G. H. RAISONI INSTITUTE OF ENGINEERING AND TECHNOLOGY, NAGPUR

DEPARTMENT OF ELECTRICAL ENGINEERING

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A monthly newsletter of Electrical Department for Institute Friends, Patrons, Mentors and Alumni….

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Electrical Department News

One week Short Term Training Program was organized by Electrical Engineering Department of GHRIET on **"Advance Applications of Power Electronics and Drives"** from 15th-19th Nov. 2016. The Inauguration program on 15th Nov. 2016 was graced with the presence of chief guest Dr. H. M. Suryawanshi, EEE Dept.,VNIT , Guest of Honour Shri. Milind A. Pathak, Hon. Secretary, IEI, Dr. K.K. Dhote, Exe. Director, RGI, Dr. M.B. Daigavane, Principal, GHRIET and Prof. M J Katira, Dean Academics, HoD Electrical and Convener of the program. After the auspicious Lamp Lightening Ceremony,

Principal Dr. M.B. Daigavane, Shri. Milind A. Pathak, Dr. K.K. Dhote addressed the faculty members and participants, it is followed by the Key Note Address by Dr. H.M. Suryawanshi on "High Step Up Converter". The program ended with the vote of thanks by Mrs. Shweta Rajurkar, Coordinator of the program. Further sessions were on "DC-DC Converter" By Dr.D.R. Tutakne, GHRCE and on "Electric Springs-New Smart Grid Technology" By Dr. Snehal Gawande, YCCE.

Second day (16th Nov) full day session conducted by Prof. B.V.S. Raghava and Prof. Sumon Dhara, GHRCE on "MATLAB Applications in Power Electronics" & "Matrix Converter". In this session various power electronics simulation examples were discussed with hands on practice.

Shri. Suhas Harisangam & Mr. Atul Ghumade from M/s Arav Systems Pvt. Ltd. were invited for 3 days (17-19 Nov) session on Labview. They mainly focus on Labview graphical programming, Power Electronics based Examples on Labview, Practical example of controlling AC drive with Labview and Demonstration of Motor Speed Control using Hardware with hands on practice.

One week STTP program ended with the Valedictory Function. In this program Dr. Achal Shahare, Chief guest, GHRAET and Dr. M.B. Daigavane, Principal, GHRIET distributed certificates to all the participants. From the feedback and overall response of the participants, the program was a grand success.

Ms. Mohini Moitra anchored the whole STTP program. The whole event was planned and organized by Convener, Prof. M.J. Katira and coordinated by Prof. Shweta Rajurkar under the guidance of Dr. M B Daigavane, Principal, GHRIET.

35 Easy Ways To Stop Global Warming

Here are 35 common sense, yet practical and easy ways to stop or prevent global warming

