



ELECTRICAL

INSTALLATION ENGINEER

NEWS LETTER

TAMILNADU ELECTRICAL INSTALLATION ENGINEERS' ASSOCIATION 'A' GRADE (Regn. No. 211/1992)

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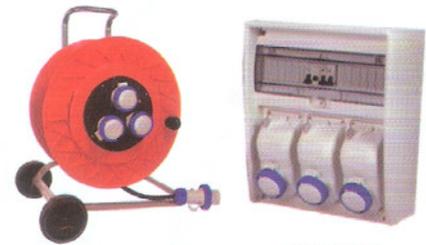
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EVENTS



KELCON Presents Kerala's Biggest Electrical Engineering Exhibition

KELCON -The Kerala state 'A' Grade Electrical Contractors Association ,which came into existence in 1981 is an independent and autonomous association representing the interests of Members driving up electrical industry standards ,ensuring that work carried out by its members is of the highest quality and providing guidance to the Electrical Engineers of the future. AS an apex body of licensed and practicing Electrical Engineers, KELCON dedicates its services to maintain an ethically driven professional environment in the field of electrical engineering.

ELECTRIC WORLD 2015, the largest Electrical Engineering focused exhibition in south India pertaining to generation, transmission and distribution equipment industry.

ELECTRIC WORLD, the flagship event of KELCON is a biennial event in Kerala since 2009. ELECTRIC WORLD is growing with every passing biennial as one stop-shop for electrical equipments and industrial electronics. The participation of professionals, technicians, manufacturers and students community connected with the electrical Engineering industry create awareness to the importance of the power in the day today life of a human being. ELECTRIC WORLD is here to provide an unparalleled marketing, education, and net working opportunities to manufacturers, technocrats & users of the latest product offering in the field of High voltage, low voltage and power electronics.

This year ELECTRIC WORLD 2015 has a unique theme "POWERING AHEAD". Apart from being a marketing promotional exhibition ELECTRIC WORLD also hosts a number of technical and commercial interactions through its finely planned portfolio of concurrent events. It is lesser known fact about ELECTRIC WORLD is that it has chronicles of success stories orally scripted by a vast majority of participants. It has changed the business profile of many exhibitors. It offers opportunities at the every corner; the interaction elevates the understanding of the sector and brings out the spirits of an Engineer in you. The statures of technologists, entrepreneurs and academia have been elevated within a span of 4 days with us in Kochi.

The ELECTRIC WORLD 2015 is being held from February 26 to March 1 2015 at the Jawaharlal Nehru Stadium ground ,Cochin ,South India .

Let us Focus ,Perform and get recognition

' POWERING AHEAD '

EASO JOHN K

(Chairman- Electric World 2015)



Events Profile: The **World Future Energy Summit (WFES)** is the Middle East's largest gathering on future energy and one that drives actionable solutions to the world's energy challenges.

Date: 19th – 22nd January 2015

Venue: Abu Dhabi National Exhibition Centre

Website: <http://www.worldfutureenergysummit.com/>



Events Profile: The seminar is envisaged to strengthen the technological choices and offer the options to empower and utilize existing infrastructure for a result oriented future. In partnership with all stake holders, let us add a Smart Indian Dimension to our future and endeavour to lead the global trend.

Date: 12th – 13th February 2015

Venue: Hotel Le Meridien, Janpath, New Delhi, India

Website: <http://www.meteringindia.in>

EDITORIAL

Dear Members, Fellow Professionals and Friends

Greetings For A Happy And Prosperous 2015!

Happy Pongal!!

The New Year has started with lot of positive signs for a sustained Growth and Development. There has been reasonably Good rains in many parts of the Country including Tamilnadu, which can ensure Good Agricultural Production, with exportable surplus as it has happened in a number of years in the recent past. We have gained the praise of the World for the firm faith in Democracy shown by the people of India, in the past as well in recently held elections in some of the most challenged states, against all kinds of odds. The Programs and initiatives by Government, not only for Economic Growth of India, but also for the Welfare of People and ensuring a Clean India, are all most timely and welcome.

Energy continues to be one of the important issues concerning both the availability and the costs. There was a recent report about Competitiveness which will be decided not only by the cost of labour but also by the cost of Energy. The cost of Energy, as we can understand, is decided not merely by the Unit cost of Energy but also by the quantum of Energy used in fulfilling a particular work or task, culminating into cost of production. This is where the Efficiency comes into play and India still has a long way to go with regard to Efficiency, be it Production or Productivity. Individual operational in- efficiencies culminate into overall in- efficiency and it could sound rather unbelievable that India uses 4 to 6 times more energy per Unit Production of GDP compared to some of the countries like Japan, who have record of Best of Efficiencies and Productivity. In one of the Seminars recently to Celebrate Energy Conservation Day, addressed by the Minister for Electricity, Chief Electrical Inspector to Government and some officials from Delhi, the point of Efficiency was greatly stressed and they made a point that Energy Conservation through Energy Efficiency has a great potential in India and it is rightly considered as the “Fifth Fuel”. The areas available for exploration of Energy Efficiency in our country is very vast, be it cooking fuel usage at homes or in millions of commercial restaurants all over, conditions and nature of roads and driving, Electricity Distribution and End Uses at homes, Commercial Establishments or Industries and many more such areas. Millions could be put at about 100 millions, of Electrical Pumping Sets used in Agriculture, homes, Municipalities and Industries could all be targeted for Efficiency improvements and huge savings of Electrical Energy is possible.

Since passage of Energy Conservation Act in 2001, there have been lot of measures and there is still large scope. A simple approach in any situation of Energy usage is to estimate / examine ‘End Use Efficiency’ and possible improvements.

The Republic Day Celebrations on the 26th January is a reminder for the Great Value of our Independence and our Constitution and our Democracy for which Great Sacrifices have been made by innumerable freedom fighters. Let us again resolve to contribute our might for the safety and prosperity of our Nation.

We thank all those members who have helped us by participating in the advertisements appearing for the issue December 2014 – EA Facilities Services Pvt. Ltd., Power Cable Corporation, Wilson Power and Distribution Technologies Pvt. Ltd., Faith Power Solutions, Ashlok Safe Earthing Electrode Ltd., Power Links, Heat Craft Engineers Pvt Ltd., Abirami Electricals, Max Electric Co., Sivasakthi Electricals, Tandem Enterprises, Pentagon Switchgear Pvt. Ltd., EVR Electricals Pvt. Ltd., Galaxy Earthing Electrodes Pvt. Ltd., The Motwane Mfg. Co. Pvt. Ltd., Supreme Power Equipment Pvt. Ltd., Elmeasure India Pvt. Ltd., Cape Electric Pvt. Ltd., Universal Earthing Systems Pvt. Ltd.

EDITOR

“Knowledge is power and at the end of the day, our health, the health of our children, the health of our community, and the health of Mother Earth is our responsibility. Therefore, it is imperative that we understand the human and environmental affects of the products that we buy.” – OBIORA EMBRY

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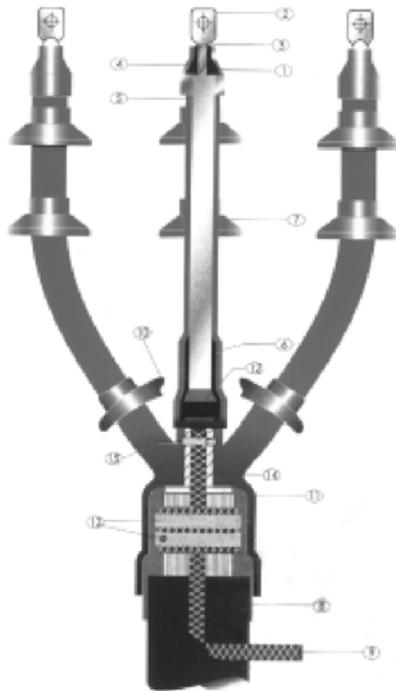
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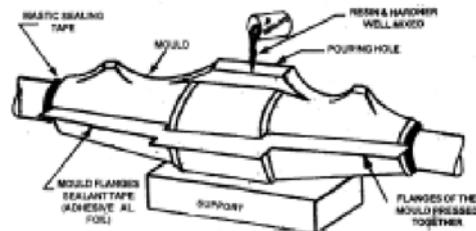
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LI-FI GETS READY TO COMPETE WITH WI-FI

Visible light communications could outshine Wi-Fi in industrial settings

As LEDs become a more common source for room lighting, they're opening a new pathway for linking mobile devices to the Internet, with the potential for wider bandwidth and quicker response time than Wi-Fi. At least that's what researchers such as Harald Haas, chair of mobile communications at the University of Edinburgh, are hoping.

"All the components, all the mechanisms exist already," Haas says. "You just have to put them together and make them work."

Haas's group, along with researchers from the Universities of Cambridge, Oxford, St. Andrews, and Strathclyde, are halfway through a four-year, £5.8 million project funded by the Engineering and Physical Sciences Research Council, in the United Kingdom. They are pursuing ultra-parallel visible light communication, which would use multiple colors of light to provide high-bandwidth linkages over distances of a few meters. Such a Li-Fi system, as it's been dubbed, could supplement or in some instances replace traditional radio-based Wi-Fi, they say. But taking on such a broadly used radio technology is an uphill battle.

At the IEEE Photonics Conference in October, members of the consortium showed off the progress they're making. For instance, the team has used commercially available red, green, and blue LEDs as both emitters and as photodiodes to detect light. By doing that, they created a system that could both send and receive data at aggregate rates of 110 megabits per second. When transmitting in one direction only, they reached a rate of 155 Mb/s.

But Haas says that this version is limited by existing LEDs, and by the use of LEDs as transmitters and detectors at the same time. Members of the consortium, however, have created a better LED, which provides a data rate close to 4 gigabits per second operating on just 5 milliwatts of optical output power and using high-bandwidth photodiodes at the receiver. With a simple lens to enhance the distance, they can send data 10 meters at up to 1.1 Gb/s, and soon they will increase that to 15 Gb/s, Haas says. The 802.11ad Wi-Fi standard for the 60-gigahertz radio band reaches just under 7 Gb/s, so Li-Fi would more than double that rate.

They're also using avalanche photodiodes to make better receivers. In an avalanche photodiode, a single photon striking the receiver produces a cascade of electrons, amplifying the signal. Haas's team at the Li-Fi R&D Centre has created the first receiver chip for Li-Fi with integrated avalanche photodiodes on CMOS. The 7.8-square-millimeter IC houses 49 photodiodes.

Separately, the Fraunhofer Institute for Photonic Microsystems, in Dresden, Germany, had announced plans to demonstrate a Li-Fi hot spot in November (after press time) at the Electronica 2014 trade show in Munich. Frank Deicke, who leads the team developing Li-Fi at Fraunhofer, says that the system would most likely use infrared light and is aimed at industrial users rather than consumers. The hot spot was set to be a point-to-point link with a data rate of up to 1 Gb/s.

"You can have more or less the same data rate as over a USB cable," Deicke says. "That's very challenging for most wireless technologies, like Wi-Fi and Bluetooth." Another advantage, says Deicke, is that the latency of Wi-Fi—the time between when a signal is sent and when it's received—is measured in milli-seconds, whereas Li-Fi's latency is on the order of microseconds. In industrial applications, where data has to flow between sensors, actuators, and a control unit, low latency and high data rates would make Li-Fi useful in places where Wi-Fi is not. "We don't want to replace Wi-Fi," he says. "That's not our goal."

But Deicke says Li-Fi could complement existing communications technologies, including Wi-Fi and gigabit Ethernet. For now, his group is not focusing on combining it with general lighting, as Haas proposes.

A group of European academic researchers and networking companies is aiming for the consumer market, though. The group is working on a project called Advanced Convergent and Easily Manageable Innovative Network Design (ACEMIND) to develop ways to manage local networks in homes and small businesses. ACEMIND includes a number of demonstrator projects to test different technologies, including Li-Fi. Dimitris Katsianis at the University of Athens, who is a participant in ACEMIND, thinks Li-Fi might be in practical use within the next five years. "Li-Fi has the advantage of being useful in electromagnetically sensitive areas such as in hospitals, aircraft cabins, and power plants," he says.

Haas is counting on a much bigger market. He expects LEDs to evolve past just being light sources, much the same way the cellphone evolved from a communications device to a mobile computer. "In 25 years, every lightbulb in your house will have the processing power of your cellphone today," he says. "It will in the future serve illumination as just one of many purposes."

Source: IEEE Spectrum

Energy Conservation is the Foundation of Energy Independence. - THOMAS H. ALLEN

KNOW THY POWER NETWORK - 88

Let me reconnect with you again today. We are experiencing Smartness everywhere and the term “SMART” goes VIRAL in all social media. There are Smart ways to keep physically and mentally fit, Smart ways to make an impressive talk, Smart Diets, Smart Infrastructure and also Smart ways to hack the Smart devices and systems and disrupt their functioning operations (make them inoperative or immobile). *The ability of the “Hackers” (both Nation states and unruly human elements) cannot be fathomed nor under estimated.* In this context, the news item that has appeared in an English daily recently will be of much interest. *It states that Hackers hit “1 in 6” users of Smart phones regularly. It is a routine job for the rogue nations to place stealthy malwares in cyber space and target telecommunication, energy, air transport, hospitality and research sections of the selected countries and utilities.* These malwares have many stages and many stealthy features which can not be easily detected. There have been many high cost breaches of companies and customer information in USA and other countries. I think that this vital information will make you to understand the problems faced in the cyber world and how difficult it will be to “ward off” such threats faced in the “cyber space”. It can be compared to star wars or electronic wars in cyber space which constitutes the main or vital part of Smart Grid and other Smart Devices / systems. As a small deviation now let us turn our focus to some more Smart items like Smart ship, Smart Airport and then our regular topic, “Smart Grid”.

I SMART SHIP - The name of the most high tech and Smart cruise ship ever built in the world is “**quantum of the seas**” and it started its maiden voyage on Nov 2, 2014. Its salient features are,

- 1,68,666 ton vessel
- One among the ten biggest liners that has been ever built in the world
- Many high tech attractions that are new to cruise ships – unprecedented connectivity with boat loads of band width – 500 times more than that available in any other cruise ship
- RFID methods to speed up the boarding processes and also facilitate the guests to track their luggages speedily.
- Worlds first “robotic bar tenders”
- A device to transport the travelers to a height of 300 above the ocean floor, which provides an “**elevated oceanic view**”
- Largest indoor sports and entertainment complex
- Staterooms with virtual balconies, which offer expensive and real time views of the ocean.

The next items that stand in the queue for our view or study is that “**Virtual Airport Control**” and **Smart Grid**.

II A VIRTUAL AIRPORT CONTROL - Half a dozen flights in and out of Ornskoldsvik air port in Sweden will be guided by the virtual controller sitting in another airport, 160 kms away from it. Such an operating method is expected to be on stream in the next few months. Thus Ornskoldsvik is going to be the world’s first remote controlled airport, a kind of Smart airport ever existing in the world.

III SMART GRID - Let us reconnect / link with the portion that has appeared in the last month’s Newsletter. We all know that the Smart Grid consist of a physical grid structure and a virtual cyber network surrounding it. The threat areas faced by the physical part of this grid are well known to all but it is very difficult to figure out the problem areas in the cyber space. It is mainly due to the fact that the problems occur in a virtual space which is not visible to us and also the crisis situation’s appear suddenly without giving any prior information / notice / warning to us. Hence the very high security arrangements in the cyber and communication networks are essential to the existence and the reliable operation of Smart Grid. Lately the response time allowed is only in seconds. Before going deep into this topic, let us view the evolution of the various threats in the cyber space since 1990.

