AVANTHI INSTITUTE OF ENGG & TECHONOLOGY

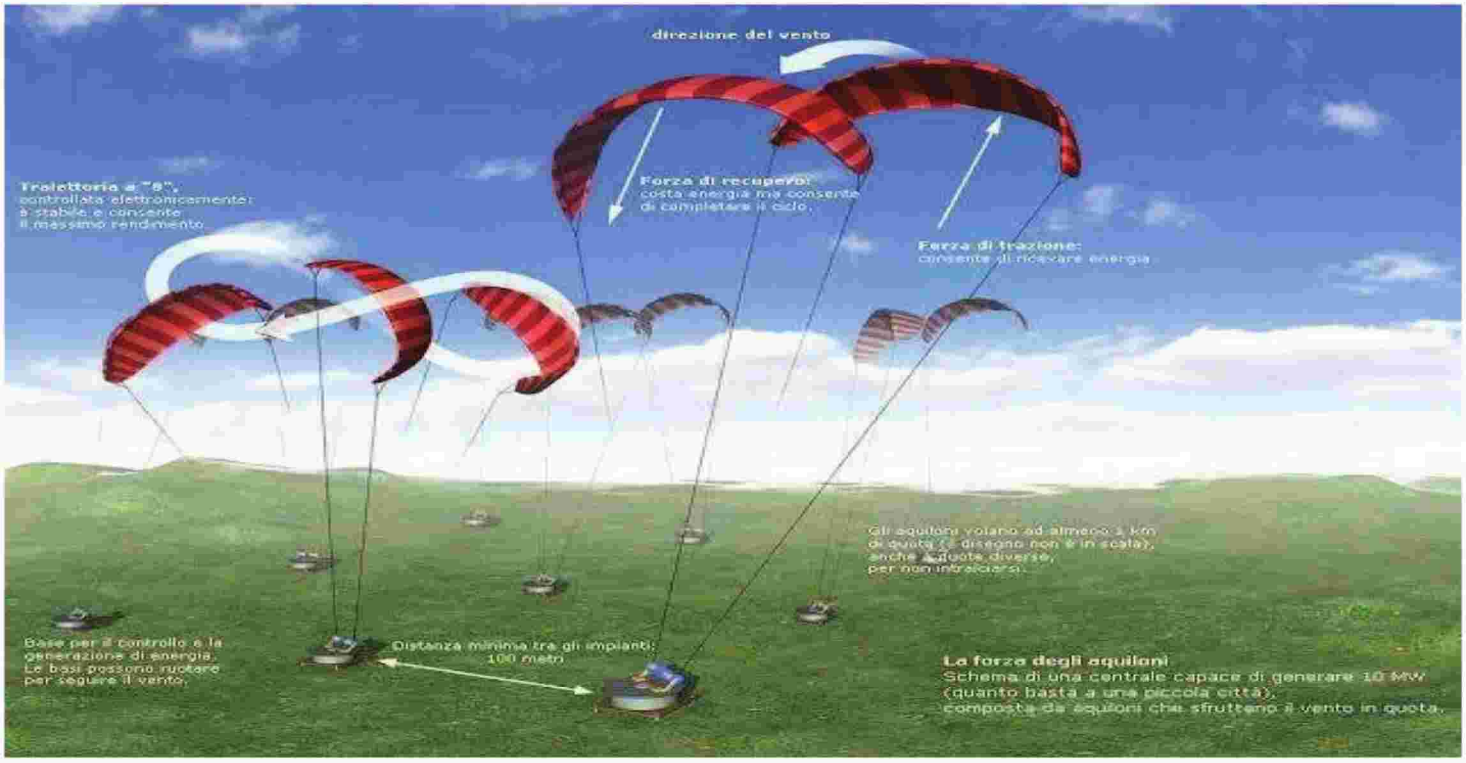
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

LAKSHYA

2019-2020

Deconstructing Danger :

The odds of being seriously injured or killed when encountering unsafe conditions in the electrical industry may far exceed those for other classes of occupational injuries. That's why near-miss reporting is so important. Because they're chillingly frequent — on the order of 300,000 for every 300 recordable injuries — 30 lost-time injuries and one fatality according to a probability model known as "Heinrich's Relationship," they can constitute a steady stream of valuable condition information from the field. Plus, near-misses come to light because workers were careful rather than because someone got hurt. By training workers to spot electrical dangers and encouraging them to report minor injuries and even close encounters, safety teams can collect information on unsafe conditions or practices that could have led to serious injuries. In this special report, Freelancer Tom Zind demonstrates how safety managers can expose and address potent risks and hazards that can lie dormant until a severe injury or fatality occurs.