1. **Replace Regular Incandescent Light bulb:** Replace regular incandescent light bulb with compact fluorescent light (CFL) bulbs. They consume 70% less energy then ordinary bulbs and have longer lifetime.
2. **Drive Less or Carpool:** By driving less you are not only saving fuel but also helping in reducing global warming. Also, look out for other possibilities, for e.g.: car pooling. If you have colleagues who live in the same area then you can combine trips. If you need to go to a local market then either walk or go by cycle. Both of them are great form of exercise. The biggest pollution emitting fumes are caused by oil and gasoline. Cutting down consumption, is a huge step to reducing energy wastes.
3. **Reduce, Reuse, Recycle:** Reduce your need to buy new products or use less, resulting in a smaller amount of waste. Even if you need to buy, consider buying eco-friendly products. It is most effective of the three R's. It simply says cut back from where are you now. Reuse bottles, plastic containers, and other items bought at the grocery store. Reusing water bottles, yogurt cups, bread ties, and other items is being conscious about what is already out there. It will lessen having to purchase other items that would fulfill the same function. Try to use the disposable products into some other form. Just don't throw them away. Recycling unwanted paper, bottles, etc…is a great earth saving tip. If possible, upcycle tables, furniture, and other outdated items to keep landfills clean. You can recycle almost anything for e.g.: paper, aluminum foils, cans, newspapers. By recycling you can help in reducing landfills.
4. **Go Solar:** Many people have caught the energy efficient band wagon of solar energy. Having solar panels installed is something readily possible and available. Incentives and discounts given by government agencies and energy companies make solar energy something to look into.
5. **Buy Energy-Efficient Appliances:** Always buy products that are energy efficient as they can help you save good amount of money on your energy bill. Energy-efficient products can help you to save energy, save money and reduce your carbon footprint.
6. **Reduce Waste:** Landfills are the major contributor of methane and other greenhouse gases. When the waste is burnt, it release toxic gases in the atmosphere which result in global warming. Reusing and recycling old items can significantly reduce your carbon footprint as it takes far less energy to recycle old items than to produce items from scratch.
7. **Use Less Hot Water:** Buy energy saving geysers and dishwasher for your home. Avoid washing clothes in hot water. Just wash them in cold or warm water. Avoid taking frequent showers and use less hot water. It will help in saving energy require to produce that energy.
8. **Avoid Products With Lot of Packaging:** Just don't buy products with lot of packaging. When you buy such products you will end up in throwing the waste material in the garbage, which then will help in filling landfill sites and pollute the environment. Also, discourage others from buying such products.
9. **Install a Programmable Thermostat:** A programmable thermostat doesn't cost much and its cost can be recovered from the amount that you save by reducing energy. The easiest and most cost effective advice is simply adjusting your thermostat up 1 degree down in the winter and up by 1 degree in the summer. Lower your thermostat 2 degrees in the winter. Instead of making your home a burning furnace, try putting on extra layers.
10. **Turn Off the Lights:** Duh! If you're not using a room, there's no need for the light to be on.
11. **Turn off Electronic Devices:** Turn off electronic devices when you are moving out for a couple of days or more. Unnecessary usage of electronic appliances will not only save fuel i.e. coal by which we get electricity but also increase the lifetime of your gadgets.
12. **Plant a Tree:** Planting trees can help much in reducing global warming then any other method. They not only give oxygen but also take in carbon dioxide, during the process of photosynthesis, which is the main source of global warming.
13. **Use Clean Fuel:** Electric, smart cars, cars run on vegetable oil, etc…are great examples for using renewable energy. Supporting companies that provide these products will help the rest of the mainstream manufacturing companies convert over.
14. **Look for Renewable Fuel Options:** If you can't afford an electric car, buy the cleanest gasoline as possible. When car shopping, look at the benefits of options that provide renewable fuel. Although it may be a pretty penny now, you're on the ground level of forward thinking.
15. **Save Energy:** When you consume less, the less carbon dioxide is released into the atmosphere. Setting your thermostat using your smart phone or changing the type of light bulb you use is a great start.
16. **Replace Filters on Air Conditioner and Furnace:** If you haven't, not only are you wasting energy, but breathing in dirty air. Cleaning a dirty air filter can save several pounds of carbon dioxide a year.
17. **Go Green:** Using energy star appliances will not only save money, but also the amount of energy wasted in your home. Have a look at various ways to go green.
18. **Tune Your Car Regularly:** Regular maintenance will help your car function properly and emit less carbon dioxide.
19. **Download Earth Saving Apps:** Apps like Kil-Ur-Watts and Wiser EMS not only help calculate your energy costs, but provide tools and ways to save energy and money.
20. **Conserve Water:** This is a tired tip, but ever so important. If we added up the water wasted by the millions of Americans brushing their teeth, we could provide water to more than 23 nations with unclean, drinking water. Remember, it takes energy to draw and filter water from underground. Taking a quick 5 minute shower will greatly conserve energy. The type of shower head used, will also aid in combating global warming. Take showers instead of baths. Showers use less water than baths by 25%. Over the course of a year that's hundreds of gallons saved.
21. **Stop Idling Your Car:** It might be freezing outside, but

unless your car is buried in snow, start your car as usual. It may take longer to warm up, but the world isn't just about you.