“EVOLUTION OR THREATS IN CYBER SPACE”

S.No	Period	Nature of Threat	Possible Remedial Measure	Time permitted for taking necessary corrective Action
1.	Early 1990s	Introduction of file viruses	Human response	Months
2.	Mid 1990s	Macro viruses	-do-	Days
3.	Late 1990s	E-mail threats	-do-	Hours
4.	2000	Blended threats	Human response is not possible; only the automated response is possible	Minutes

S.No	Period	Nature of Threat	Possible Remedial Measure	Time permitted for taking necessary corrective Action
5.	2003	Warhol Threat	Automated response is required	Minutes
6.	Late 2000 (Beyond 2003)	Flash Threats	Proactive blocking is the only possible method of protection	Seconds / Instant action

Most of the electrical networks in India use their own telecommunication system like carrier communication, fibre optic links and micro wave links, in addition to the links provided by other agencies. These communication links are used for controlling major power station and sub stations. Increased use of electronic control and automation systems are widely prevalent. All these demand necessary operational security in these systems. Mostly these systems contain a complex network of sensors, automated and manual controls, which are tied together through communication systems. Any activity like spoofing, jamming or wrong commands that impact / disrupt the correct operation and the sensors and other related components will cause major havocs and also leads to black outs and high cost physical damage to key systems components like generators and transformers. Hence the communication systems that facilitate all control actions need a special focus. This assumes greater significance when the communication links are not completely under the control of the operating utility. It occurs when some other agency owns and operates the communication networks. So when you go for Smart Grid operations it is preferable for your organization that own and operates the power plants, SCADA (Supervisory Control and Data Acquisition) or any energy management systems to own the related communication links also. Other wise, the security of the Smart Grid will be compromised; it will be beyond the control of the utility running it and many insecure path ways and threats will be created. The central point that is stressed in this regard is that there should not be any interdependence of these links and if any such dependence exists, then it will be the opening for failures at any time. In our country Smart Grid is yet to take deep roots. So far so good. We get adequate time to prepare ourselves for facing the threats in the cyber space of the grid boldly and to ward them

off successfully. In this context, it is opt to view the role of insider or human operators in causing the crisis situations in the Smart Grid. Though many of the operations in this grid are “automatic”, it is the human operators in the system control centres ultimately make the final decisions and control the operations of the system. The human errors and the insecure codes in the controls can always bring the crisis situations. To cite an example, the “Trojan horse” embedded in the soft wares of the control centres can always bring havocs at any time. So the reliability of human operators and the computer soft wares should be at the highest level. Simply put the Smart Grid system should be designed and operated in such a way that it will always be able to resist the attacks either on its physical structure or on its cyber assets by promptly identifying and responding to the disruptions caused by sabotages, natural causes, Human Errors and other factors.

Let me sign off here.

(To be continued...)

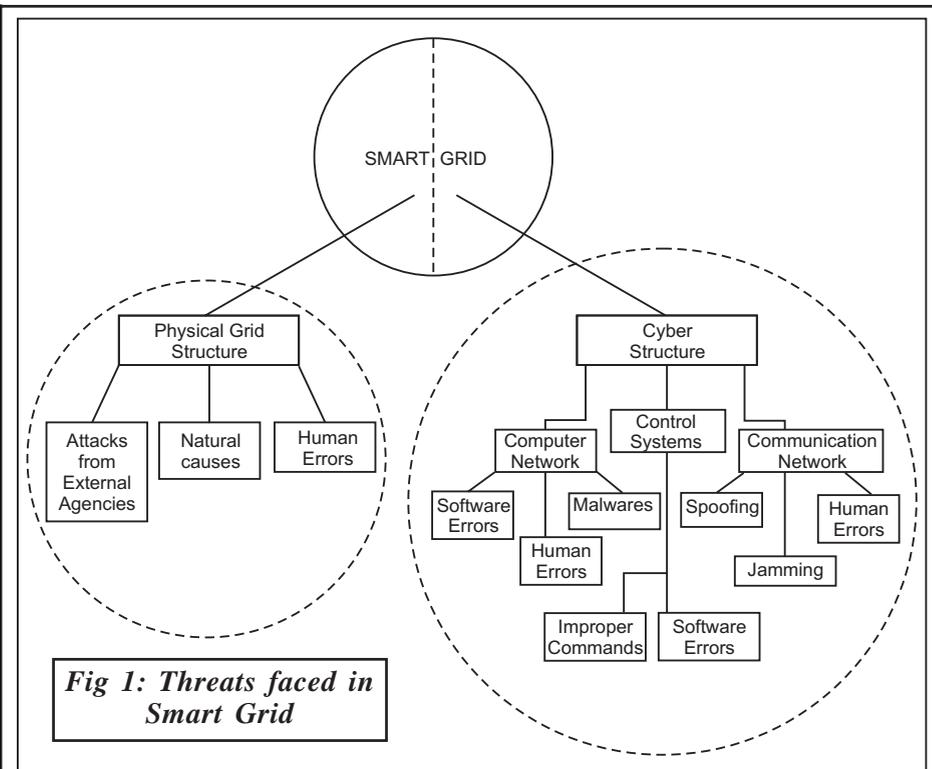


Fig 1: Threats faced in Smart Grid



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MIGRATION MERITS PLACE IN MAINSTREAM OF CLIMATE DEBATE

Among all the statistics about temperature increase, polar melting and sea level rise associated with a warming world, the impact on hundreds of millions of people forced to leave their homes due to climate change is often not fully considered.

But the International Organization for Migration (IOM), an intergovernmental body set up in the early 1950s to help resettle an estimated 11 million people made homeless in the aftermath of World War Two, is making new efforts to put questions of migration at the centre of the climate change debate.



Forecasts for the number of people who will be forced to move due to climate change vary considerably. At the top end of the scale, there are estimates that up to one billion environmental migrants could be created by mid-century.

The IOM is trying to bring together the various data and research on migration and climate change to better understand the issue, and has recently launched a website dedicated to the topic.

Environmental factors

As part of a new research programme, IOM will initially examine how environmental factors influence migration patterns – and impact on overall policy making – in six countries: Vietnam, Papua New Guinea, Kenya, Mauritius, the Dominican Republic, and Haiti.

The link between environmental change and migration is complex. Better educational possibilities elsewhere – or the lure of jobs and wages – are often primary reasons for people leaving their homes. Often changes in climate – leading to floods or droughts, and resulting in decreasing crop yields – are just one added factor driving migration.

Migration can be one way people find of adapting to climate change. The IOM says: “Migration in the face of global environmental change may not be just part of the ‘problem’, but can also be part of the solution”.

The six-country study, funded by the European Union, will involve household surveys in places of origin and of destination. The aim is to determine to what degree climate change encourages migration, and also to assess whether migration is a positive or negative factor in the adaptation process.

Remittances to families left at home might be used to build more resilience to climate change – for example, money sent back to villages might be used to buy seeds that are more resistant to drought or flood. On the other hand, migration can mean that farms are left untended, with fewer crops harvested.

The headlines often portray migration in terms of large movements of people across borders, but the bulk of migration takes place within countries – from rural to urban areas. More than 50 per cent of the world’s population now lives in cities.

Environmental migration can be slow to build up as land becomes degraded, soil fertility decreases and water availability shrinks.

But migration can also happen over a relatively short period of time. In China, in a little more than a generation, more than 250 million people have moved from the countryside to cities “mainly in search of work” in what is the biggest mass movement of people in history.

The IOM seeks to integrate climate change factors into migration management and policy making – and wants greater consideration of migration in climate change negotiations.

Legal status

Among the questions it is raising is how environmental migrants should be classified under international law – and whether they should be given the same legal status as, for example, refugees from conflicts and war.

Back in 1990, when the Intergovernmental Panel on Climate Change made its first detailed assessment of the threat posed by global warming, it said: “The gravest effects of climate change may be those on human migration”.

Over time, a lack of research and absence of data on issues linking climate change with the movement of people has meant that the topic has become sidelined in successive climate negotiations.

Among the projects the IOM has been working on is an Atlas of Environmental Migration.

“There are no reliable estimates of climate change-induced migration,” the IOM says. “But it is evident that gradual and sudden environmental changes are already resulting in substantial population movements”.

ELECTRIC CYCLE

He admitted that he finds traditional electric bikes ugly, and began wondering if it would be possible to cycle entirely on solar energy.



‘Some solar bikes were available, but they all used a large trailer for the solar panels and I wanted my bike to be handy in traffic and effortless to ride, even in the absence of sun,’ continued Mr. Van Dalen.

‘I imagined how great it would be to cycle just on solar energy without pedalling - just like sailing in the wind’.

‘People in my field all said that a bicycle on solar energy was not possible but that didn’t put me off, in fact it encouraged me to develop the solar bike’.

The handmade bike has been patented and will be tested to enter the Guinness World Records next summer.

Only 50 of the bikes will be built and sold, for £80,000 (\$126,000) each.

Mr. Van Dalen taught himself about carbon composites and solar cells since starting the project in 2010.

He experimented with different sized solar panels until settling on some large enough to provide enough energy, but small enough to ride in traffic.

Without pedalling or using the battery, the sun delivers the energy for a speed that averages 14mph (20km/h) but can go faster.

‘This shows how powerful the sun is,’ continued Mr. Van Dalen. ‘The solar panels may seem large at first glance, but the Maxun One is easy to handle in traffic and the solar panels perform particularly well, even on semi-cloudy days’.

‘I always watch out when the weather is sunny so I can ride my solar bike again’.

‘I do find it funny when Japanese people pass by, they say: here they already have solar bikes, which we have not got back home yet’.

Read more: <http://www.dailymail.co.uk/sciencetech/article-2851708/Forget-pedal-power-80-000-electric-bike-fitted-solar-panels-powered-entirely-SUN.html#ixzz3MzlpNp4f>

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CURRENT IN EARTHING SYSTEMS IN THE CASE OF SHORT-CIRCUIT TO EARTH IN A. C. INSTALLATIONS WITH RATED VOLTAGES OVER 1 KV

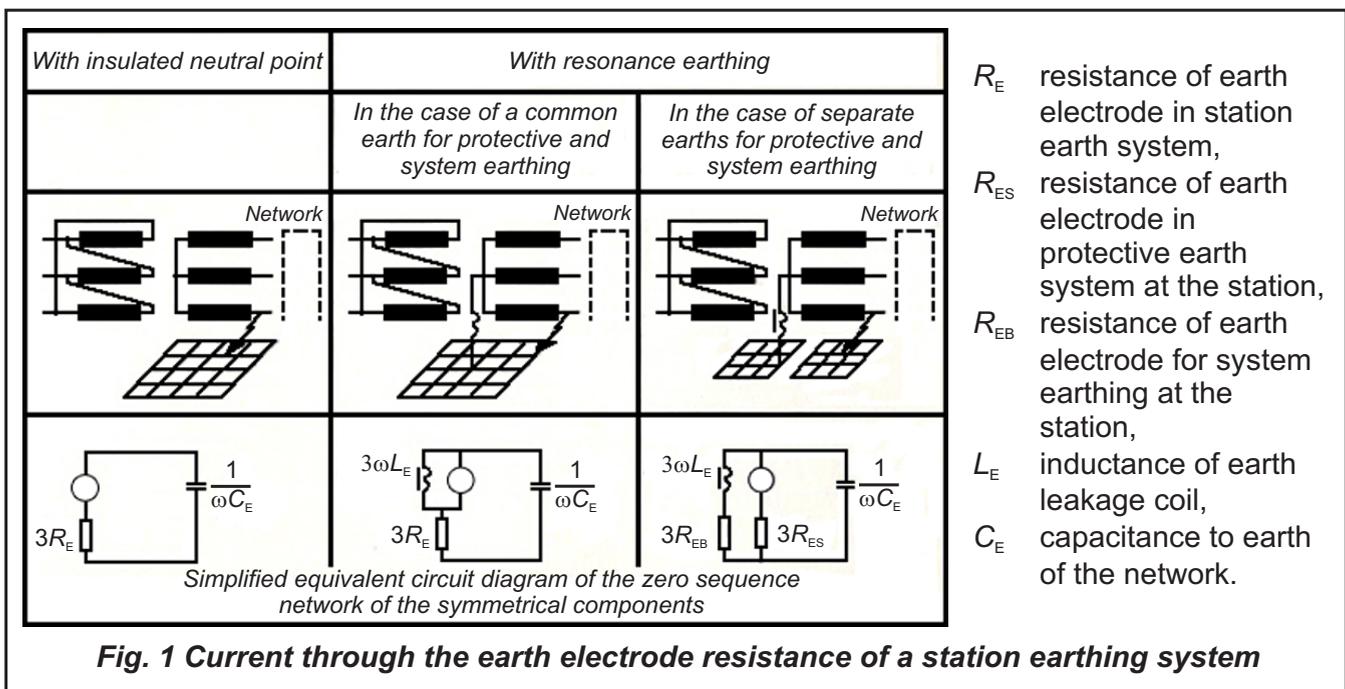
Current in earthing systems of power stations and transformer substations. Installations in networks with insulated neutral point or with resonance earthing. Stations in overhead line networks without earth wires. The earth resistance should be virtually equal to the earth electrode resistance.

The simulated generator in the zero sequence system has in the case of this neutral point treatment approximately the neutral voltage as its terminal voltage. The resultant current causes the earth electrode potential of the protective earthing system to appear across a resistance which consists of three times the earth electrode resistance, $3R_E$ and three times the resistance of the protective earthing system, $3R_{ES}$.

Approximately the same currents occur in overhead line networks with steel earth wires as in networks without earth wires.

For stations in cable networks the earthing resistance of connected metallic cable sheaths (provided that these are connected when the system is operational) is substituted for R_E and R_{ES} . Using the procedure described in the case of the simulated generator, we then calculate the earth electrode potential increased by a factor

($\approx \frac{1}{\text{reduction factor}}$) i.e. allowing a certain margin.



Installations in networks with low-resistance neutral point earthing.

Networks with low-resistance neutral point earthing.

A network has low-resistance neutral point earthing when the neutral point of one or more transformers, neutral point-forming devices or generators is earthed either directly or through current-limiting impedances, and network and protective devices are arranged in such a way that leakage to earth from a main conductor must lead to circuit interruption, wherever the leakage to earth occurs in the network.

The vector sum of the earth return currents of all the lines, leaving the installation, flow through the earth resistance.

This rule applies to faults both inside and outside the installation. The earth return current is in this case the product of the total zero sequence current $3I_0$ of the main conductor and the reduction factor of the line. The zero sequence current is determined by calculation or by measurement on a network model. The product of a reduction factor and the earthing resistance can also be measured.

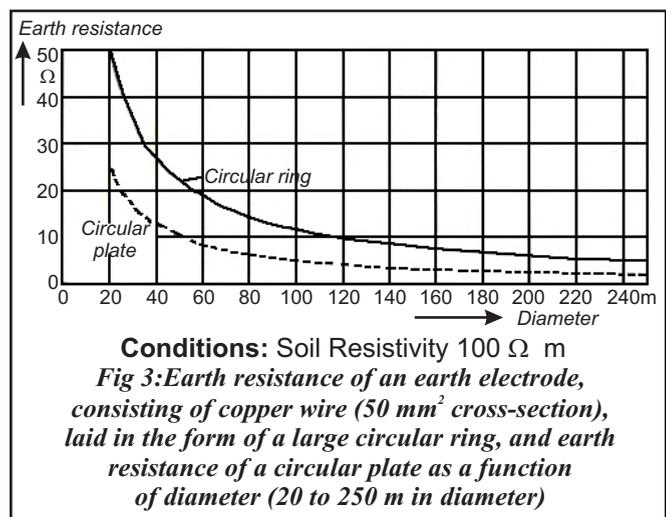
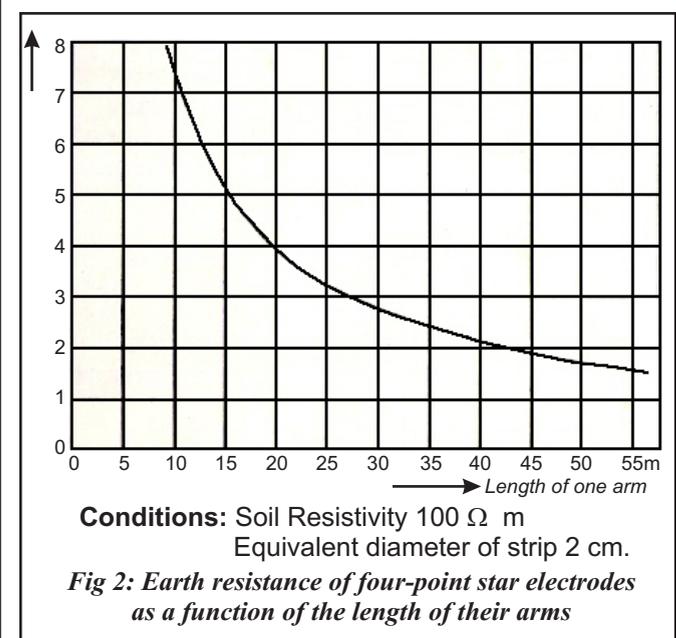
The limitation of fault voltages to prescribed levels is to be aimed at, e.g. within switching substations and in their vicinity.

The voltages occurring in the case of a short-circuit to earth, provided they are not caused by induction, are approximately proportional to the current flowing through the earth-resistance. The maintenance of the permissible voltages can in many cases be achieved by the incorporation of suitable combinations of earth electrodes.