Kite Power:

- *Kite Power is a cost-effective renewable energy solution with a low environmental footprint. The inflatable wing and the traction tether are made from strong but flexible lightweight materials. In contrast to conventional wind turbines, this tensile structure is not obstructing the view. It is an ideal basis for a highly mobile wind energy system. The heavy generator is positioned at ground level, which facilitates servicing and also minimizes structural forces. The direct force transmission into the ground station removes the need for bending-resistant foundations, which is particularly interesting for deep-water offshore deployment*

a

How doesit work?

The system is operated in periodic pumping cydes, alternating between reel- out and reel-in of the tether. During reel-

out, the kite is flying figure-eight maneuvers at high speed (70 to 90 km/h). This creates a high traction force (3.1 kN at 7 m/s wind speed) which is converted into electricity by the drum and the connected 20 kW generator. When reaching the maximum tether length, the kite is de-powered by releasing the rear (steering) lines such that the whole wing rotates and aligns with the apparent wind.

Using the drum/generator module as a winch, the kite is now pulled back to the

initial position to start the next pumping

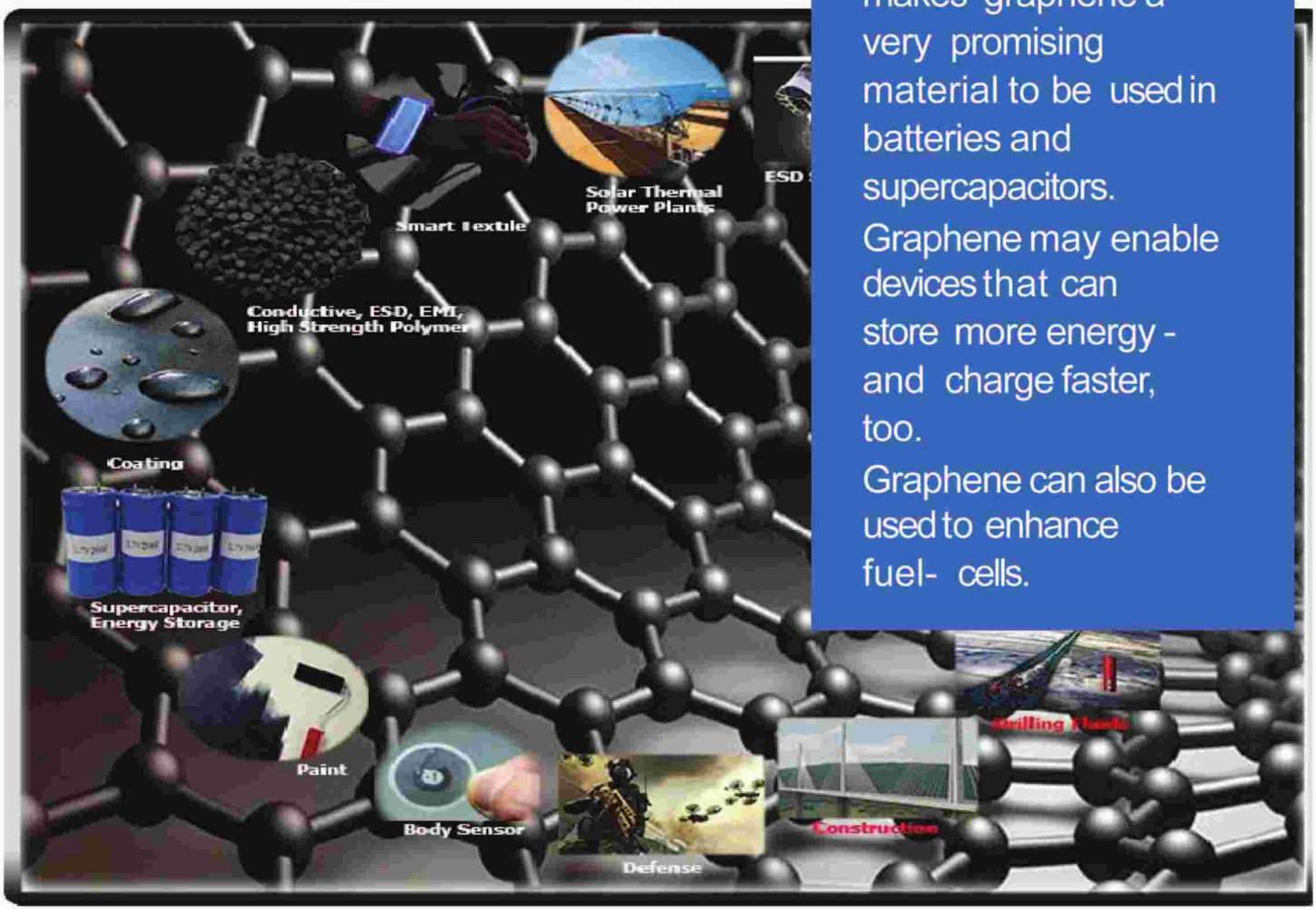
Graphene

Graphene is, basically, a single atomic layer of graphite; an abundant mineral which is an allotrope of carbon that is made up of very tightly bonded carbon atoms organised into a hexagonal lattice. What makes graphene so special is its sp2 hybridisation and very thin atomic thickness (of 0.345Nm). These properties are what enable graphene to break so many records in terms of strength, electricity and heat conduction

Energy storage

Because graphene is the world's thinnest material, it is also the material with the highest surface-area to volume ratio. This makes graphene a very promising material to be used in batteries and supercapacitors.
Graphene may enable devices that can store more energy - and charge faster, too.
Graphene can also be used to enhance fuel- cells.