22. **Eat Less Hamburger:** Besides carbon dioxide, methane introduced into the air contributes to global warning. With meat consumed by the seconds, the amount of cows breathing out methane is a huge contributor, thanks to our carnivorous diet and the billion-dollar meat industry.
23. **Use Clothesline to Dry Your Clothes**: Think of your grandmother when you do this. Most clothes shouldn't be put in the dryer anyway.
24. **Eat Naturally:** Not only do the health benefits speak wonders for those who eat naturally, but it cuts down the energy costs used by factories who produce processed food.
25. **Ride Your Bike:** Not only is bike riding, healthy it reduces the amount of CO2 released into the air. Walking is another easy way to reduce global warming.
26. **Use a Kitchen Cloth Instead of Paper Towels:** Paper towels produce nothing but wasted energy. Think of the factory pollution, as well as the tree consumption.
27. **Reuse Towels:** Hang towels to dry, instead of popping them back in the wash after a few uses.
28. **Check Your Tires:** When you drive make sure your tires are inflated properly. If not, then your vehicle might consume more fuel which in turn release more CO2 in the atmosphere. Keep your engine properly tuned and drive less aggressively. Aggressive driving and frequent applying of brakes hampers the engine and can even lower the mileage of your car.
29. **Take Lunch in a Tupperware:** Each time you throw away that brown paper sack, more brown paper sacks are being produced in a factory as we speak.
30. **Wrap your water heater in insulation:** By keeping the energy in the water heater condensed, less energy is emitted into the air. This not only helps the earth, but your pocketbook.
31. **Get Home Energy Audit Done:** Call a home energy audit company and get an audit done for your home that will help you to identify areas that consume lot of energy and are not energy efficient at all.
32. **Become Part of the Global Warming Community:** Connecting with others will help you become more conscious of the impact we all have. The Climate Change National Forum and Global Humanitarian Forum are great avenues to know the latest facts, statistics, and efforts in making a difference.
33. **Actually celebrate Arbor Day and Earth day:** Although most of us hear about these days in passing, see what the buzz is all about. Plant a tree, pick up trash, or join a forum.
34. **Become Aware of Your Contribution:** With technology within your fingertips, finding information about protecting the environment is everywhere. To help emit less CO2, the first step is being aware of how much you contribute.
35. **Spread the Awareness:** Always try your best to educate people about global warming and it's causes and after affects. Tell them how they can contribute their part by saving energy that will be good for the environment. Gather opportunities and establish programs that will help you to share information with friends, relatives and neighbors.

Contributed By Prof. S. A. Rajurkar

Economic consequences of demonetization of 500 and 1000 Rupee Notes

In an important move, the Government of India declared tha the five hundred and one thousand rupee notes will no longer be legal tender from midnight, 8th November 2016. The RBI will issue Two thousand rupee notes and new notes of Five hundred rupees which will be placed in circulation from 10th November 2016. Notes of one hundred, fifty, twenty, ten, five, two and one rupee will remain legal tender and will remain unaffected by this decision. This measure has been taken by the PM in an attempt to address the resolve against corruption, black money and counterfeit notes. This move is expected to cleanse the formal economic system and discard black money from the same. The probable consequences of this decision on various economic variables and entities.

1) **Effect on parallel economy**: The removal of these 500 and 1000 notes and replacement of the same with new 500 and 2000 Rupee Notes is expected to remove black money from the economy as they will be blocked since the owners will not be in a position to deposit the same in the banks, Temporarily stall the circulation of large volume of counterfeit currency and curb the funding for anti-social elements like smuggling, terrorism, espionage, etc.

2) **Effect on Money Supply**: With the older 500 and 1000 Rupees notes being scrapped, until the new 500 and 2000 Rupees notes get widely circulated in the market, money supply is expected to reduce in the short run. To the extent that black money (which is not counterfeit) does not re-enter the system, reserve money and hence money supply will decrease permanently. However gradually as the new notes get circulated in the market and the mismatch gets corrected, money supply will pick up.

3) **Effect on Demand:** The overall demand is expected to be affected to an extent. The demand in following areas is to be impacted Consumer goods, Real Estate and Property' Gold and luxury goods, Automobiles (only to a certain limit) All these mentioned sectors are expected to face certain moderation in demand from the consumer side, owing to the significant amount of cash transactions involved in these sectors.