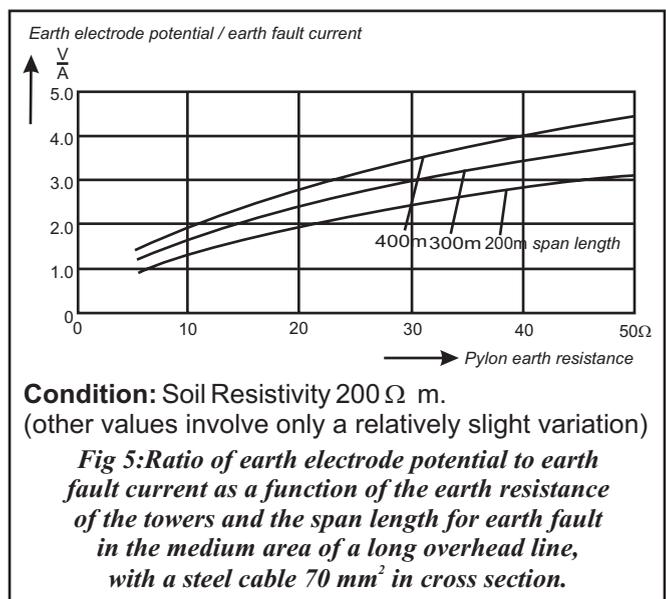
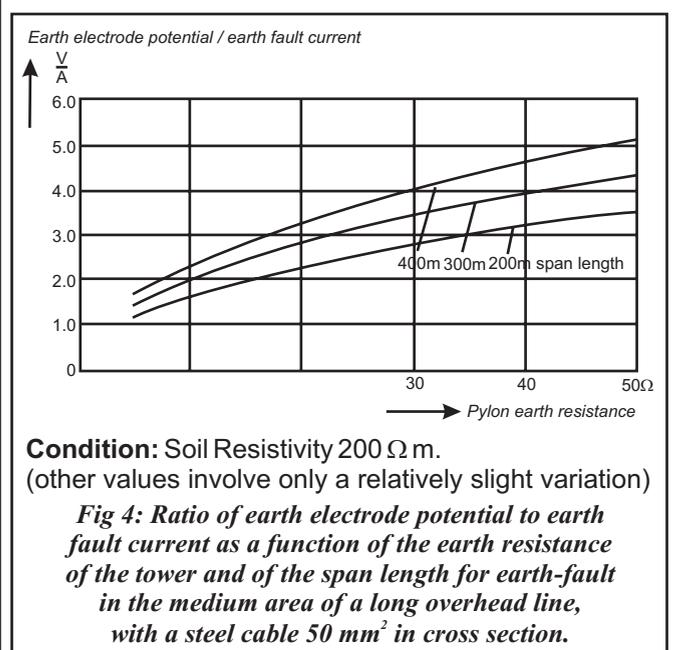
Current in earthing systems of overhead line towers

The earth electrode potential, occurring in the worst case of a fault in the centre section of the line connecting two transformers, can for some of the normal earth wire arrangements be obtained from Figs. 4 to 9 as a function of total fault current, earthing resistance of the tower earthing systems, earth wire cross-section and mean length of the span.

Combined earth plates

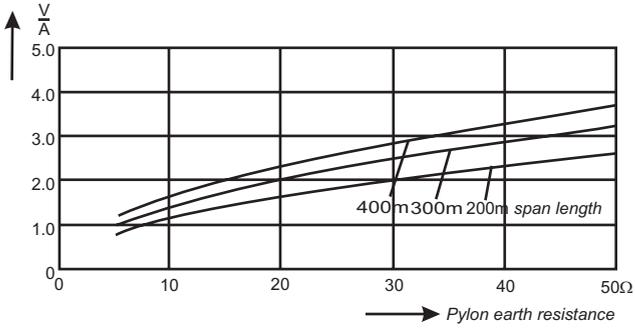


Earth electrode potential of the earthing systems, connected by earth wire, of line towers (pylons) as a function of fault current, tower (pylon) earth resistance, earth wire cross section and mean length of span



Feeling sorry for yourself, and your present condition, is not only a waste of energy but the worst habit you could possibly have - DALE CARNEGIE

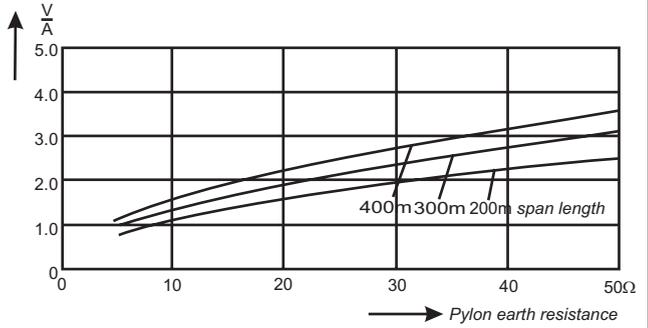
Earth electrode potential / earth fault current



Condition: Soil Resistivity $200 \Omega \cdot m$.
(other values involve only a relatively slight variation)

Fig 6: Ratio of earth electrode potential to earth fault current as a function of the earth resistance of the towers and the span length for earth-fault in the medium area of a long overhead line, with a steel cable 95 mm^2 in cross section.

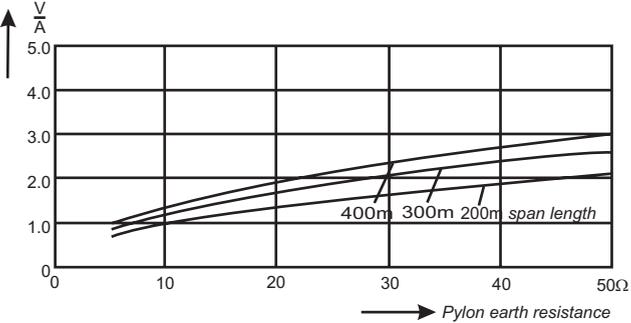
Earth electrode potential / earth fault current



Condition: Soil Resistivity $200 \Omega \cdot m$.
(other values involve only a relatively slight variation)

Fig 7: Ratio of earth electrode potential to earth fault current as a function of the earth resistance of the towers and the span length for earth-fault in the medium area of a long overhead line, with two twin steel cables 50 mm^2 in cross section.

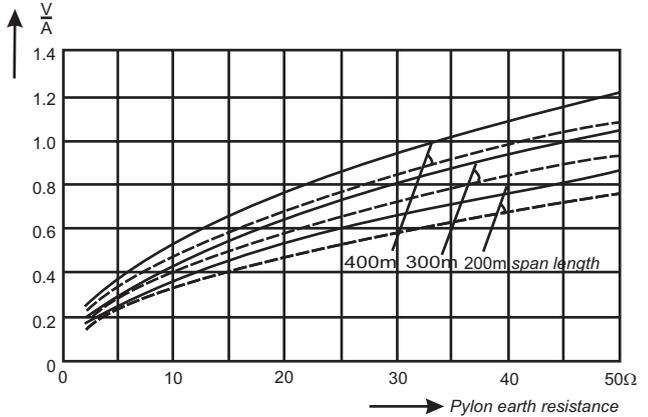
Earth electrode potential / earth fault current



Condition: Soil Resistivity $200 \Omega \cdot m$.
(other values involve only a relatively slight variation)

Fig 8: Ratio of earth electrode potential to earth fault current as a function of the earth resistance of the towers and the span length for earth-fault in the medium area of a long overhead line, with two steel cables 70 mm^2 in cross section

Earth electrode potential / earth fault current



Condition: Soil Resistivity $200 \Omega \cdot m$.
(other values involve relatively slight variation)
— for a 240/40 steel/aluminium earth cable (ACSR),
- - - for two 50/8 or 44/33 steel/aluminium earth cable, located 15m apart

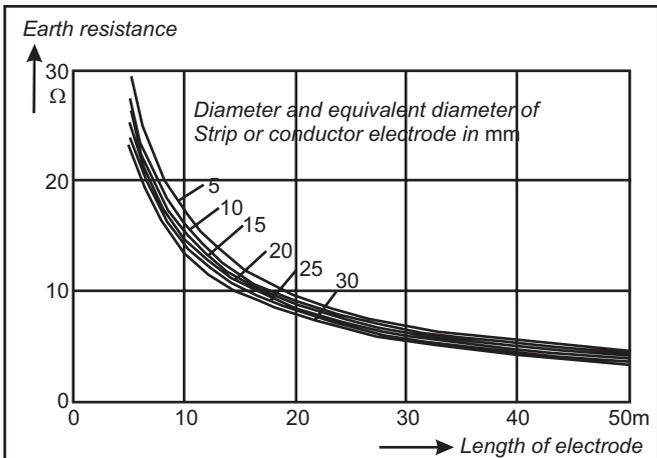
Fig 9: Ratio of earth electrode potential to earth fault current as a function of earth resistance of the towers and span length for the earth fault in medium area of a long over-head line.

Earth electrode resistance

Individual electrodes

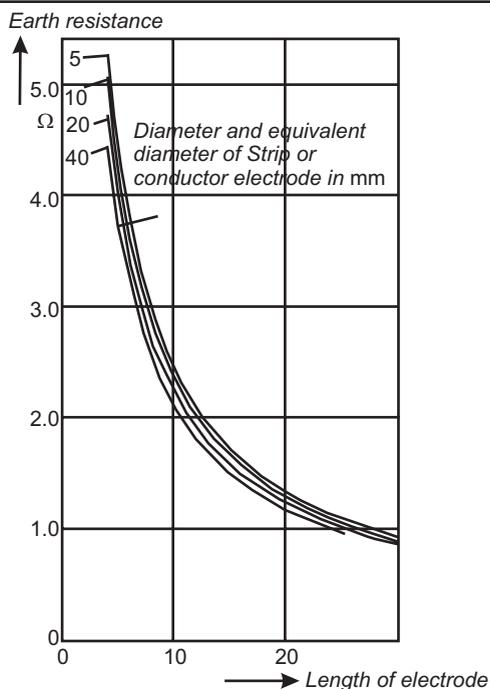
The equivalent diameter for an earth electrode cross-section profile, e. g. a rectangular profile in the case of flat bar-steel, is the diameter of a cylindrical earth electrode, e. g. of wire rod, which under otherwise equal conditions gives an equal resistance.

One of the lessons that I grew up with was to always stay true to yourself and never let what somebody else says distract you from your goals. And so when I hear about negative and false attacks, I really don't invest any energy in them, because I know who I am - MICHELLE OBAMA



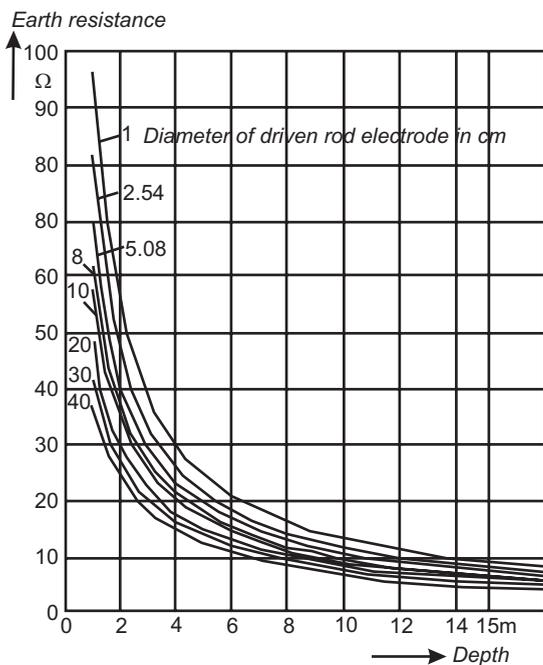
Condition: 1. Soil Resistivity $100 \Omega \text{ m}$.
2. extended laying

Fig 10: Resistance of strip or conductor electrodes of up to 50m length, laid at 0.5 m depth



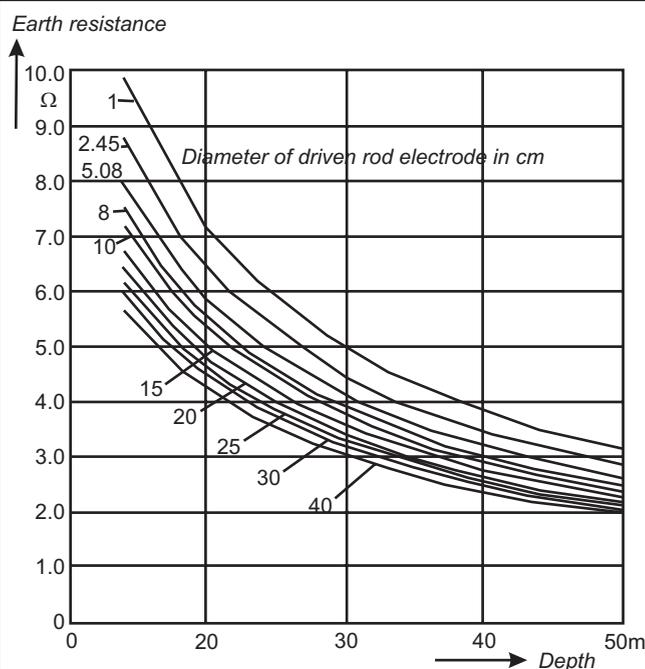
Condition: 1. Soil Resistivity $100 \Omega \text{ m}$.
2. extended laying

Fig 11: Resistance of strip or conductor electrodes of 40 to 300 m in length, laid at 0.5 m depth



Condition: Soil Resistivity $100 \Omega \text{ m}$.

Fig 12: Resistance of driven rod electrodes 1 to 15 m in depth



Condition: Soil Resistivity $100 \Omega \text{ m}$.

Fig 13: Resistance of driven rod electrodes 14 to 50 m in depth

***It is wonderful how much time good people spend fighting the devil.
If they would only expend the same amount of energy loving their fellow men,
the devil would die in his own tracks of ennui - Helen Keller***

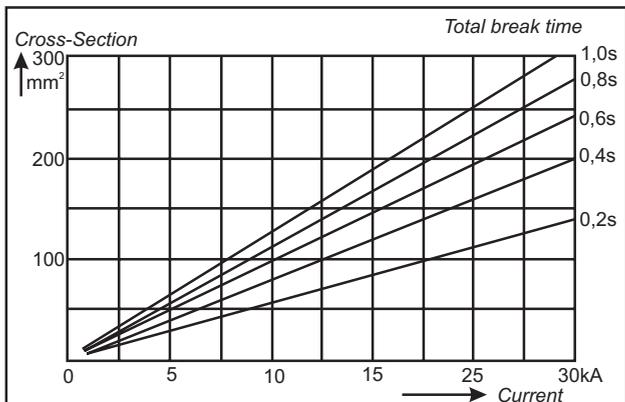
Table 1 - Guide values for the current capacity of earthing-conductors

Cross section mm ²	Continuous current in			Current flow for 1 s in		
	Steel A	Aluminium ²⁾ A	Copper A	Steel A	Aluminium ²⁾ A	Copper A
16	-	-	150	-	-	2 500
25	-	160	200	-	2 700	4 000
35	-	200	280	-	3 700	5 500
50	150 ¹⁾	250 ¹⁾	480 ¹⁾	3 300	5 300	8 000
70	180 ¹⁾	320 ¹⁾	590 ¹⁾	4 700	7 400	11 500
100	240 ¹⁾	430 ¹⁾	780 ¹⁾	6 700	10 500	16 000
200	420 ¹⁾	760 ¹⁾	1380 ¹⁾	13 500	21 000	32 500

¹⁾ Only in the case of flat profiles.

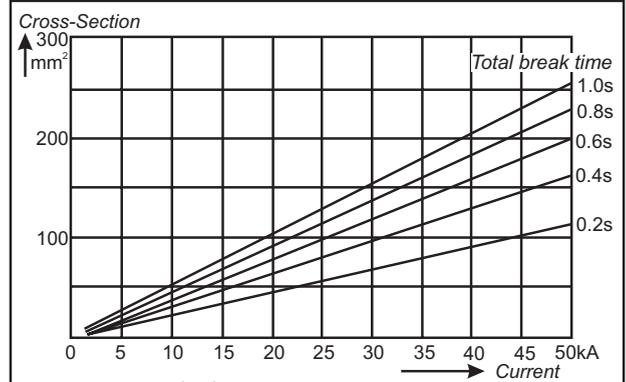
²⁾ Permissible only if for the particular application aluminium is more corrosion resistant than steel and copper.

The data above relate to a maximum temperature of 200°C. An increase in the maximum temperature to 300°C is permissible, provided that no risk of fire occurs as a result; the values should in such case be multiplied by a factor of 1.2.



Conditions: Final temperature 300°C; Temperature at start of short-circuit 20°C

Fig 14: Required cross section of earthing mains of (hotgalvanized) steel as a function of the magnitude of double earth fault current or single-phase short-circuit current and the total disconnection (break) time. Current range: 5 to 25 kA



Conditions: Final temperature 300°C; Temperature at start of short-circuit 20°C

Fig 15: Required cross section of earthing mains of copper as a function of the magnitude of double earth fault current or single-phase short-circuit current and the total disconnection (break) time. Current range: 5 to 50 kA

Courtesy: Electrical Engineering Handbook

TERRA MOTORS UNVEILS ELECTRIC THREE-WHEELER FOR INDIA

Japanese electric vehicle (EV) startup Terra Motors today unveiled its first three-wheeler, to be sold in developing Asian markets as an affordable and environmentally-minded alternative to gas-powered scooters and trikes. Dubbed the R6, Terra Motors' new three-wheeler can accommodate seven people (six passengers and a driver) and travel 100 kilometers on a single charge.