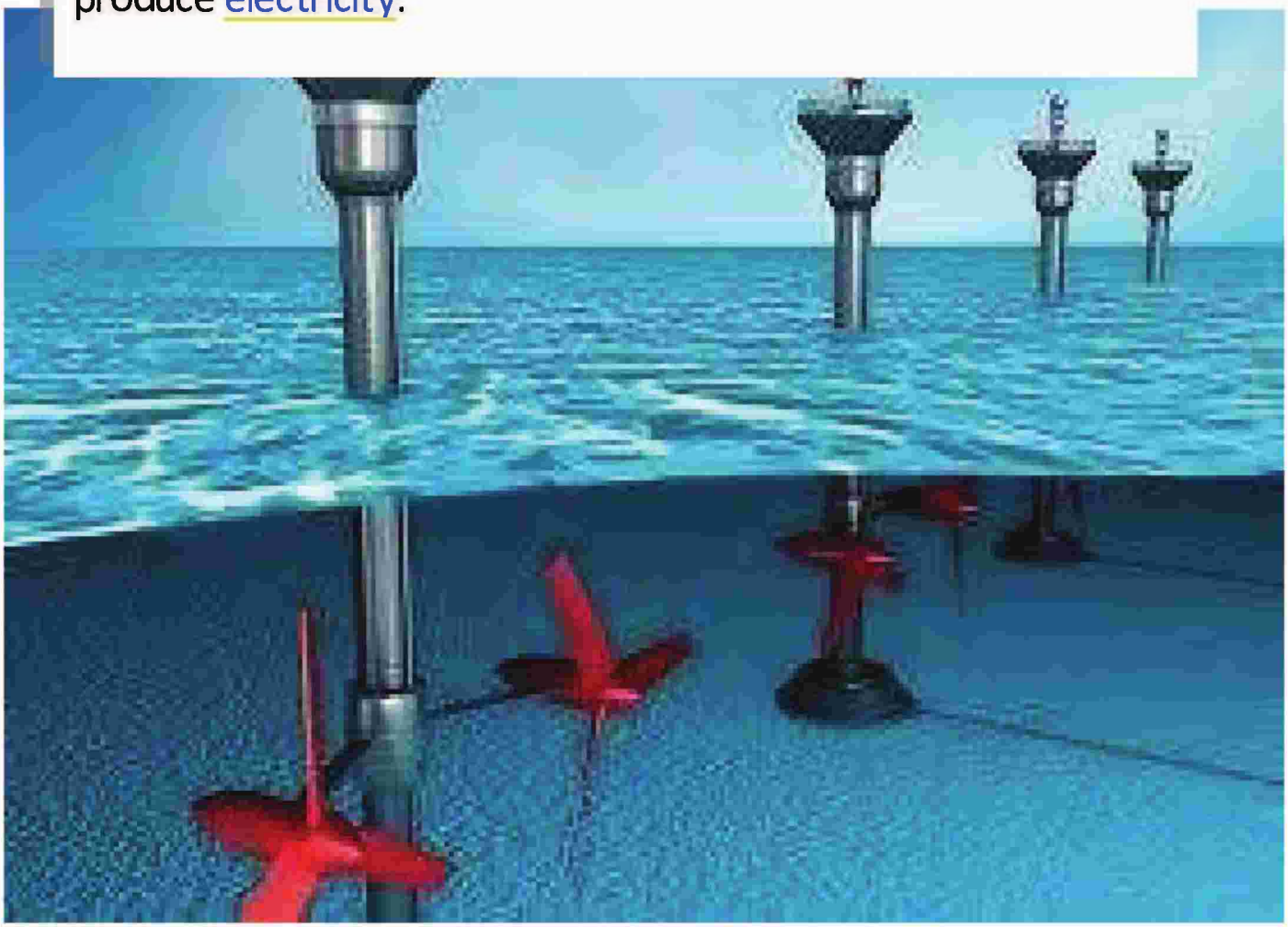
Graphene



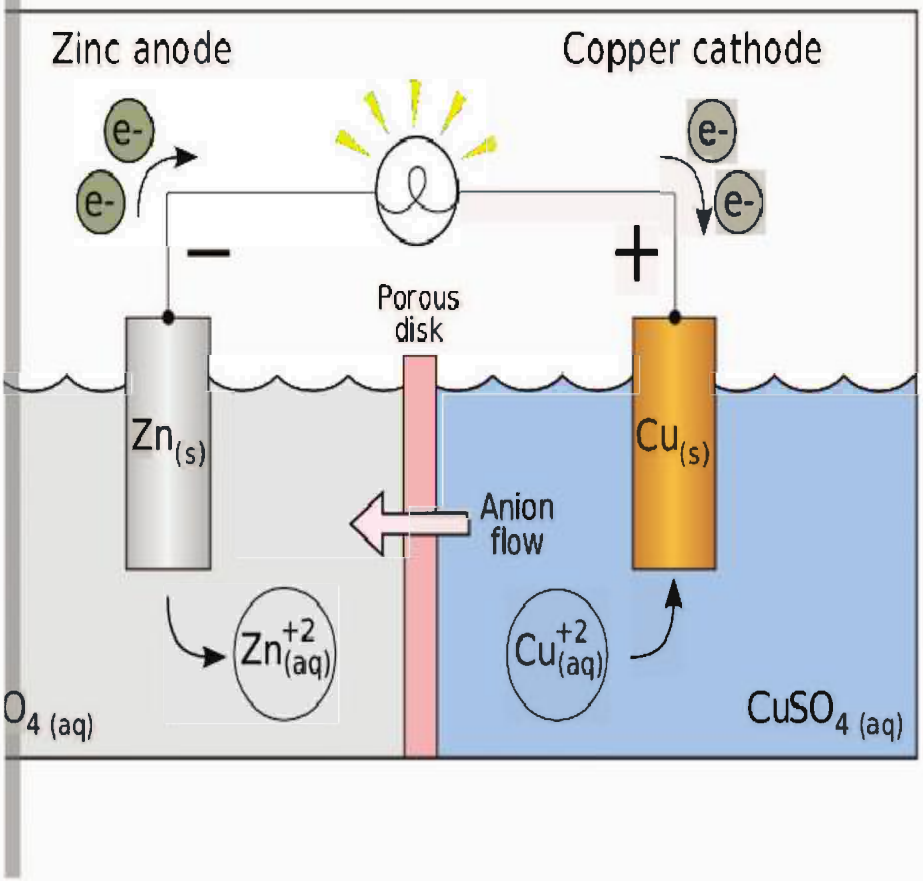
TIDALPOWER

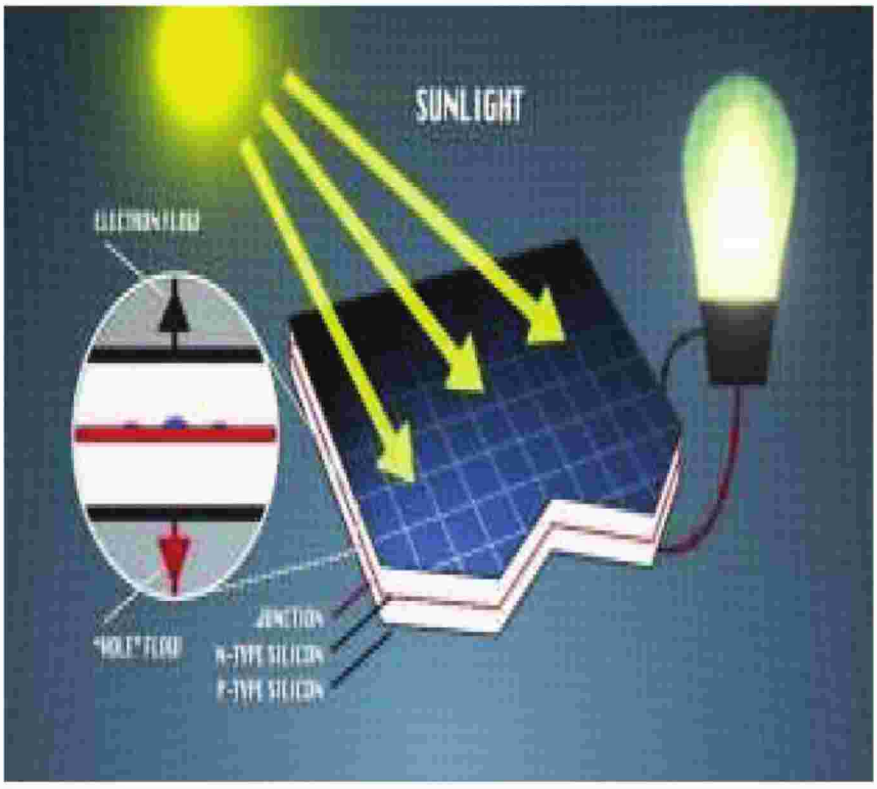
Tidal energy is one of the oldestforms of energy generation. It is a renewable form of energy that converts the natural rise and fall of the tides into electricity. Tides are caused by the combined effects of gravitational forces exerted by the Moon, the Sun, and the rotation of the Earth.