4) **Effect on Price:** Price level is expected to be lowered due to moderation from demand side. This demand driven fall in prices could be understood as follows: Consumer goods: Prices are expected to fall only marginally due to moderation in demand as use of cards and cheques would compensate for some purchases. Real Estate and Property: Prices in this sector are largely expected to fall, especially for sales of properties where major part of the transaction is cash based, rather than based on banks transfer or cheque transactions.

In the medium term, however the prices in this sector could regain some levels as developers rebalance their prices (probably charging more on cheque payment).

5) **Effect on various economic entities**: With cash transaction lowering in the short run, until the new notes are spread widely into circulation, certain sections of the society could face short term disruptions in facilitation of their transactions. These sections are: Agriculture and related sector, Small traders, SME, Services Sector, Households, Political Parties, Professionals like doctor, carpenter, utility service providers, etc. The nature, frequency and amounts of the commercial transactions involved with these sections of the economy necessitate cash transactions on more frequent basis. Thus, these segments are expected to have the most significant impact post this demonetization process and the introduction of new notes in circulation.

6) Effect on GDP: The GDP formation could be impacted by this measure, with reduction in the consumption demand. However with the recent rise in festival demand is expected to offset this fall in overall impact. Moreover, this expected impact on GDP may not be significant as some of this demand will only be deferred and reenter the stream once the cash situation becomes normal.

7) Effect on Banks: As directed by the Government, the 500 and 1000 Rupee notes which now cease to be legal tender are to be deposited or exchanged in banks (subject to certain limits). This will automatically lead to more amounts being deposited in Savings and Current Account of commercial banks. This in turn will enhance the liquidity position of the banks, which can be utilized further for lending purposes. However, to the extent that households have held on to these funds for emergency purposes, there would be withdrawals at the second stage.

8) **Effect on Online Transactions and alternative modes of payment :** With cash transactions facing a reduction, alternative forms of payment will see a surge in demand. Digital transaction systems, E wallets and apps, online transactions using E banking, usage of Plastic money (Debit and Credit Cards), etc. will definitely see substantial increase in demand. This should eventually lead to strengthening of such systems and the infrastructure required

Contributed By Prof. M. A. Moitra

Bendable Battery May Power Future Wearable Devices, Smartphones

A new bendable lithium-ion battery that can flex and twist could power wearable devices and one day be used to develop a flexible smartphone, according to Panasonic, which is developing the new battery.

Although it's still in the early stages of development, the battery already has been tested to withstand twists, bends and other deformations while maintaining its ability to hold a charge, according to Panasonic. In contrast, a regular lithium-ion battery, commonly used in smartphones and other gadgets, can degrade when it is deformed, thus shortening the device's operating time, the company said.

Lithium-ion batteries can be highly volatile if they malfunction, as was the case with the Samsung Galaxy Note 7, which was plagued by battery problems that caused them to overheat and sometimes explode. Faulty batteries can catch fire when they are overcharged, because the lithium ions can collect in one spot and be deposited as metallic lithium. If this happens, the heat from the overcharging can cause oxygen bubbles to form, which are highly reactive with metallic lithium. If they combine, this can lead to an explosion.

Panasonic's bendable battery uses "a newly developed laminated outer body and internal structure" that the company said makes it difficult for the battery to leak or overheat. With this new casing and internal wiring, the battery is both safer and more reliable for wearable tech devices, the company said.

The bendable battery is just 0.02 inches (0.55 millimeters) thick, and was able to withstand being bent so that the curve of the battery has a radius of 25mm, and being twisted up to 25 degrees in tests, according to Panasonic. The company noted that the capacity of these batteries is still small — they can hold a charge between 17.5 mAh (for the smallest size) and 60 mAh (for the largest). For comparison, the iPhone 7 has a 1,960-mAh battery. Though further development is needed before the battery will be ready for use in smartphones, the invention could be suitable for low-power devices such as smart cards or smart clothing, Panasonic said.

"When used in card devices such as smart cards and card keys that work on batteries, as well as body-worn devices and smart clothing, this battery can retain its characteristics even if the device is frequently bent or twisted," the company said in a statement. Panasonic said mass production will require further product development.

Contributed By Prof. V. M. Lanjekar