The startup claims that charging costs amount to a mere US\$328 per year. A similar gas-powered three-wheeler, on the other hand, burns through US\$4,307 of petrol annually. These estimates are based on the cost of electricity and gasoline in Delhi, as Terra Motors is targeting the Indian market for the R6's debut. It has set a sales goal of 10,000 units in the country for 2015. According to a Terra Motors statement, at least two other e-rickshaws are in development to compliment the flagship R6.

Tuk tuk-style transportation vehicles are a common sight across South and Southeast Asia. Their compact design allows them to carry just as many (if not more) passengers as a traditional taxi while navigating narrow roads and the region's notoriously congested streets. But idling a gasoline engine during peak traffic is a big source of air pollution – something Terra Motors is passionate about curbing. The R6 has a tight 3.2-meter turning radius and a reverse function for maneuverability – all with zero carbon emissions.

Additionally, the R6 can reach 30km/h and safely climb 10-degree inclines. A lead acid battery provides the power, and it can reach an 80 percent charge in just one to two hours. It even has built-in rain flaps for inclement weather.

Tetsuya Ohashi, Terra Motors' PR manager, tells *Tech in Asia* that the R6 will also be sold in Bangladesh, Sri Lanka, and the Philippines. Pricing has not yet been made public.

Courtesy: Technasia

SWISS RESEARCHERS CREATE ECO-FRIENDLY PLASTIC FROM BIOFUEL WASTE

In a breakthrough that may benefit two different eco-friendly technologies, a group of Swiss researchers has discovered a way to make biodegradable plastic from a pesky waste product of biofuel.

The market for PLA, a form of plant-derived, biodegradable plastic that's already being used in food packaging, is projected to grow from 360,000 tons in 2013, to over 1.2 million tons by 2020. But PLA is derived from plants like corn, sugar and tapioca roots (depending on the region). So making megatons of plant-based plastic might mean setting aside millions of acres of land that could otherwise be used to grow food.

But a group of researchers at the Institute of Chemical and Bioengineering at the university ETH



Zürich, led by professors Konrad Hungerbühler and Javier Pérez-Ramírez, have outlined a new process for making PLA using glycerol, a waste byproduct of biofuel production. According to the work, recently published in the journal *Energy & Environmental Science*, this technique saves energy by using a product that is otherwise commonly disposed of in rivers or fed to livestock (despite concerns over its effects), while also producing 20 percent less carbon dioxide than traditional methods.

Rather than using fermentation to create PLA, as is commonly done, the researchers teamed up with scientists from the university's Advanced Catalysis Engineering group to create a custom catalyst. Made from a microporous mineral, and developed in large part by Pierre Dapsens, a PhD student working with Pérez-Ramírez, the catalyst's structure specifically promotes the desired chemical process.

Of course, with the rising demand for bioplastic, this method wouldn't be all that useful if the amount of available waste glycerol couldn't keep pace. But Cecilia Mondelli, a senior scientist at the Advanced Catalysis Engineering group at ETH Zurich and one of the paper's coauthors, says that shouldn't be a problem.

According to Mondelli, biodiesel production is expected to reach nearly 40 million tons by 2020, and that crude glycerol waste will make up roughly 10 percent of that weight. "For the moment," she says, "all forecasts indicate biodiesel production will increase, and the amount of crude glycerol available will be higher and higher". For any industry to take off, profit is, of course, also important. And the team says that, by lowering costs, their method could increase profits of PLA production by as much as 17 times or more. Merten Morales, a PhD student in the Safety and Environmental Technology group and another of the paper's authors, says beyond profitability, their work provides a framework for those who may want to use this method in a new or existing biorefinery.

"What this scientific publication shows, in general," says Morales, "is the direction to go for [PLA] production, that there is a way, there is an opportunity".

He also cautions that the team's method won't be adopted overnight—at least on a mass scale. He points out that the oil industry took more than 50 years to build massive refineries and that their work is aimed more at showing potential investors that a technology that is green can also be profitable enough to be viable.

Even if the bioplastic market booms thanks to this new method, there will still be a substantial need for petroleum-based plastics for the foreseeable future. PLA (at least in its current form) doesn't handle high temperatures well. So don't expect it to show up in your coffee cup or microwavable food container anytime soon.

Read more: <http://www.smithsonianmag.com/innovation/swiss-researchers-create-eco-friendly-plastic-biofuel-waste-180953582/#SOksAQgWbzBjkOgD.99>

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Avoid fragmentation: Find your focus and seek simplicity. Purposeful living calls for elegant efficiency and economy of effort — expanding the minimum time and energy necessary to achieve desired goals. — DAN MILLMAN

WORLD'S 2ND TALLEST POWER TRANSMISSION TOWERS IN WEST BENGAL

Haldia (WB), Nov 26 (PTI) The world's second tallest power transmission towers, built by Haldia Energy Limited (HEL), has come up in West Bengal.

The 236-metre-long twin towers, located at HEL's 600-MW capacity plant at Haldia and Raichak across the river Hooghly, are the tallest in the country.

Covering a span of 1.5 km, the twin towers weigh 1,800 tonnes. The world's highest transmission tower (370 metres) is located at Mount Damaoshan in China.

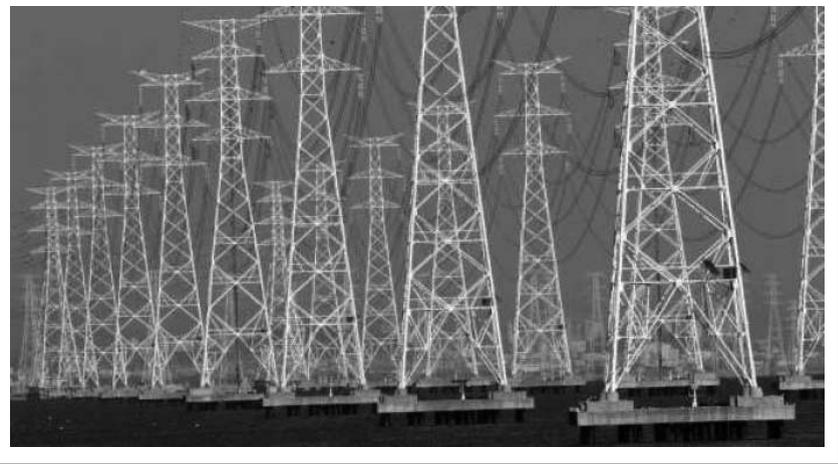
"The power evacuation network is the most sophisticated one. The twin towers are the second tallest ones in the world and the tallest in India. It is something we are very proud of," Sanjiv Goenka, chairman of the RP-Sanjiv Goenka Group, told reporters here today.

HEL is a wholly-owned subsidiary of CESC Limited run by Goenka and the power generated in Haldia would be used to supply electricity in the power company's licensed areas in Kolkata.

Generation of power would begin from next month in the plant. The tallest power transmission towers in India till date were located at Rihand lake in Uttar Pradesh with a height of 185 metres.

Company officials said the towers are designed by Elias Ghannoum, an international expert on designing transmission lines.

The 400 KV twin circuit twin moose transmission line is specially designed to withstand wind force on the conductors as well, as these are in a high wind zone.



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PRODUCT OF THE MONTH

FLIR SYSTEMS LAUNCHES GROUND BREAKING TG165 IMAGING

IR THERMOMETER

Thermal imager and IR spot meter combined for rapid, easy troubleshooting

WILSONVILLE, OR, September 29, 2014– FLIR Systems, Inc. (NASDAQ: FLIR) announced today the release of its TG165 Imaging IR Thermometer, a powerful, affordable, compact tool that lets you see invisible heat patterns, measure temperatures accurately, and conveniently store images and measurement data for reporting.

Built around FLIR's exclusive Lepton® micro thermal imaging camera core, the TG165 eliminates the blind guesswork of troubleshooting by combining a single spot IR thermometer with the power of a thermal camera in a rugged, compact package anyone can use. This unique combination of technologies speeds troubleshooting, making it easy to find invisible hot and cold spots from a safe distance so you can investigate and solve problems quickly.

Fast and easy to use, the TG165 lets you get right to work with no training required. Its dual lasers visually mark the edges of what is being measured and the cross hairs pinpoint the center point of the measurement area. The TG165 is designed to withstand a two-meter drop, making it rugged enough for industrial professionals while offering the simplicity valued by do-it-yourself homeowners.

“The TG165 bridges the gap between current generation IR thermometers that offer no imaging capability, and FLIR's market-leading thermal cameras,” said FLIR President and CEO, Andy Teich. “By leveraging our new Lepton core's revolutionary price, size, and low power consumption, the TG165 transforms one of the most commonly used measurement tools into a discovery device that gives facility maintenance workers, contractors, electricians, HVAC techs, and homeowners greater capability to solve heating and electrical issues quickly and safely.”

The TG165 is priced at Rs. 37999/- plus local sales taxes and will be available at popular industrial test equipment retailers in markets around the world starting in early October. For more information, please visit www.flir.com/tg165.

About FLIR Systems

FLIR Systems, Inc. is a world leader in the design, manufacture, and marketing of sensor systems that enhance perception and awareness. FLIR's advanced thermal imaging and threat detection systems are used for a wide variety of imaging, thermography, and security applications, including airborne and ground-based surveillance, condition monitoring, research and development, manufacturing process control, search and rescue, drug interdiction, navigation, transportation safety, border and maritime patrol, environmental monitoring, and chemical, biological, radiological, nuclear, and explosives (CBRNE) detection. For more information, go to FLIR's web site at www.FLIR.com.



If I were emperor of the world, I would put the pedal to the floor on energy efficiency and conservation for the next decade. — Steven Chu

ENERGY CONSERVATION DAY CELEBRATION 13.12.2014 - MADURAI



From Left to Right:

Mr. S. Ponnambalanathan,
Vice President, Madurai;
TNEIEA

Mr. U. Baskaran, President,
TNEIEA

Er. N. Mohanasundaram,
Chief Engineer, TANGEDCO,
Madurai;

Er. S. Appavoo, CEIG;

Er. P. Palani,
Electrical Inspector, Dindigul



Lighting Kuthu Vilaku by **Er. S. Appavoo,** CEIG



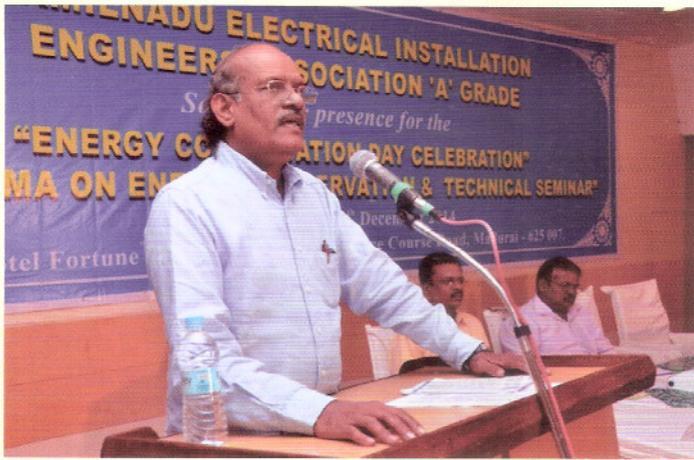
Lighting Kuthu Vilaku by **Er. N. Mohanasundaram,**
Chief Engineer, TANGEDCO, Madurai



Welcome Address by **Mr. U. Baskaran,** President, TNEIEA



Felicitating by **Er. N. Mohanasundaram,**
Chief Engineer, TANGEDCO, Madurai



Key Note Address by **Er. S. Appavoo**, CEIG



Mini Drama by **Er. J. Jayaseelan**, Executive Engineer, Batlagundu, TANGEDGO & Team of Engineers



Honouring **Mr. R. Chandru**, Reactive Power and Harmonics Management, Larsen & Toubro Ltd., Mumbai by **Mr. Suresh**, Jayanth Electricals, Dindigul



Honouring **Mr. V. Venugopalan**, Managing Director, Sri Bhoomidurga Marketing Pvt. Ltd. by **Mr. D. Chandran**, Hopes Engineering, Madurai



GATHERING



Vote of Thanks by **Mr. K. Kannan**, Secretary, TNEIA

UNDERSTANDING CURRENT & VOLTAGE HARMONICS

Current and voltage harmonics are often used interchangeably. At most places, only harmonics is quoted and whether the values pertain to current or voltage is not mentioned. They can be differentiated on how they originate.

Understanding Total Harmonic Distortion:

The current and voltage harmonics in a system are often expressed as Total Harmonic Distortion (THD). The total harmonic distortion, or THD, of a quantity is a measurement of the harmonic distortion present and is the ratio of all harmonic components to the fundamental component. It is given by the formula as under:

$$THD_Y = \frac{\sqrt{\sum_{h=2}^{\infty} Y_h^2}}{Y_1}$$

Where,

Y_1 is the rms value of fundamental

Y_h is the rms value of h^{th} harmonic

Hence, current THD is the ratio of the root-mean-square value of the harmonic currents to the fundamental current.

$$I_{THD} = \frac{\sqrt{\sum_{h=2}^{\infty} I_h^2}}{I_1}$$

Where do current & voltage harmonics originate?

Harmonics always originate as current harmonics and voltage harmonics are the results of current harmonics. Current harmonics originate because of the presence of non-linear loads like variable speed drives, inverters, UPS, television sets, PCs, semiconductor circuits, welding sets, arc furnaces in the system. They act as harmonic current sources.

The resulting current waveform can be quite complex depending on the type of load and its interaction with other components of the system.

The distorted current waveforms can be represented as the sum of current waveform of fundamental frequency and of its multiples (harmonics):

Voltage harmonics do not originate directly from non-linear loads. The current harmonics (distorted waveform) flow through system impedance (source and line impedances) and cause harmonic voltage drop across the impedances. This will distort the supply voltage waveform. Thus voltage harmonics are generated. Long cable runs, high impedance transformers, etc. contribute to higher source impedance and hence, higher voltage harmonics.

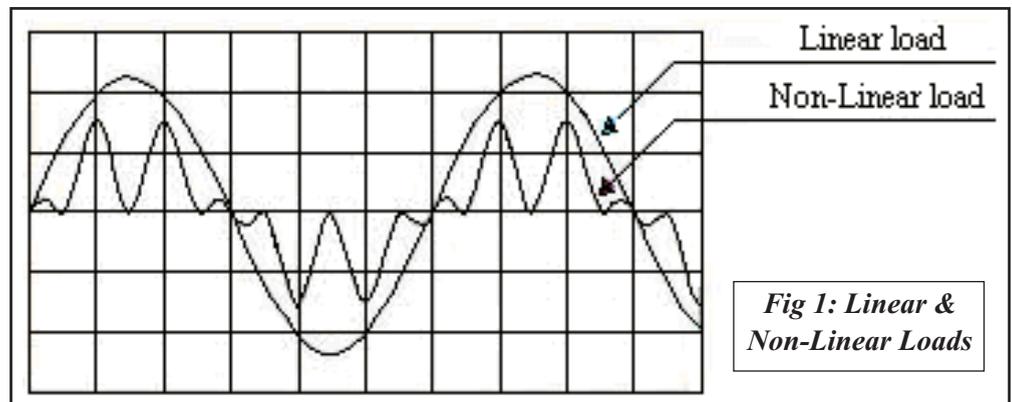


Fig 1: Linear & Non-Linear Loads

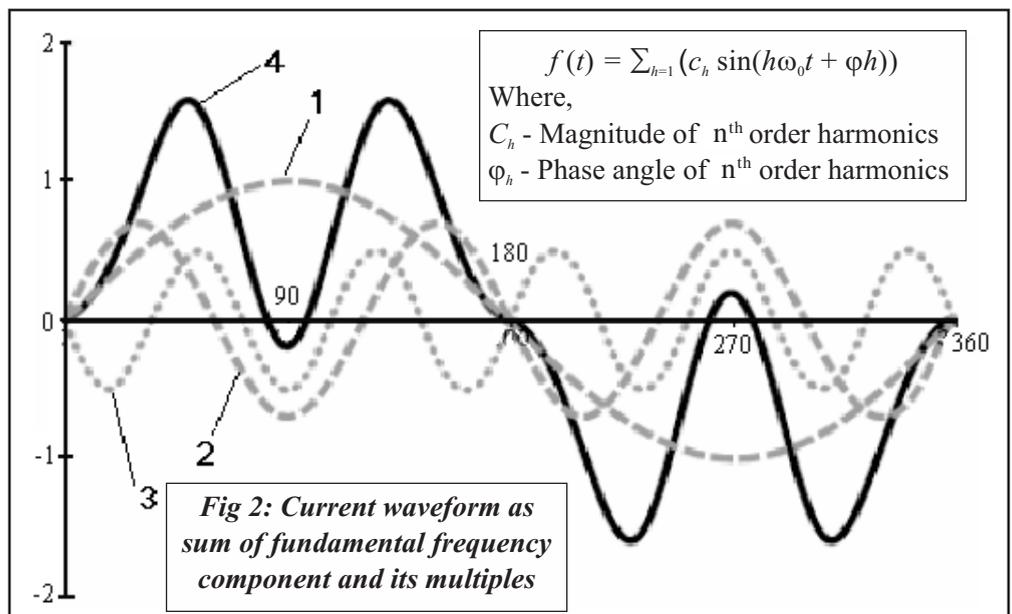


Fig 2: Current waveform as sum of fundamental frequency component and its multiples