Tidal energy presents an evolving technology with tremendous potential. However, it can only be installed along coastlines. Coastlines often experience two high tides and two low tides on a daily basis. The difference in water levels must be at least 5 meters high to produce electricity.



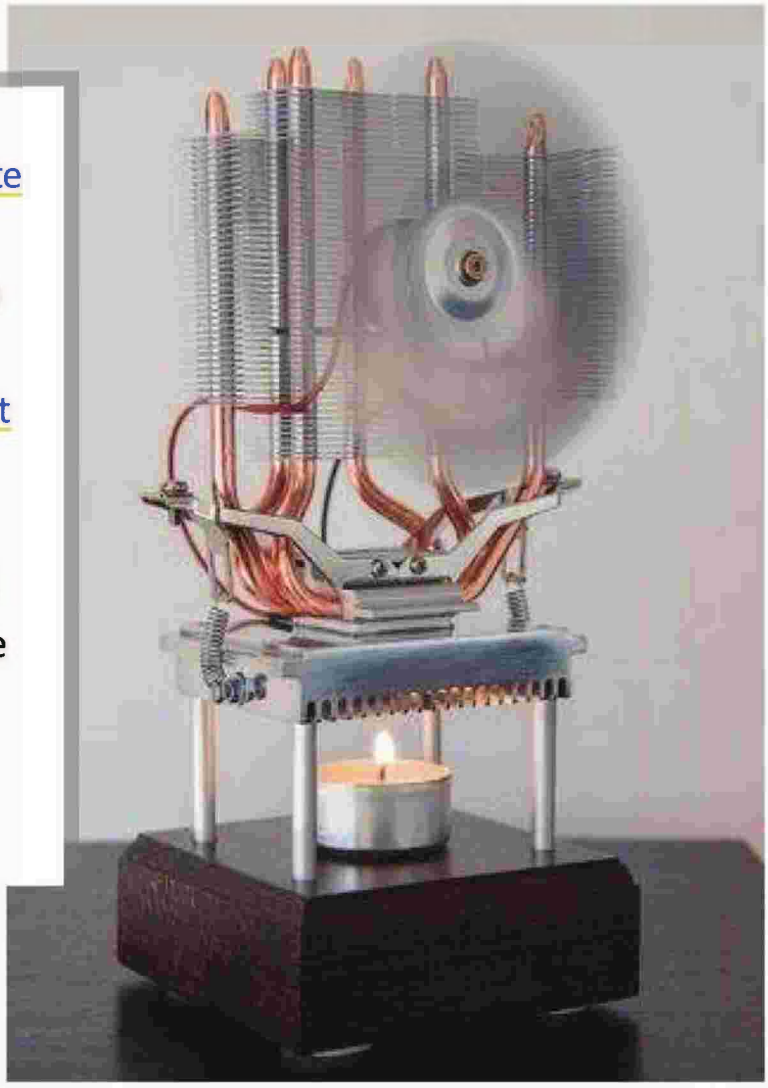
Electrochemistry is the branch of physical chemistry that studies the relationship between electricity, asa measurable and quantitative phenomenon, and identifiable chemical change, with either electricity considered an outcome of a particular chemical change or vice versa. These reactions involve electric charges moving between electrodes and an electrolyte (ionic species aa solution). Thus electrochemistry deals with the interaction between electrical energy and chemical change.





