dark with streaks of worn particles retained in the oil film and that with the lubricant from the running reducer unit is in between the two. (The particle sizes clinging on to the glass slides can be measured by Ferrography). So change the lubricant when the shade left on the glass changes to darker side. But for the first installation and operation it is a good practice to drain out the lubricant completely from the reducer unit, then wash the gear unit with kerosene oil by pouring inside the unit and by manually rotating the unit for say 5 to 10 minutes for smaller units/in case of large units by pressure cleaning with kerosene which has to be emptied; the remaining kerosene to evaporate for which some time say one hour may be allowed with air passage open. Then fill up the unit with fresh lubricant upto the level indicated. At first sight the process seems cumbersome, costly and time consuming. No care no gain. The process is repeated twice, once say 100-200 hours of running after first installation and then after about 1000-1500 hours of operation after the first cleaning.

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This, if resorted to, will enhance the life of the gears and the bearings, i.e. the reducer unit considerably, the reason being there is least of abrading particles in the lubricant. Regarding cost, the lubricant may be reused after filtering and so is the case with kerosene; there is no frequent down time of your plant for change of gear units. Net effect of attending the unit (or any other machinery) on time improves the productivity.

I feel a company may gain considerably having Ferrography equipments and changing the lubricant of bearings as to be indicated by the Ferrography test results. TISCO have increased the life of their rolling mill bearings considerably employing Ferrography with attendant improvement of productivity.

Sir, let's have tea. You have been standing so long, says the officer.

We are led to a room to rest a while.

Sir, It's already dark.

So what, I smile. There is something more to inspect. There is misalignment problem in the reducer units.

Tell me how long have you been using the reducer units of this make?

For more than two years and we are having trouble with these units. You have seen many units broken; many have been taken back by the supplier.

Look Mr. Das, alignment of gear shaft bores have to be checked up. But how? What do you have in your maintenance shop? Any dial indicator?

No Sir, we have a centre lathe and a few other ordinary tools for fitting shop.

Have you any marking block with a magnetic base.

Yes Sir, we have one.

Let's go to your lathe. Please arrange for one reducer housing on the spot.

Sir, the lathe is kept under a temporary shed. There is no light there. Can you not do this someday next week Sir?

No, we took three hours to reach your TPS to-day. I hear that this traffic jam is the beauty of this place. I am having breathing difficulty, you have seen I have used the asthma inhaler already twice here. I don't like to go through the ordeal again. You better arrange for a handlamp, this you must be having.

The machined outer surface of one of the bores is held against the faceplate fast on the lathe. The outermost end of the hole on the other side is centered with the help of the marking block rotating the faceplate manually. Now the pointer of marking block is moved axially along the bore length. On rotating the faceplate the pointer vibrates with rhythmic sound; this shows that the bore is not square with the machined face of the bore. We check a number of bores, the result is similar. This indicates misalignment. This testing is very crude though. The pattern of wear on the gear teeth suggests misalignment also.

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It's already past 8.30 in the evening. Is the car ready?

Yes Sir, but what's your advice Sir?

You follow the proposed schedule of replacing the lubricant twice as suggested. Then from time to time test the lubricant on glass slide as done. After the first two lubricant replacements, probably you will need topping the lubricant as you are doing now. From oil-smear on glass slide you will have an idea when to change the lubricant fully. Regarding misalignment you can't do anything. The manufacturer of the reducer units will have to be intimidated. You will get substantially improved services from the reducer units by oil check.

Fools rush in where angels fear to trade. Fiscal control is a complex subject. This engineer illiterate under hallucination often thinks himself very cute and intelligent, and therefore, feels entitled to express his meditated views on fiscal control even. Official pronouncement that rupee being stronger adversely affect the country's export perturbs him. One dollar in 1958 was ₹ 3.50, on 26.02.1985 ₹. 7.00 and in 2015 hovers round ₹. 66.00. So rupee has devalued nearly 19 times (1958 as base year) and 9 times (1985 base year). Enough of export boost! Trade deficits are ever on the rise, \$ 200 billion in 2014-15. ***It's hard to digest why a nation with huge trade gap and enormous foreign debt be not pragmatic in fiscal decision!*** Stronger the rupee lesser becomes the foreign loan and trade deficits too; the import cost will be lower; ***only the ones exporting goods using indigenous materials be given matching incentive for export lest they lose the foreign market—this amount will be a fraction of the foreign currency saved.*** IT sectors might have to tighten their noose a bit while submitting global bids.