A typical power system has the following impedances as indicated in the line diagram:

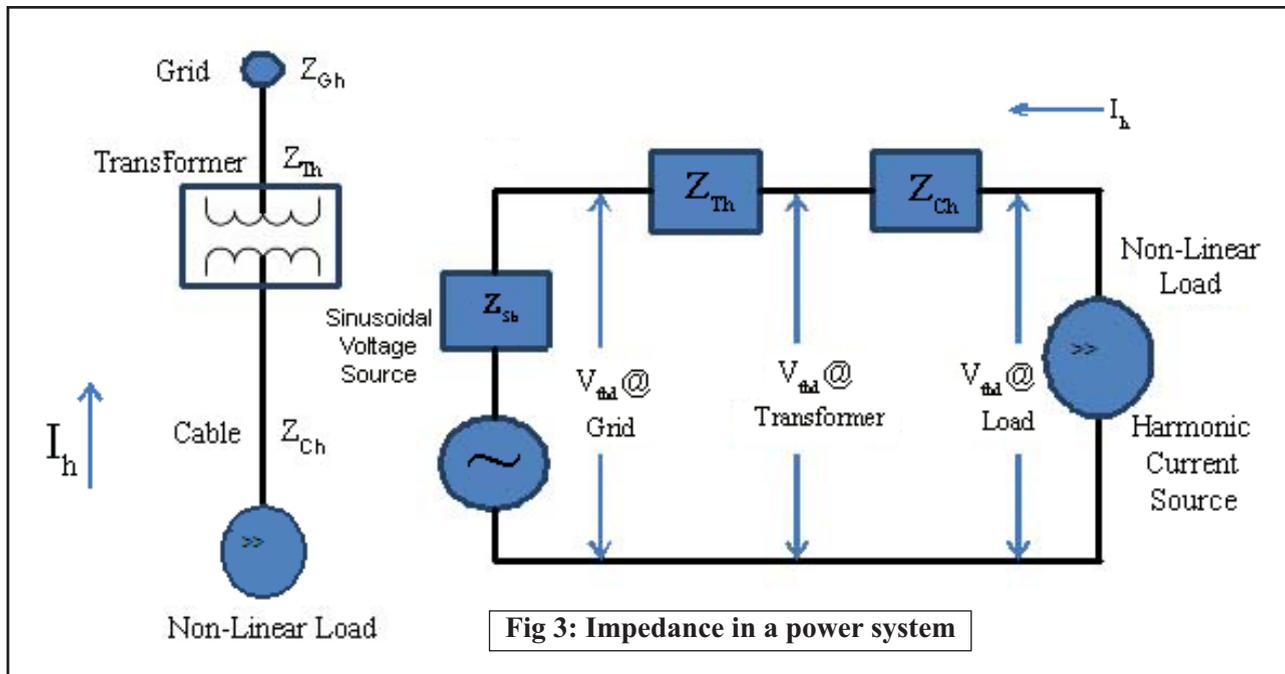


Fig 3: Impedance in a power system

In the above diagram,

$V_h = h^{\text{th}}$ harmonic voltage

$I_h = h^{\text{th}}$ harmonic current

$Z_h =$ Impedance at h^{th} harmonic

$V_{thd} =$ Voltage Total Harmonic Distortion

At load, $V_h = I_h \times (Z_{Ch} + Z_{Th} + Z_{Gh})$

At transformer, $V_h = I_h \times (Z_{Th} + Z_{Gh})$

At grid, $V_h = I_h \times (Z_{Gh})$

Usually, grid impedances are very low and hence, the harmonic voltage distortions are also low there. However, they may be unacceptably higher on the load side as they are subjected to full system impedance there. Hence, it becomes important where the harmonics measurements are done.

However, in case of DG sets, the source impedance is large resulting in high voltage harmonics despite small current harmonics. Thus, a clear distinction between current and voltage harmonics becomes important here.

An industry, say industry A, that has large non-linear loads will generate huge current harmonics in its system. A nearby industry, say industry B, connected to the same grid may not have non-linear loads, yet, it may be subjected to high voltage harmonics. These voltage harmonics are the result of high current harmonics of industry A and impedance of grid & transformer. Thus, industry B despite small current harmonics, has high voltage harmonics. However, if industry B goes for power factor correction, then, due to the presence of capacitors, current harmonics may also appear in the system, magnifying voltage harmonics further.

How do current & voltage harmonics affect the system?

Current harmonics increase the rms current flowing in the circuit and thereby, increase the power losses. Current harmonics affect the entire distribution all the way down to the loads. They may cause increased eddy current and hysteresis losses in motor and transformers resulting in over-heating, overloading in neutral conductors, nuisance tripping of circuit breakers, over-stressing of power factor correction capacitors, interference with communication etc. They can even lead to over-heating and saturation of reactors.

Voltage harmonics affect the entire system irrespective of the type of load. They affect sensitive equipment throughout the facility like those that work on zero-voltage crossing as they introduce voltage distortions.

Understanding IEEE 519 guidelines:

The purpose of harmonic limits in a system is to limit the harmonic injection from individual customers to the grid so that they do not cause unacceptable voltage distortion in the grid. IEEE 519 specifies the harmonic limits on

Total Demand Distortion (TDD) and not Total Harmonic Distortion (THD). TDD represents the amount of harmonics with respect to the maximum load current over a considerable period of time (not the maximum demand current). Whereas, THD represents the harmonics content with respect to the actual load current at the time of measurement.

It is important to note here that a small load current may have a high THD value but may not be significant threat to the system as the magnitude of harmonics is quite low. This is quite common during light load conditions.

TDD limits are based on the ratio of system's short circuit current to load current (I_{sc}/I_L). This is used to differentiate a system and its impact on voltage distortion of the entire power system. The short circuit capacity is a measure of the impedance of the system. Higher the system impedance, lower will be the short circuit capacity and vice versa.

The guidelines IEEE – 519-1992 at PCC level are as under:

Current Distortion Limits for General Distribution Systems (120 V Through 69 kV)

**Maximum Harmonic Current Distortion in % I_L
Individual Harmonic Order (Odd Harmonics)**

I_{sc} / I_L	<11	$11 \leq h < 17$	$17 \leq h < 23$	$23 \leq h < 35$	$35 \leq h$	TDD
<20	4.0%	2.0%	1.5%	0.6%	0.3%	5.0%
20 - 50	7.0%	3.5%	2.5%	1.0%	0.5%	8.0%
50 - 100	10.0%	4.5%	4.0%	1.5%	0.7%	12.0%
100 - 1000	12.0 %	5.5%	5.0%	2.0%	1.0%	15.0 %
>1000	15.0%	7.0%	6.0%	2.5%	1.4%	20.0%

where

I_{sc} = maximum short-circuit current at PCC [Can be calculated as $MVA/(\%Z \times V)$]

I_L = maximum demand load current (fundamental frequency component) at PCC

Systems with higher I_{sc}/I_L have smaller impedances and thus they contribute less in the overall voltage distortion of the power system to which they are connected. Thus, the TDD limits become less stringent for systems with higher I_{sc}/I_L values.

Voltage Distortion Limits

Bus Voltage at PCC	Individual Voltage Distortion	V_{THD}
$\leq 69 \text{ kV}$	3.0%	5.0%
$69 \text{ kV} < V \leq 160 \text{ kV}$	1.5%	2.5%
$> 160 \text{ kV}$	1.0%	1.5%

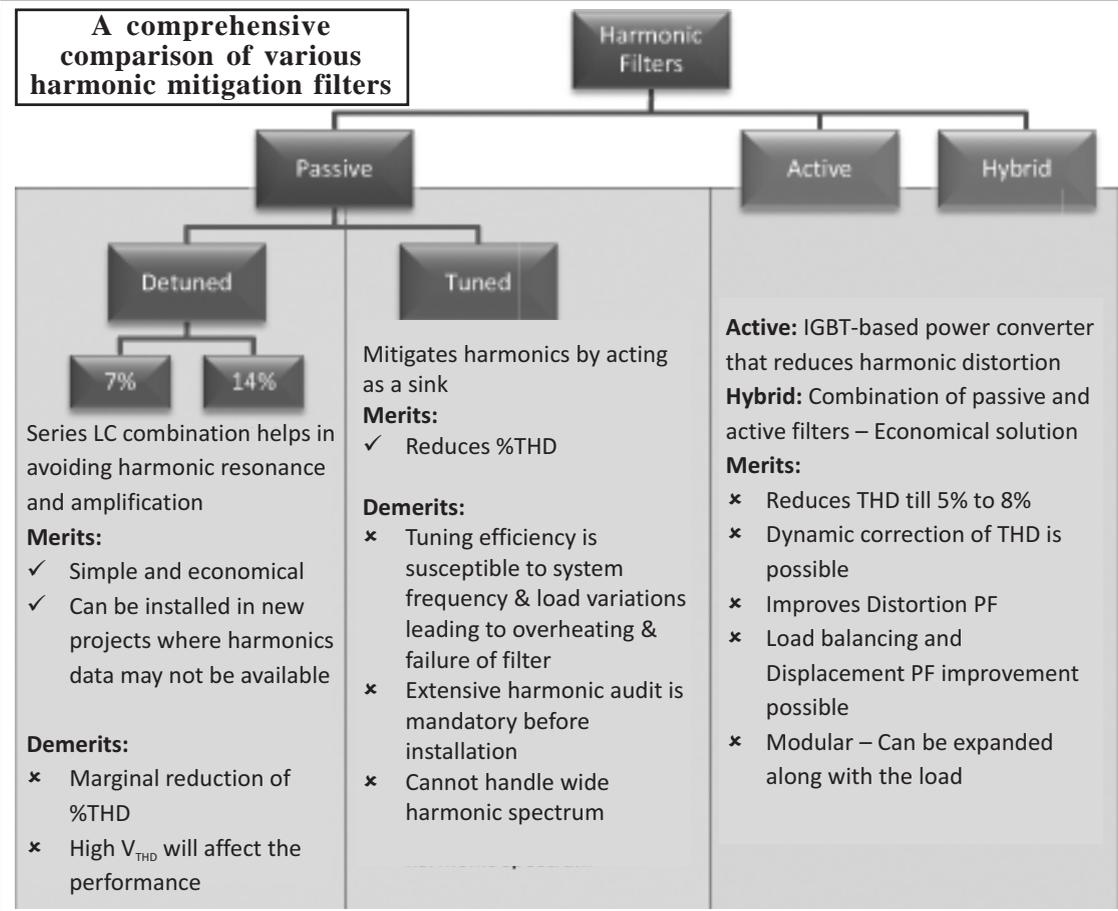
The limits on voltage are set at 5% for total harmonic distortion and 3% of fundamental for any single harmonic at PCC level. Harmonics levels above this may lead to erratic functioning of equipment. In critical applications like hospitals and airports, the limits are more stringent (less than 3% V_{THD}) as erroneous operation may have severe consequences. As discussed already, the harmonic voltage will be higher downstream in the system.

Typical solutions for Current & Voltage Harmonics:

Current Harmonics (I_{THD})	Voltage Harmonics (V_{THD})	Recommended Solutions**
High	High	Detuned Harmonic Filter with 525 V Capacitors and/or Active Harmonic Filter (Hybrid filter)
High	Low	Detuned Harmonic Filter with 480 V Capacitors and/or Active Harmonic Filter (Hybrid filter)
Low	High	Grid may be polluted with voltage harmonics. It may not be possible to reduce them at the load side. Check with utility to rectify.

**These are typical solutions. However the actual solution may vary depending up on the actual harmonic content in the system. Kindly consult experts before deciding on any type of solutions.

A comprehensive comparison of various harmonic mitigation filters



Majority of the energy saving devices are non-linear in nature. Consequently, the problem of harmonics has become inevitable. Advanced devices like active harmonic filter provide an ideal solution to this problem. These filters help in maintaining a stable and healthy power system thereby increasing productivity, efficiency and avoiding the penalties levied by utilities.

*R Chandru, Reactive Power and Harmonics Management
Larsen & Toubro Ltd., Mumbai*

FIRST GREEN BUILDING LAB IN COUNTRY OPENS AT AHMEDABAD TEXTILE INDUSTRY'S RESEARCH ASSOCIATION

The first-ever innovative and green building laboratory in India, IGB Lab, was inaugurated at Ahmedabad Textile Industry's Research Association (ATIRA) campus. The laboratory will be used for testing as well as display of Textile Reinforcement Concrete (TRC).

Textile-reinforced concrete is a type of reinforced concrete in which the usual steel reinforcing bars are replaced by textile materials. Instead of using a metal cage inside the concrete, this technique uses a fabric cage inside the same.

According to experts, TRC is 80% lighter than fiber-reinforced composite (FRC) and stronger. This lab is an attempt to make the builders aware about this green building technology.

The lab has been established with international partners like Instut fur Textiltechnik-RWTH Aachen (ITA), Aachen Germany and German House for Research

and Innovation, along with a Mumbai-based company and CSIR-Structural Engineering Research Centre, Chennai.

“We want to bring TRC to India after years of research. This laboratory will help us convince the architects and builders about the feasibility of TRC. For last 10 years, FRC is being used by builders for constructing green buildings,” said Mohit Raina, Indian coordinator for German partners in IGB lab.

Currently, there is no technology for manufacturing TRC in India as it requires alkali-resistant glass as raw material which is not available in India.

“The glass is used to make warp-knitted structures for TRC and it is available only in Europe and China. The import duty for this kind of glass is 30% in India,” added Raina.

TRC can also be used for curved structures and in comparison to FRC gives extra carpet area to builders.

Courtesy: Times of India

மருத்துவ குணம் நிறைந்த கொய்யாப்பழம்

மிக மிக மலிவான பழம்... ஆனால் பலனோ... அபாரம்... பழங்களிலேயே விலை குறைவானதும், அனைவராலும் எளிதில் வாங்கி உண்ணக் கூடியதுமான கொய்யாப் பழத்தில் முக்கிய உயிர் சத்துக்களும், தாது உப்புக்களும் அடங்கியுள்ளன. கொய்யாமரத்தில் இருந்து கிடைக்கக்கூடிய கனி மட்டுமல்லாது. இலை, பட்டை என அனைத்துமே மருத்துவ குணம் கொண்டுள்ளது.



கொய்யா பழத்தில் அடங்கியுள்ள சத்துக்கள்

வைட்டமின் பி மற்றும் வைட்டமின் சி ஆகிய உயிர்ச்சத்துகள் கொய்யாப்பழத்தில் அடங்கியுள்ளன. கால்சியம், பாஸ்பரஸ், இரும்பு போன்ற தாது உப்புக்களும் இதில் காணப்படுகின்றன.

இலைகள்

கொய்யாமரத்தின் இலைகள் திசுக்களை சுருக்கும், மற்றும் குருதிப்போக்கினைத் தடுக்கும் திறன் உடையவை. மலச்சிக்கல் போக்கும். கசாயம் வாந்தியினை தடுக்கும். ஈறுகளில் வீக்கம் ஏற்பட்டால் இலையை காய்ச்சி கொப்பளிக்கலாம். கொய்யா இலைகள் மூலம் தயாரிக்கப்படும் கஷாயம் இருமல் தொண்டை மற்றும் இதய சம்பந்தமான நோய்களுக்கு தீர்வு தருகின்றன. கொய்யா மரத்தின் இளம் புதுக்கிளைகளின் மூலம் தயாரிக்கப்படும் கஷாயம் காய்ச்சலைக் கட்டுப்படுத்தும். கொய்யா மரத்தின் இலைகளை அரைத்து காயம், புண் இவற்றின் மேல் தடவினால் அவை விரைவில் ஆறிவிடும். கொய்யா இலைகள் அல்சர் மற்றும் பல் வலிக்கும் உதவுகின்றன.

பட்டை

கொய்யாமரத்தின் பட்டை பாக்கிரியா அழுகலை தடுக்கும். காய்ச்சலைப் போக்கும். வேர், பட்டை குழந்தைகளின் வயிற்றுப்போக்கினை குணப்படுத்தும்.

குழந்தைகளுக்கு வரப்பிரசாதம்

கொய்யாப்பழத்தை அரிந்து சாப்பிடுவதை விட பழத்தை நன்றாக கழுவி பிறகு பற்களில் நன்றாக மென்று தின்பதே நல்லது. இதனால் பற்களும், ஈறுகளும் பலப்படும். வேறு எந்தப் பழத்திலும் இல்லாத வைட்டமின் "சி"

என்ற உயிர்ச்சத்து இப்பழத்தில் அதிக அளவில் காணப்படுகிறது. அதனால் வளரும் குழந்தைகளுக்கு கொய்யாப்பழம் ஒரு வரப்பிரசாதமாகும். உடல் நன்கு வளரவும், எலும்புகள் பலம் பெறவும் கொய்யாப்பழம் உதவும்.