The **photoelectric effect** is the emission of electrons or other free carriers when light shines on a material. Electrons emitted in this manner can be called as *photo electrons*. This phenomenon is commonly studied in electronic physics, well as in fields of chemistry, such as quantum chemistry or electrochemistry

A **thermoelectric generator** (**TEG**), also called a **Seebeck generator**, is a solid state device that converts heat flux (temperature differences) directly into electrical energy through a phenomenaon called the Seebeck effect (a form of thermoelectric effect). Thermoelectric generators function like heat engines, but are less bulky and have no moving parts. However, TEGs are typically more expensive and less efficient.



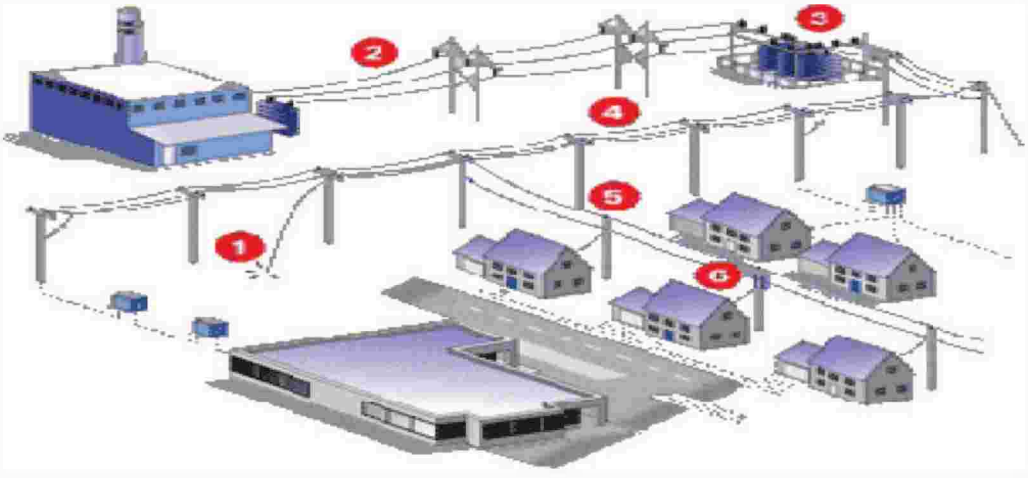
India in 2014 produced 1383 TWh of electricity, 1042 TWh (75%) of this from coal, 138 TWh (10%) from hydro, 68 TWh (5%) from natural gas, 48 TWh (3.5%) from solar and wind, 37 TWh (2.7%) from nuclear, 27 TWh from biofuels, and 23 TWh from oil. There were virtually no imports or exports of electricity in 2015, and about 19% of production was lost during transmission. Consumption in 2015 came to about 1027 TWh[a], or about 800 kWh per capita on average. Total installed capacity as of June 2017 was about 330 GWe, consisting of 220 GWe fossil fuels, 58 GWe renewables (including small hydro), 45 GWe large hydro, and less than 7 GWe nuclear[b].