Another concern of this dolt is what the successive Pay Commission (P.C.) had been recommending; another report is due in 2016. God knows what will be there! Already the **maximum limit of dearness allowance (DA) prevalent in early seventies last has been done away with. And perks in various forms have been gifted.** Result : Upper strata of Central Government employees really know not how to spend. In addition, Central Government goes on ***adding a dose of DA every six months.*** Some state governments have followed suit for their employees while others' performance in this regard is dismal. After all, states can not mint money so to say. And all these hardly cover ten percent of populace. 90 percent populace is beyond the purview of P.C.? Do they not purchase the daily necessities of life from the same market?

My wife asks me what I am writing so attentively. I tell her the gist.

Her sharp reaction, You are also benefitted.

Yes, to some extent.

Now I get you, she says, if you got the benefit to full extent, your pen won't have been vocal.

From the President

You all are opportunists.

She focuses on my beast; its pulse rate I count, it's 85, 13 notches higher than normal. Am I hyper normal! I am confused and stop writing.

The MNC Director comes to me few days after our site visit. I tell him our observations.

He says, Do you think by changing the lubricant as you have suggested, there would be improved performance of the reducer units?

There will be some positive change no doubt, after all you will get the data from your site office.

Professor, do you think the design is O.K?

No idea.

Then why not vet the design of reducer unit?

No problem, but you have to give us the design calculations then.

Oh yes, I will instruct our designer accordingly.

So, a good sum is deposited to the university.

After about 10/15 days, their designer comes to meet me.

What a wonder! He is my ex-student. He has brought a few computer print-out.

What's it?

Design calculations, Sir.

No sketch even, only some numerical figures.

Look Swapan, we want the design calculations in full.

Then, Sir, we will write to our principal at U.K., since they have designed it. Sir, the computer sheets I have will not serve your purpose?

Swapan, is the design I have taught you was of this nature? Look, **man designs, he feeds so many data** to the computer. So the designer must have the long hand design calculations which we need for vetting the design.

The long hand calculation never reached us even in six months. Since I was to retire shortly, I wrote to the director narrating the whole episode. Hope our suggestion during the site visit would significantly improve the performance of the gear units.

That the steps yielded very good result came to my knowledge from the engineers working in the TPS who participated in different training programmes even after 3/4 years. Eventually I used to run training programmes on different aspects for the engineers of the said TPS as also their other sister TPSs.

May be alignment of the gears has been improved by better machining; also who knows, the design of the reducer unit has been changed in the mean time.

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By nature I am an optimist, but now-a-days pessimism flashes in my mind; I become morose. With young India I have very high hopes, but now it seems also meandering. Long spell of British rule here survived by effective deployment of 'Divide and Rule Policy (DRP) and Indian administrative wheels role on with the DRP wedge in all spheres of society with more vigour. Result, indiscipline in all walks of life. The country has been divided based on religion once and we are still savouring (!) sour grapes. No lesson has the power to educate us! We are ever on the process of splitting the states, who knows in not so remote future whether states would give birth to *Native States* as existed in pre-independence days. Is there any conclusive evidence that by the creation of so many states the lives of the general people have improved? Upper administrative plush posts are created no doubt.

Government requests the general populace to forego different types of subsidies to enhance the entitlement of the ruling class, as if.

After 68 years of independence no governments even endeavoured to frame a national wage policy, not to speak of retirement (eg. pension) policy. Whatever has been done, it is piece meal only, that too for government and public sector employees; 80 to 90% of the working class is made to mend their own.

All are not economist by training. Necessarily that does not debar a man to express his opinion about country's economy. India's economy does not project its bright prospect when the trade gap is ever on the rise from year to year. God forbid, let bankruptcy befall not on the whole nation. But the Almighty Himself will fail to stop it in the face of governments yielding always to the pressure for **crass** populism. All governments are only interested for power-cake, the welfare of the nation is relegated to their oratory lectures.

Last but not the least is to seriously consider whether budget sessions in the Parliament and the State Assemblies with so much secrecy and fun fare be made OPTIONAL!

Probably more next time. My deep appreciation for your going through this trash, and greetings to you all for festivities and New Year, 2016.

07.09.2015

Sd/- Engineer Illiterate

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Once more I convey my greetings to all of you.

21.09.2015

Sincerely yours
Sd/- Madhusudan Bhattacharyya