கொய்யாவின் தோலில் தான் அதிக சத்துக்கள் உள்ளன. இதனால் தோலை நீக்கி சாப்பிடக் கூடாது. முகத்திற்கு பொலிவையும், அழகையும் தருகிறது. தோல் வறட்சியை நீக்குகிறது. முதுமை தோற்றத்தை குறைத்து இளமையானவராக மாற்றுகிறது.

சீரணமண்டலம் பலமடையும்

சீரண மண்டலம் உறுப்புகளைப் பலப்படுத்தும் ஆற்றல் பெற்றது இப்பழம். இதை உண்பதால் வயிறு. குடல், இரைப்பை, கல்லீரல், மண்ணீரல் போன்றவை வலுப்பெறும். மலச்சிக்கலை போக்கும் ஆற்றலும் இதற்கு உண்டு. மலக்கிருமிகளை கொல்லும் சக்தியும் உள்ளது. வயிற்றில் புண் இருந்தால் அதை ஆற்றும் தன்மை கொய்யாப் பழத்திற்கு உண்டு.

இரத்த சோகை உள்ளவர்கள் இப்பழத்தை தொடர்ந்து உண்டு வந்தால் குணம் பெறலாம். பசியைத் தூண்ட வல்லது கொய்யாப்பழம். இடைவிடாத விக் கல் இருந்தாலும் நிறுத்தவல்லது கொய்யாப்பழம்.

மதுப் பழக்கத்தில் இருந்து விடுதலை

மது போதைக்கு அடிமையான மது பிரியர்கள் அப்பழக்கத்தில் இருந்து விடுபட நினைத்தால் இப்பழத்தை அதிகம் சாப்பிடலாம். இதை தொடர்ந்து சாப்பிட்டால் மது அருந்தும் ஆசை, வெறி எல்லாம் தூளாகி விடும். மிக எளிதில் மது. போதை பழக்கத்தில் இருந்து விடுதலை பெறலாம்.

கொய்யா மரத்தின் சில பகுதிகளுடன் வேறு சில பொருட்களும் சேர்த்து தயாரிக்கப்படும் ஒரு கஷாயத்தை அருந்தினால் பிரசவத்திற்கு பின்பு வெளியாகும் கழிவுகளை வெளியேற்ற மிகவும் உதவுவதாக சித்த மருத்துவத்தில் தெரிவிக்கப்பட்டுள்ளது.

யார் சாப்பிடக்கூடாது?

சாப்பிடுவதற்கு முன் இப்பழத்தை சாப்பிடவது நல்லதல்ல. சாப்பிட்ட பின்போ அல்லது சாப்பிடுவதற்கு நீண்ட நேரத்திற்கு முன்போ சாப்பிடுவது நல்லது.

நோயால் அவதியுற்று மருந்து சாப்பிட்டு வருபவர்கள் இப்பழத்தை சாப்பிட்டால் மருந்து முறிவு ஏற்படும். இருமல் இருக்கும் போது இப்பழத்தை சாப்பிட்டால் அதிகமாகும். தோல் தொடர்பான வியாதி உள்ளவர்கள் இப்பழத்தை உண்டால் நோய் அதிகரிக்கும்.

கொய்யாப் பழத்திற்கு மருந்தை முறிக்கும் ஆற்றல் உண்டு. ஒரு சிலருக்கு மயக்கத்தை ஏற்படுத்தும். வாதநோய், ஆஸ்துமா போன்ற நோய் உள்ளவர்கள் இப்பழத்தை சாப்பிடக்கூடாது.

கொய்யாப்பழத்தை இரவில் சாப்பிடக்கூடாது. சாப்பிட்டால் வயிறு வலி உண்டாகும். கொய்யாவை அளவுடன் சாப்பிட வேண்டும். அளவிடாததிமாக சாப்பிட்டால் பித்தம் அதிகரித்து வாந்தி மயக்கம் ஏற்படும்.

Courtesy: The Pesot

வந்து பாருங்கள் – பரளிக்காடு

பார்த்ததுமே பிடிக்கும்



கோவை மாவட்டத்தில் இருப்பவர்களுக்கேகூட பரளிக்காடு எனும் சொர்க்கம் தெரிந்திருக்குமா என்பது சந்தேகம் தான். கோவையிலிருந்து மேட்டுப்பாளையம் செல்லும் வழியில் இருக்கிறது காரமடை. அங்கிருந்து கிளை பிரியும் தோலாம் பாளையம் சாலையில் பசுமை கண்களை அள்ள, 30 கிலோமீட்டர் பயணித்தால் வந்துவிடும் பில்லார் அணைக்கட்டு. அங்கிருந்து குறுகலான மலைப்பாதையில் பயணித்தால் அணைக்கட்டை ஒட்டி இருக்கும் பரளிக்காடு எனும் மலையோர கிராமம்

மனம் குளிர வரவேற்கும். கோவையிலிருந்து 70 கிலோமீட்டர் தொலைவு. இங்கு வாழும் பழங்குடி மக்களின் நலனுக்காக வனத்துறையே வடிவமைத்ததுதான் பரளிக்காடு பசுமைச் சுற்றுலா. இங்கு செல்ல வனத்துறை அலுவலரிடம் தொலைபேசியில் முன்பதிவு செய்ய வேண்டும். வார விடுமுறை தினமென்றால் நூறு பேருக்கும் குறையாமல் வருகிறார்கள். மற்ற நாட்களில் செல்வதென்றால் குறைந்தது 30 பேர் கொண்ட குழுவாக இருக்க வேண்டும். அங்கு வாழும் பழங்குடி மக்களைத் திரட்டி ஒரு சுய

உதவிக்குழு அமைத்து அதன் மூலம் சுற்றுலாப் பயணிகளுக்கு வேண்டிய உணவு, பரிசல் பயணம் என அன்பான உபசரிப்புக்கு வனத்துறையே ஏற்பாடு செய்துவிடுகிறது. காலை பத்து மணிக்குத் தரும் மலைத்தேன் சுக்குக் காப்பி உட்பட்ட மதிய உணவு, படகுச் சவாரி என அனைத்துக்குமாகச் சேர்த்து பெரியவர்களுக்குக் கட்டணம் ரூ.350, சிறியவர்களுக்கு ரூ.200.

காலை 7 மணிக்கு கோவை காந்திபுரம் பேருந்து நிலையத்திலிருந்து பரளிக்காட்டிற்கு அரசுப் பேருந்து இயக்கப்படுகிறது. சரியாக 10 மணிக்கு பரளிக்காட்டைத் தொட்டுவிடலாம். அதன் பிறகு அங்கு இயற்கை தரும் விருந்தையும் மலைவாழ் மக்கள் தரும் விருந்தையும் மறக்க முடியாது. லைஃப் ஜாக் கேட் போட்டுக்கொண்டு சுமார் ஒன்றரை மணி நேரம் படகுச் சவாரியில் பறவைகளை ரசிக்கலாம். யானைகளைப் பார்க்கலாம். ஆற்றில் மீன்களைக் காணலாம். குளியலும் போடலாம். காட்டுக்குள் வன அலுவலர்கள் பாதுகாப்புடன் வனநடையும் மேற்கொள்ளலாம். எல்லாவற்றுக்கும் மேலாக அந்த மூலிகைக் காற்று. அதில் தவமும் மணம்... அட்டா ஆனந்த அனுபவம்.

Courtesy: தி இந்து, ஜய வருட மலர் 2014

20 MOST PEACEFUL COUNTRIES IN THE WORLD - 2

NORWAY



Many people do not expect **Norway** to appear in the list of the most peaceful countries in the world. Perhaps, this is because of Anders Behring Breivik, mass murderer, who hit the pride of the country hard. Sure, it was an extraordinary incident, but according to the Global Peace Index Norway is one of the world's most peaceful countries and friendly and safe place to live. Norway is the country with the highest level of human development in the globe, plus, the government of Oslo always places peace at the forefront of the priorities of the country.

WERNER VON SIEMENS (1816-1892)

Early years

Werner Siemens was born in Lenthe, today part of Gehrden, near Hannover, in the Kingdom of Hanover in the German Confederation, the fourth child (of fourteen) of a tenant farmer. He is a brother of Carl Heinrich von Siemens and Carl Wilhelm Siemens, sons of Christian Ferdinand Siemens (31 July 1787 - 16 January 1840) and wife Eleonore Deichmann (1792 - 8 July 1839).



Middle years

After finishing school, Werner Siemens intended to study at the Bauakademie Berlin. However, since his family was highly indebted and thus could not afford to pay the tuition fees, he chose to join the Prussian Military Academy's School of Artillery and Engineering, between the years 1835-1838, instead, where he received his officers training. Siemens was thought of as a good soldier, receiving various medals. He is known worldwide for his advances in various technologies, and chose to work on perfecting technologies that had already been established. In 1843 he sold the rights to his first invention to Elkington of Birmingham. Siemens invented

a telegraph that used a needle to point to the right letter, instead of using Morse code. Based on this invention, he founded the company *Telegraphen-Bauanstalt von Siemens & Halske* on 1 October 1847, with the company taking occupation of its workshop on 12 October. The company was internationalised soon after its founding. The von Siemens family still owns 6% of the company shares (as of 2013) and holds a seat on the supervisory board, being the largest shareholder.

Later years

Apart from the pointer telegraph Siemens made several contributions to the development of electrical engineering and is therefore known as the founding father of the discipline in Germany. He built the world's first electric elevator in 1880. His company produced the tubes with which Wilhelm Conrad Röntgen investigated x-rays. He claimed invention of the dynamo although others invented it earlier. On 14 December 1877 he received German patent No. 2355 for an electromechanical "dynamic" or moving-coil transducer, which was adapted by A. L. Thuras and E. C. Wente for the Bell System in the late 1920s for use as a loudspeaker. Wente's adaptation was issued US patent 1,707,545 in 1929. Siemens is also the father of the trolleybus which he initially tried and tested with his "Elektromote" on 29 April 1882.

Personal life

He was married twice, first in 1852 to Mathilde Duman (died 1 July 1867) and second in 1869 to his relative Antonie Siemens (1840–1900). Children from first marriage were Arnold von Siemens and Georg Wilhelm von Siemens. Children from second marriage were Hertha von Siemens (1870 - 5 January 1939), married in 1899 to Carl Dietrich Harries, and Carl Friedrich von Siemens.

Patents

U.S. Patent 415,577 — Electric meter (19 November 1889)

U.S. Patent 428,290 — Electric meter (20 May 1890)

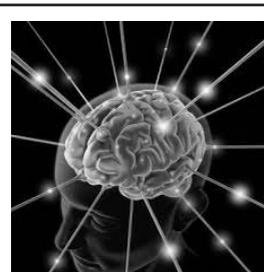
U.S. Patent 520,274 — Electric railway (22 May 1894)

U.S. Patent 601,068 — Method of and apparatus for extracting gold from its ores (22 March 1898)

POWER YOUR MIND

POLITICS AND POLITICIAN

Politics is not
A profession
But a passion
To serve one's nation.
The politician is not a
Rule but a
Humble servant of citizens.



A politician without
Patriotism
Is like a minister
Without any portfolio.

Courtesy: Swami Srikantananda

HUMOUR

Not just a Joke; Example of Personalized Service Marketing

* Dining Out

Remember when eating out was a relaxing experience? Someone else cooked for you, served you and cleaned up after you. All you had to do was chew, swallow and pay. No longer, though. Today, you feel like a laboratory rat who has to struggle through a maze every time it wants a chunk of cheese:

“Good evening,” the maitre d’ said. “Table for four?”

“Yes, Thank you”.

“Smoking or non?”

“Non smoking”.

“Would you prefer to dine indoors or outdoors this evening?”

“I guess indoors would be good”.

“Very well, sir,” he said. “Would you like to be seated in the main dining room, the enclosed patio, or our lovely solarium?”

“Uh, let me see...uh...”

“I can give you a table with a lovely view in our lovely solarium”.

“I think the solarium would be lovely,” I said.

We followed him there...

“Now, would you prefer a view overlooking the golf course, the sunset on the lake or the majestic mountains to the West?”

“Whatever you recommend,” I said.

Let HIM make a decision for a change, I thought.

He sat us by a window facing the golf course, lake or mountains. I couldn’t tell which because it was dark outside.

Then, a young man better dressed and better looking than any of us presented himself at our table...

“Good evening, my name is Paul, and I’ll be your waiter this evening. Would you like a few minutes before I take your order?”

“No,” I said. “I’m just a meat-and-potatoes guy, so I’ll have the filet mignon and a baked potato”.

“Soup or salad?”

“Salad”.

“We have a mixed-green salad, hearts of palm, or a very fine endive salad with baby shrimp”.

“Just a mixed-green salad, okay?”

“Whatever you say, sir. Dressing?”

I didn’t want to make another decision... “Whatever you’ve got will be fine”.

“We have creamy Italian, Blue Cheese, Vinaigrette, Thousand Island, Honey Dijon and Ranch”.

“Just bring me one. Surprise me”.

“Creamy Italian is our house specialty. Would that be all right, sir?”

“Yeah”.

I was curt. I was done with civility.

“And for your baked potato?”

I knew what was coming! “I just want the baked potato dry, you understand? I don’t want anything on it”.

“No butter? No sour cream?”

“No”.

“No chives ? No bacon chips?”

“No! Don’t you understand English?” “I don’t want anything on it. Just bring me a baked potato and a steak”.

“Would you prefer the six, eight, or 12-ounce steak, sir?”

“Whatever”.

“Would you like that rare, medium rare, medium, medium well or well done? Or, if you prefer, we can butterfly it for you”.

“Pauly Boy,” I said, “you are really starting to get me steamed”.

“Which brings up the vegetables, sir. Would you like steamed broccoli, creamed corn, sauteed zucchini, or diced carrots?”

That did it. I threw my napkin to the floor, stood up, put my face right in his arrogant kisser and said, “How’d you like to settle this outside?”

“Fine with me, sir. Would you prefer the parking lot, the side alley or the street in front of the restaurant?”

“I prefer right here”.

Then I sucker-punched him:

He ducked, then countered with a left hook right under my eye. It was the first time all night he hadn’t offered me a selection.

I collapsed semiconscious into my chair, as someone in authority rushed over and berated Pauly.

I felt my tie being loosened, my collar unbuttoned, hands slapping my face. When I regained my senses, I saw the very concerned maitre d’ right in front of my nose. He apologized and offered to buy me a drink, call the paramedics, whatever I wanted.

“No, no,” I said. “I’ll be all right. Just bring me a glass of water”.

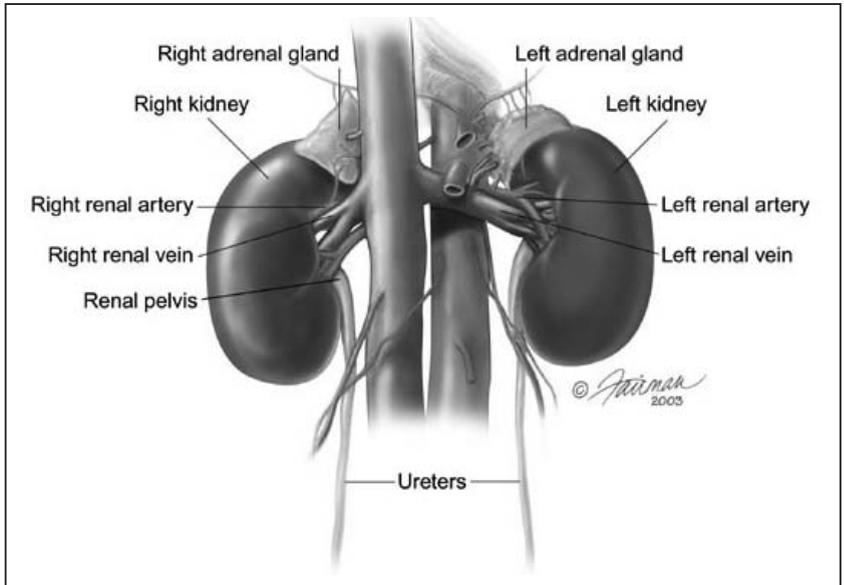
“Yes, sir, right away,” he said.

“Would you prefer imported mineral water, sparkling water, or club soda with a wedge of lime?”

Automobiles are not the only products that could be made more energy efficient if we just put in place sensible requirements. This is also true of many appliances and even of entire buildings. - SHERWOOD BOEHLERT

KIDNEY CARE TIPS

The kidneys filter waste products from the blood before turning it to urine. Kidneys are vital organs that remove excess water and cleanse the blood of toxins. When the kidneys fail, waste products and fluid build up in the body, making you feel unwell, gain weight, become breathless and get swollen hands and feet. The kidneys also produce hormones that help to control blood pressure, boost the production of red blood cells and help keep bones healthy. This means that if kidney damage is severe it can lead to high blood pressure, anemia and bone disease. Kidneys are vital to overall health, so it is important to look after them.



1. Avoid contact with all the toxic and harmful items listed
 - Being obese
 - Through fluoride in your water supply
 - Using non stick cookware (Teflon) and other common household items
 - Undergoing root canal treatment along with dental mercury amalgams
 - Exposure to toxic mold in the home and elsewhere
 - The use of pesticides and laundry detergents and other toxic cleaning materials
 - Artificial sweeteners of all types
 - Consuming fructose, sodas and candies
2. Eat lots of fresh fruit and vegetables (particularly the latter) together with grass fed beef and free range chicken and eggs.
3. Stay away from sugars, sodas and artificial sweeteners, processed salty foods and the bad trans fats. Instead, change to natural salt and good fats such as butter from raw cream, olive oil and organic coconut oil. Stevia is a safe replacement for sugar.
4. Try to drink only water instead of other drinks. This should be pure filtered water – several glasses per day.
5. Maintain a healthy weight and, of course, this will be more easily achieved through the other lifestyle changes that you make.
6. Stay fit by at least 30 minutes of physical activity that increases your heart rate on five or more days of the week – suggestions include: walking, lawn mowing, cycling, swimming or gentle aerobics.
7. Don't smoke and limit your alcohol to a maximum of two small drinks per day if you are male or one small drink per day if you are female.
8. Have your blood pressure checked regularly. If you blood pressure levels are higher than they should

- be, lower them with natural remedies rather than statins which can actually lead to kidney damage.
9. Do things that help you relax and reduce your stress levels.
 10. Spirulina (from a safe source) helps to protect your kidneys. As kidneys are one of the first organs to suffer damage after significant radiation exposure, Spirulina is used – but research also suggests that spirulina helps protect from the nephrotoxicity of cancer treatments, antibiotics and analgesics.
 11. Please be aware that many people today are gluten intolerant and as such can suffer from gluten induced kidney damage. If you are not sure or are suspicious that you might be gluten intolerant, get genetically tested for gluten sensitivity. If you have actually have kidney disease, make sure your doctor checks your 25 OHD levels (vitamin D). Additionally, make sure that he measures for other nutritional deficiencies as well. Malabsorption is a common cause of secondary diseases for those with intolerance or sensitivity to gluten.
 12. It cannot be overemphasized how important vitamin D is to your general health including the kidneys. Vitamin D is not a vitamin at all but a steroid hormone that is probably the single most important factor in human health. The optimum level for good health is to be between 40 ng/ml and 100 ng/ml and if you are not receiving sufficient sunlight exposure, the average adult needs to take a daily dose of 8000 IUs daily to elevate their levels above 40 ng/ml.
 13. Limit your salt intake. Too much salt is not only bad for your blood pressure, it's also bad for your kidneys. Many Filipinos die of kidney disease, which can be partly attributed to our high salt intake and fondness for fish sauce, soy sauce, bagoong, plain

salt, and salted fish. Even our instant noodles, chips, and nuts are teeming with salt. According to Dr. Montemayor, it doesn't matter if you dilute your soup with lots of water. As long as you drink all the soup, you'll still get all the salt in it. Hence, if you like eating instant noodles, just use half of the seasoning and add half of the water only. The problem with salt is that it encourages the body to retain water, and can increase your blood pressure (which damages the kidneys). Learn to read nutritional labels and limit eating salty foods.

14. Don't load up on high-protein foods. Did you know that eating too much protein, such as pork and beef meat, can overwork your kidneys? It's true. Being a kidney specialist and physiology professor, Dr. Montemayor explains that too much protein makes the kidneys work twice as hard. Her analogy is: If the kidney's usual activity level is similar to a person walking, then taking in too much protein can force the kidneys to be "running" on high gear. Pretty soon, your kidneys could get tired and some of the weaker kidney cells can die. A friendly reminder to people on a high-protein Atkin's Diet or South Beach Diet: Don't overwork your kidneys. The time-tested doctor's advice of moderation in everything will serve you well. Eat a balanced diet of rice, vegetables, fish, and fruits and you can't go wrong.
15. Keep your blood sugar below 120 mg/dl. Diabetes and high blood pressure are the two leading causes of kidney failure. Diabetes affects almost all organs of the body. According to Dr. Montemayor, a person with uncontrolled diabetes for five to 10 years may develop significant kidney damage. Consult your doctor and keep your blood sugar under control with diet, exercise, and maintenance medicines. Our two goals are to have 1) a fasting blood sugar of 120 mg/dl or less, and 2) a hemoglobin A1C test (three-month average blood sugar test) of six percent or less.
16. Drink eight glasses of water a day. Doctors usually advise people to take in eight glasses of water a day, but this really depends on your age and condition. If you're sweating a lot and work outdoors, you may need to drink more than eight glasses a day. However, if you are above 65 years of age, you may do well with just six glasses a day. Drinking enough water also prevents the formation of kidney stones, a painful condition which, if left untreated, can also lead to kidney failure.
17. Watch your intake of pain relievers and other drugs. Dr. Montemayor says that taking pain relievers like mefenamic acid, ibuprofen, and the coxibs (like celecoxib) for a prolonged period of time may cause kidney damage. Because of this, we should limit taking these medicines to only a week, or just take them as needed. After taking these pain relievers, we need to let our kidneys rest first (from

all its running and puffing) before taking the medicines again. For those with chronic arthritis, try to look for other ways to relieve the pain such as using a hot water bag, pain reliever ointments, or the safer paracetamol tablet. Certain antibiotics can also cause kidney damage. Check with your doctor first.

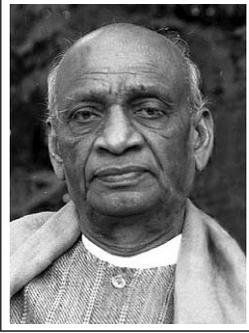
18. Be careful with tests and procedures using contrast dyes. Some tests, like CT scans and MRIs, use a contrast dye which helps doctors delineate the organs better. Many procedures, such as heart angioplasties and some cancer treatments, also use ample amounts of contrast dyes. The problem with such dyes is that they can cause kidney damage, especially in the elderly and those with previous kidney disease. Dr. Montemayor says there are studies, which support the use of fluid loading (200-300 ml orally or through the vein), before such a procedure. Another promising kidney-protecting technique is to take a medicine called Fluimucil (containing N-acetylcysteine) two days before and up to two days after the procedure (as reported in the New England Journal of Medicine, June 29, 2006). To be safe, I would strongly advise you to consult a kidney specialist before undergoing such procedures.
19. Don't take too much vitamin C. Some patients are fond of taking high doses of vitamin C, such as in the 2,000mg range. However, Dr. Montemayor warns patients against using such high doses. Too much vitamin C (ascorbic acid) can lead to the formation of kidney stones in predisposed individuals. If you need to take vitamin C, a dose of 500mg or less is safer.
20. Don't rely on food supplements to protect your kidneys. According to Dr. Montemayor, there is still no food supplement that has been scientifically proven to protect the kidneys. The above tips are so far the best tips to care for the kidneys.
21. Get a kidney check-up. Simple tests, such as a complete blood count, BUN, creatinine, and a urinalysis are the first screening tests for the kidneys. Finding a trace of protein in the urine can alert the doctor of possible kidney disease. Patients with diabetes and high blood pressure should also be checked for early kidney disease.

Remember that avoiding all toxins, taking regular exercise, along with a balanced diet and drinking plenty of water will help to keep your kidneys working well and in peak condition. Kidney diseases are silent killers which will largely affect your quality of life. They are expensive and difficult to treat. Let's take the necessary steps to protect our kidneys today.

*Courtesy: www.amoils.com, www.philstar.com,
[www.nhs.uk/livewell/kidneyhealth/pages/
theriseofkidneydisease.aspx](http://www.nhs.uk/livewell/kidneyhealth/pages/theriseofkidneydisease.aspx)*

VALLABHBHAI PATEL - 1

Vallabhbhai Jhaverbhai Patel (31 October 1875 – 15 December 1950) was an Indian barrister and statesman, one of the leaders of the Indian National Congress and one of the founding fathers of the Republic of India. He was a social leader who played a leading role in the country's struggle for independence and guided its integration into a united, independent nation. In India and elsewhere, he was often addressed as Sardar, which means *Chief* in Hindi, Urdu and Persian. A **'Run for Unity'** and pledge taking will mark India's first home minister Sardar Vallabhbhai Patel's birth anniversary on Oct 31, being observed as **'Rashtriya Ekta Divas'**.



He was raised in the countryside of Gujarat. Vallabhbhai Patel was employed in successful practice as a lawyer. Patel subsequently organised peasants from Kheda, Borsad, and Bardoli in Gujarat in non-violent civil disobedience against oppressive policies imposed by the British Raj; in this role, he became one of the most influential leaders in Gujarat. He rose to the leadership of the Indian National Congress and was at the forefront of rebellions and political events, organising the party for elections in 1934 and 1937, and promoting the Quit India movement.

As the first Home Minister and Deputy Prime Minister of India, Patel organised relief for refugees in Punjab and Delhi, and led efforts to restore peace across the nation. Patel took charge of the task to forge a united India from the British colonial provinces allocated to India and more than five hundred self-governing princely states, released from British suzerainty by the Indian Independence Act 1947. Using frank diplomacy, backed with the option and use of military force, Patel's leadership persuaded almost every princely state. Often known as the **"Iron Man of India"** or **"Bismarck of India"**, he is also remembered as the "Patron Saint" of India's civil servants for establishing modern all-India services.

Biography

Sardar Vallabhbhai Patel was born to a Patidar gurjar farmer family of Gujarat. His native place was Karamsad. His date of birth was never officially recorded – Patel entered 31 October as his date of birth on his matriculation examination papers. They lived in the village of Karamsad, Bombay Presidency, where Jhaverbhai owned a homestead. Somabhai, Narsibhai and Vithalbhai Patel (also a future political leader) were his elder brothers. He had a younger brother, Kashibhai, and a sister, Dahiba. As a boy, Patel helped his father in the fields. When he was eighteen years old, Patel's marriage was arranged with Jhaverba, a girl of twelve

or thirteen years old from a nearby village. According to custom, the young bride would continue to live with her parents until her husband started earning and could establish their household.

Patel travelled to attend schools in Nadiad, Petlad and Borsad, living self-sufficiently with other boys. He reputedly cultivated a stoic character. A popular anecdote recounts how he lanced his own painful boil without hesitation, even as the barber supposed to do it trembled. Patel passed his matriculation at the late age of 22; at this point, he was generally regarded by his elders as an unambitious man destined for a commonplace job. Patel himself harboured a plan to study to become a lawyer, work and save funds, travel to England and study to become a barrister. Patel spent years away from his family, studying on his own with books borrowed from other lawyers and passed examinations within two years. Fetching Jhaverba from her parents' home, Patel set up his household in Godhra and was called to the bar. During the many years it took him to save money, Patel – now an advocate – earned a reputation as a fierce and skilled lawyer. The couple had a daughter, Maniben, in 1904, and a son, Dahyabhai, in 1906. Patel also cared for a friend suffering from Bubonic plague when it swept across Gujarat. When Patel himself came down with the disease, he immediately sent his family to safety, left his home and moved into an isolated house in Nadiad (by other accounts, Patel spent this time in a dilapidated temple); there, he recovered slowly.

Patel practised law in Godhra, Borsad and Anand while taking on the financial burdens of his homestead in Karamsad. Patel was the first chairman and founder of the E.M.H.S. **"Edward Memorial High School"** Borsad which is at presently known as **Jhaverbhai Dajibhai Patel High School**. When he had saved enough for England and applied for a pass and a ticket, they arrived in the name of "V.J. Patel," at Vithalbhai's home, who bore the same initials. Having harboured his own plans to study in England, Vithalbhai remonstrated to his younger brother that it would be disreputable for an older brother to follow his younger brother. In keeping with concerns for his family's honour, Patel allowed Vithalbhai to go in his place. He also financed his brother's stay and began saving again for his own goals.

In 1909, Patel's wife Jhaverba was hospitalised in Bombay (now Mumbai) to undergo a major surgical operation for cancer. Her health suddenly worsened and, despite successful emergency surgery, she died in the hospital. Patel was given a note informing him of his wife's demise as he was cross-examining a witness in court. According to others who witnessed, Patel read the note, pocketed it and continued to intensely cross-examine the witness and won the case. He broke the news to others only after the proceedings had ended.

Patel decided against marrying again. He raised his children with the help of his family and sent them to English-medium schools in Mumbai. At the age of 36, he journeyed to England and enrolled at the Middle Temple Inn in London. Finishing a 36-month course in 30 months, Patel topped his class despite having no previous college background.

Returning to India, Patel settled in the city of Ahmedabad and became one of the city's most successful barristers. Wearing European-style clothes and urbane mannerisms, he became a skilled bridge player. Patel nurtured ambitions to expand his practice and accumulate great wealth and to provide his children with modern education. He had made a pact with his brother Vithalbhai to support his entry into politics in the Bombay Presidency, while Patel remained in Ahmedabad and provide for the family.

He was a vegetarian.

Fighting for independence

At the urging of his friends, Patel won an election to become the **sanitation commissioner** of Ahmedabad in 1917. While often clashing with British officials on civic issues, he did not show any interest in politics. Upon hearing of Mohandas Gandhi, he joked to Mavlankar that "Gandhi would ask you if you know how to sift pebbles from wheat. And that is supposed to bring independence." But Patel was deeply impressed when Gandhi defied the British in Champaran for the sake of the area's oppressed farmers. Against the grain of Indian politicians of the time, Gandhi wore Indian-style clothes and emphasised the use of one's mother tongue or any Indian language as opposed to English – the lingua franca of India's intellectuals. Patel was particularly attracted to Gandhi's inclination to action—apart from a resolution condemning the arrest of political leader Annie Besant, Gandhi proposed that volunteers march peacefully demanding to meet her.

Patel gave a speech in Borsad in September 1917, encouraging Indians nationwide to sign Gandhi's petition demanding *Swaraj*—independence—from Britain. Meeting Gandhi a month later at the Gujarat Political Conference in Godhra, Patel became the **secretary of the Gujarat Sabha**—a public body which would become the Gujarati arm of the Indian National Congress—at Gandhi's encouragement. Patel now energetically fought against *veth* – the forced servitude of Indians to Europeans – and organised relief efforts in wake of plague and famine in Kheda. The Kheda peasants' plea for exemption from taxation had been turned down by British authorities. Gandhi endorsed waging a struggle there, but could not lead it himself due to his activities in Champaran. When Gandhi asked for a Gujarati activist to devote himself completely to the assignment, Patel volunteered, much to Gandhi's delight.^[12] Though his decision was made on the spot, Patel later said that his desire and commitment came after intensive personal contemplation, as he realised he would have to abandon his career and material ambitions.

Satyagraha in Gujarat

Supported by Congress volunteers Narhari Parikh, Mohanlal Pandya and Abbas Tyabji, Vallabhbhai Patel began a village-by-village tour in the Kheda district, documenting grievances and asking villagers for their support for a statewide revolt by refusing the payment of taxes. Patel emphasised potential hardships with the need for complete unity and non-violence despite any provocation. He received enthusiastic responses from virtually every village. When the revolt was launched and revenue refused, the government sent police and intimidation squads to seize property, including confiscating barn animals and whole farms. Patel organised a network of volunteers to work with individual villages – helping them hide valuables and protect themselves during raids. Thousands of activists and farmers were arrested, but Patel was not. The revolt began evoking sympathy and admiration across India, including with pro-British Indian politicians. The government agreed to negotiate with Patel and decided to suspend the payment of revenue for the year, even scaling back the rate. Patel emerged as a hero to Gujaratis and admired across India. In 1920, he was elected president of the newly formed Gujarat Pradesh Congress Committee—he would serve as its president till 1945.

Patel supported Gandhi's Non-co-operation movement and toured the state to recruit more than 300,000 members and raise over Rs. 1.5 million in funds. Helping organise bonfires of British goods in Ahmedabad, Patel threw in all his English-style clothes. With his daughter Mani and son Dahya, he switched completely to wearing khadi. Patel also supported Gandhi's controversial suspension of resistance in wake of the Chauri Chaura incident. He worked extensively in the following years in Gujarat against alcoholism, untouchability and caste discrimination, as well as for the empowerment of women. In the Congress, he was a resolute supporter of Gandhi against his Swarajist critics. Patel was elected **Ahmedabad's municipal president in 1922, 1924 and 1927**—during his terms, Ahmedabad was extended a major supply of electricity and the school system underwent major reforms. Drainage and sanitation systems were extended over all the city. He fought for the recognition and payment of teachers employed in schools established by nationalists (out of British control) and even took on sensitive Hindu-Muslim Issues. Sardar Patel personally led relief efforts in the aftermath of the intense torrential rainfall in 1927, which had caused major floods in the city and in the Kheda district and great destruction of life and property. He established refuge centres across the district, raised volunteers, arranged for supply of food, medicines and clothing, as well as emergency funds from the government and public.

When Gandhi was in prison, Sardar Patel was asked by Members of Congress to lead the **satyagraha** in Nagpur in 1923 against a law banning the raising of the

Indian flag. He organised thousands of volunteers from all over the country in processions hoisting the flag. Patel negotiated a settlement that obtained the release of all prisoners and allowed nationalists to hoist the flag in public. Later that year, Patel and his allies uncovered evidence suggesting that the police were in league with local dacoits in the Borsad taluka even as the government prepared to levy a major tax for fighting dacoits in the area. More than 6,000 villagers assembled to hear Patel speak and supported the proposed agitation against the tax, which was deemed immoral and unnecessary. He organised hundreds of Congressmen, sent instructions and received information from across the district. Every village in the *taluka* resisted payment of the tax, and through cohesion, also prevented the seizure of property and lands. After a protracted struggle, the government withdrew the tax. Historians believe that one of Patel's key achievements was the building of cohesion and trust amongst the different castes and communities, which were divided on socio-economic lines.

In April 1928, Sardar Patel returned to the independence struggle from his municipal duties in Ahmedabad when Bardoli suffered from a serious predicament of a famine and steep tax hike. The revenue hike was steeper than it had been in Kheda even though the famine covered a large portion of Gujarat. After cross-examining and talking to village representatives, emphasising the potential hardship and need for non-violence and cohesion, Patel initiated the struggle—complete denial of taxes. Sardar Patel organised volunteers, camps and an information network across affected areas. The revenue refusal was stronger than in Kheda and many sympathy satyagrahas were undertaken across Gujarat. Despite arrests, seizures of property and lands, the struggle intensified. The situation reached a head in August, when through sympathetic intermediaries, he negotiated a settlement repealing the tax hike, reinstating village officials who had resigned in protest and the return of seized property and lands. It was during the struggle and after the victory in Bardoli that Patel was increasingly addressed by his colleagues and followers as **Sardar**.

As Gandhi embarked on the Dandi Salt March, Patel was arrested in the village of Ras and was put on trial without witnesses, with no lawyer or pressman allowed to attend. Patel's arrest and Gandhi's subsequent arrest caused the Salt Satyagraha to greatly intensify in Gujarat—districts across Gujarat launched an anti-tax rebellion until and unless Patel and Gandhi were released. Once released, Patel served as interim Congress president, but was re-arrested while leading a procession in Mumbai. After the signing of the Gandhi-Irwin Pact, Patel was elected Congress president for its 1931 session in Karachi—here the Congress ratified the pact, committed itself to the defence of fundamental rights and human freedoms, and a vision of a secular nation, minimum wage and the abolition of untouchability

and serfdom. Patel used his position as Congress president in organising the return of confiscated lands to farmers in Gujarat. Upon the failure of the Round Table Conference in London, Gandhi and Patel were arrested in January 1932 when the struggle re-opened, and imprisoned in the Yeravda Central Jail. During this term of imprisonment, Patel and Gandhi grew close to each other, and the two developed a close bond of affection, trust, and frankness. Their mutual relationship could be described as that of an elder brother (Gandhi) and his younger brother (Patel). Despite having arguments with Gandhi, Patel respected his instincts and leadership. During imprisonment, the two would discuss national and social issues, read Hindu epics and crack jokes. Gandhi also taught Patel Sanskrit language. Gandhi's secretary Mahadev Desai kept detailed records of conversations between Gandhi and Patel. When Gandhi embarked on a fast-unto-death protesting the separate electorates allocated for untouchables, Patel looked after Gandhi closely and himself refrained from partaking of food. Patel was later moved to a jail in Nasik, and refused a British offer for a brief release to attend the cremation of his brother Vithalbhai, who had died in 1934. He was finally released in July of the same year.

Patel's position at the highest level in the Congress was largely connected with his role from 1934 onwards (when the Congress abandoned its boycott of elections) in the party organisation. Based at an apartment in Mumbai, he became the Congress's main fund-raiser and chairman of its Central Parliamentary Board, playing the leading role in selecting and financing candidates for the 1934 elections to the Central Legislative Assembly in New Delhi and also for the Provincial elections of 1936. As well as collecting funds and selecting candidates, he would also determine the Congress stance on issues and opponents. Not contesting a seat for himself, Patel nevertheless guided Congressmen elected in the provinces and at the national level. In 1935, Patel underwent surgery for haemorrhoids, yet guided efforts against plague in Bardoli and again when a drought struck Gujarat in 1939. Patel would guide the Congress ministries that had won power across India with the aim of preserving party discipline—Patel feared that the British would use opportunities to create conflicts among elected Congressmen, and he did not want the party to be distracted from the goal of complete independence. But Patel would clash with Nehru, opposing declarations of the adoption of socialism at the 1936 Congress session, which he believed was a diversion from the main goal of achieving independence. In 1938, Patel organised rank and file opposition to the attempts of then-Congress president Subhas Chandra Bose to move away from Gandhi's principles of non-violent resistance. Patel considered Bose to want more power over the party. He led senior Congress leaders in a protest, which resulted in Bose's resignation. But criticism arose from

Bose's supporters, socialists and other Congressmen that Patel himself was acting in an authoritarian manner in his defence of Gandhi's authority.

Quit India

On the outbreak of World War II Patel supported Nehru's decision to withdraw the Congress from central and provincial legislatures, contrary to Gandhi's advice, as well as an initiative by senior leader Chakravarti Rajagopalachari to offer Congress's full support to Britain if it promised Indian independence at the end of the war and install a democratic government right away. Gandhi had refused to support Britain on the grounds of his moral opposition to war, while Subhas Chandra Bose was in militant opposition to the British. The British rejected Rajagopalachari's initiative, and Patel embraced Gandhi's leadership again. He participated in Gandhi's call for individual disobedience, and was arrested in 1940 and imprisoned for nine months. He also opposed the proposals of the Cripps' mission in 1942. Patel lost more than twenty pounds during his period in jail.

While Nehru, Rajagopalachari and Maulana Azad initially criticised Gandhi's proposal for an all-out campaign of civil disobedience to force the British to *Quit India*, Patel was its most fervent supporter. Arguing that the British would retreat from India as they had from Singapore and Burma, Patel stressed that the campaign start without any delay. Though feeling that the British would not quit immediately, Patel favoured an all-out rebellion which would galvanise Indian people, who had been divided in their response to the war. In Patel's view, an all-out rebellion would force the British to concede that continuation of colonial rule had no support in India, and thus speed power transfer to Indians. Believing strongly in the need for revolt, Patel stated his intention to resign from the Congress if the revolt was not approved. Gandhi strongly pressured the All India Congress Committee to approve of an all-out campaign of civil disobedience, and the AICC approved the campaign on 7 August 1942. Though Patel's health had suffered during his stint in jail, Patel gave emotional speeches to large crowds across India, asking people to refuse paying taxes and participate in civil disobedience, mass protests and a shutdown of all civil services. He raised funds and prepared a second-tier of command as a precaution against the arrest of national leaders. Patel made a climactic speech to more than 100,000 people gathered at Gowalia Tank in Bombay (Mumbai) on 7 August:

"The Governor of Burma boasts in London that they left Burma only after reducing everything to dust. So you promise the same thing to India? ... You refer in your radio broadcasts and newspapers to the government established in Burma by Japan as a puppet government? What sort of government do you have in Delhi now?...When France fell before the Nazi onslaught, in the midst of total war, Mr. Churchill offered union with England to the

French. That was indeed a stroke of inspired statesmanship. But when it comes to India? Oh no! Constitutional changes in the midst of a war? Absolutely unthinkable ... The object this time is to free India before the Japanese can come and be ready to fight them if they come. They will round up the leaders, round up all. Then it will be the duty of every Indian to put forth his utmost effort—within non-violence. No source is to be left untapped; no weapon untried. This is going to be the opportunity of a lifetime."

Historians believe that Patel's speech was instrumental in electrifying nationalists, who had been sceptical of the proposed rebellion. Patel's organising work in this period is credited by historians for ensuring the success of the rebellion across India. Patel was arrested on 9 August and was imprisoned with the entire Congress Working Committee from 1942 to 1945 at the fort in Ahmednagar. Here he spun cloth, played bridge, read a large number of books, took long walks, practised gardening. He also provided emotional support to his colleagues while awaiting news and developments of the outside. Patel was deeply pained at the news of the deaths of Mahadev Desai and Kasturba Gandhi later in the year. But Patel wrote in a letter to his daughter that he and his colleagues were experiencing "fullest peace" for having done "their duty." Even though other political parties had opposed the struggle and the British had employed ruthless means of suppression, the Quit India movement was "by far the most serious rebellion since that of 1857," as the viceroy cabled to Winston Churchill. More than one lakh people were arrested and many were killed in violence with the police. Strikes, protests and other revolutionary activities had broken out across India. When Patel was released on 15 June 1945 he realised that the British were preparing proposals to transfer power to Indian hands.

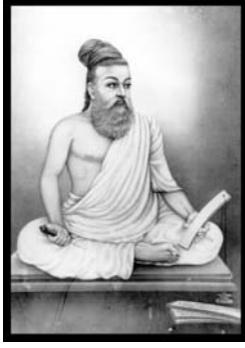
Integration after Independence and Role of Gandhi

In the 1946 election for the Congress presidency, Patel stepped down in favour of Nehru at the request of Gandhi. The election's importance stemmed from the fact that the elected President would lead independent India's first Government. As the first Home Minister, Patel played a key role in integration of many princely states into the Indian federation.

In the elections, the Congress won a large majority of the elected seats, dominating the Hindu electorate. But the Muslim League led by Muhammad Ali Jinnah won a large majority of Muslim electorate seats. The League had resolved in 1940 to demand Pakistan—an independent state for Muslims—and was a fierce critic of the Congress. The Congress formed governments in all provinces save Sindh, Punjab and Bengal, where it entered into coalitions with other parties.

(To be continued...)

TIRUKKURAL AND MANAGEMENT IN A 'NUTSHELL' - 21



In Business and Marketing, Strong position and Growth situation is attained, not instantly but over a period of time, through Good Image, Brand Equity and other positive developments built steadily. This is identified through the "Law of Perspective" of Marketing. The basic requirement for achieving this situation is the selection of the Right Strategy and persevering with that with full Enthusiasm, without getting cowed down with some initial hiccups. Tiruvalluvar deals with this concept in a number of Tirukkural, some of which are given below.

*Aakkam Atharvinaych Chellum Asaivila
Ukkam Udaiya Nuzhai Kural 594*

ஆக்கம் அதர்வினாய்ச் செல்லும் அசைவிலா
ஊக்கம் உடையா னுழை குறள் 594

"Fortune enquires, enters with boom, where tireless strivers have their home"

*Vellathu Anaiya Malar Neettam; Manthartham
Ullathu Anaiyathu Uyarvu Kural 595*

வெள்ளத்து அனைய மலர்நீட்டம் : மாந்தர்தம்
உள்ளத்து அனையது உயர்வு. குறள் 595

"Water depth is Lotus height; Mental Strength is men's merit"

*Aakkam Izhandemendru Allavar Ukkam
Oruvantham Kaithudai Yar Kural 593*

ஆக்கம் இழந்தேம்என்று அல்லாவார் ஊக்கம்
ஒருவந்தம் கைத்துஉடையார். குறள் 593

"The Strong in will do not complain about the temporary losses, but continue their relentless efforts"

HOME FESTIVALS – 2

மாசி - Masi (February/March)



Above, this is the month of Mahasivaratri, Siva's great night. In the above painting four stories associated with the festival are told. At lower left a

hunter has been cornered in a tree-top by wild beasts, where he must spend the night. To avoid sleep he plucks leaves from the bilva tree, sacred to Lord Siva, and drops them upon a sivalinga below-a traditional for of worship. Many undertake fasts and stay awake the whole night, praying to Lord Siva both at home and in temples (lower right). The home observance of Karadainombu (upper right) derives from the story of Savitri and her husband, Satyavan. They enter a forest, where he dies. When Lord Yama, the God of Death, comes to take his life, Savitri persuades Yama to let him live. The intent of the observance is that wives not be separated from their husbands. Another explanation of this festival (upper left) is that on this day Lord Siva tied a thread to parvati's right hand after their marriage as a sign of protection and fidelity. *(To be continued)*

All religions guide us towards salvation, the ultimate goal in life. In fundamentals like devotion to God, Speaking the truth and helping others, there is no difference between one religion and another. The difference between religions is mainly in regard to certain doctrines and practices which are the outcome of the varying experiences of each religious teacher. – H.H. SHRI PARAMACHARYA

THE AL NOOR MOSQUE-SHARJAH

- Client: Sharjah Government
Architect: Architectural Academic Office
Main Contractor: United Engineering
Completed: 2005
- Sharjah is the capital of Islamic Culture 2014 has over 600 Mosques, but the Al Noor Mosque (located beside Khalid Lagoon on Buhaira Corniche), is often regarded as the most famous. The Al Noor Mosque was built by order of the wife of the ruler of Sharjah, her Highness Sheikha Jawaherbint Mohammed al Qassimi. The construction of the Mosque started in 2003 and was completed 2 years later in 2005.

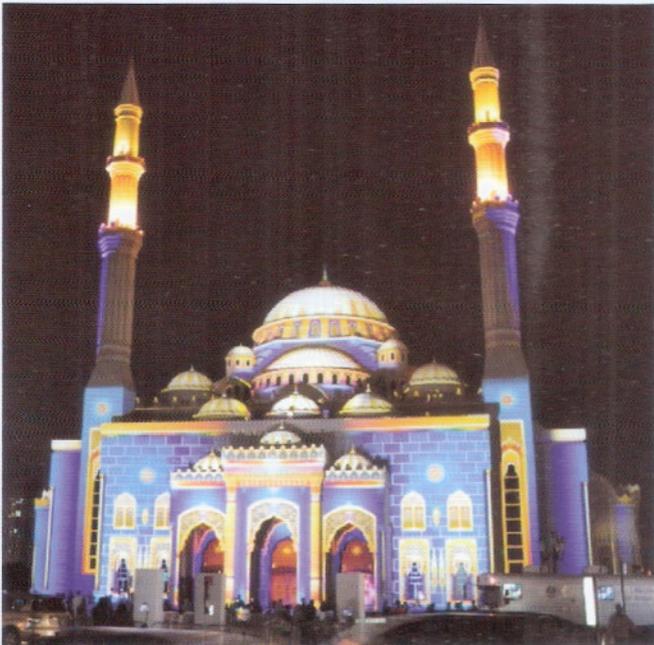
Al Noor Mosque is often regarded as the most famous. The word Noor in arabic means “Light”. The Al Noor Mosque stands majestically beside the Khalid Lagoon on Buhaira Corniche facing the Majaz district, which makes a charming landscape. Al Noor mosque is the first & only mosque in Sharjah open to the public for guided tours with a representative from The Sharjah Centre for Culture.

The intricate formwork, sweeping curves and spires of such mosque projects requires a thorough knowledge of Islamic design and a commitment to the finest detail.

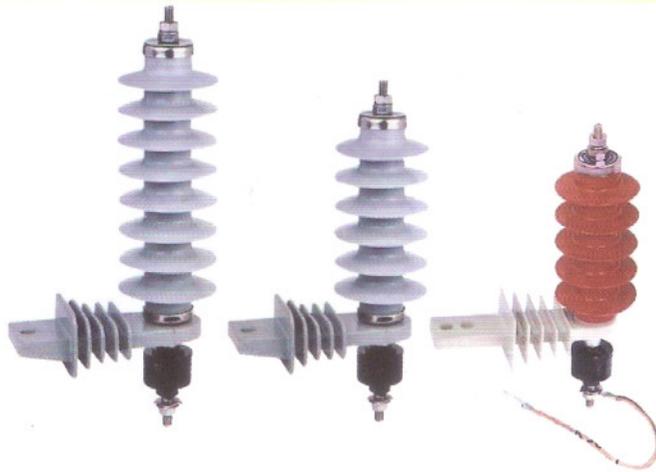
It also demands continuous research to find advanced building materials able to preserve the beauty and integrity of these hallowed structures for generations to come. The erection of Mosques is not mere construction. It is a labour of love.

Arabian Profile carried out Glass Fibre Reinforced Concrete (GRC) works in natural stone finish on all external elevations including parapet, screens, window frames, cornices, false ceiling, minaret top and domes. A total of 5,500m² of GRC and Glass Fibre Reinforced Polyester (GRP) was used.

THE AL NOOR MOSQUE-SHARJAH



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