Power Transmission

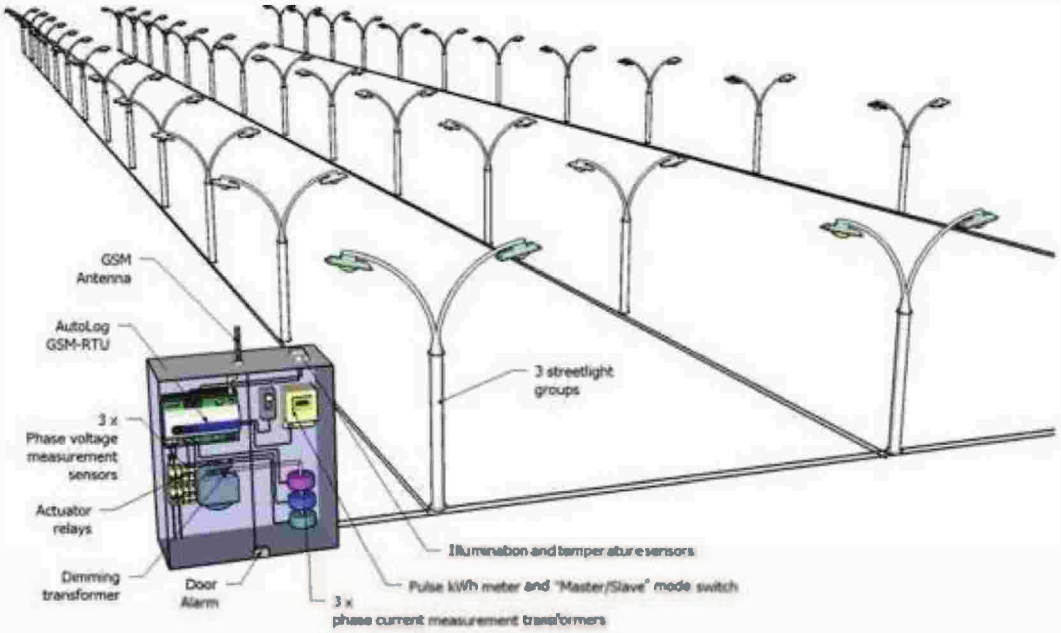
Electric power transmission is the bulk movement of electrical energy from a generating site, such as a power plant, to an electrical substation. The interconnected lines which facilitate this movement are known as a transmission network. This is distinct from the local wiring between high-voltage substations and customers, which is typically referred to as electric power distribution.

Electric power distribution

Electric power distribution is the final stage in the delivery of electric power; it carries electricity from the transmission system to individual consumers. Distribution substations connect to the transmission system and lower the transmission voltage to medium voltage rangingbetween 2 kVand 35 kV with the use of transformers. *Primary* distribution lines carry this medium voltage power to distribution transformers located near the customer's premise

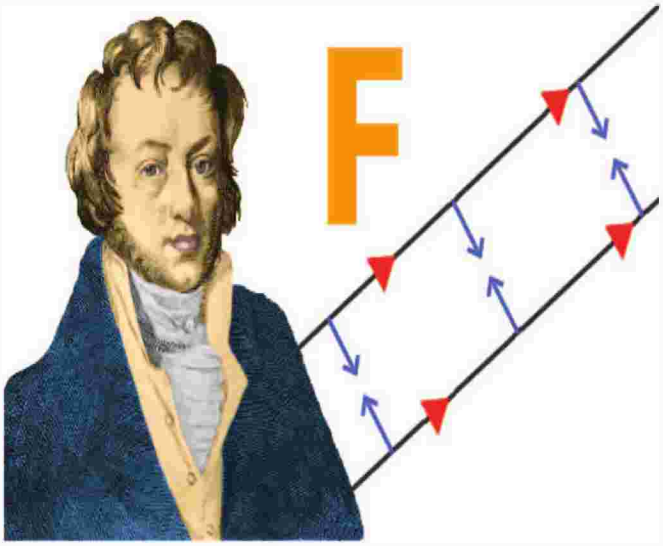


Street Lamp Illumination by Automatic Control System



Conventional street lighting systems in areas with a low frequency of passersby are online most of the night without purpose. The consequence is that a large amount of power is wasted meaninglessly. With the broad availability of flexible-lighting technology like light- emitting diode lamps and everywhere available wireless internet connection, fast reacting, reliably operating, and power-conserving street lighting systems become reality. The purpose of this work is to describe the Intelligent Street Lighting (ISL) system, a first approach to accomplish the demand for flexible public lighting systems.

ANDRE-MARIE AMPERE



Lived 1775 - 1836.
André-Marie Ampère made the revolutionary discovery that a wire carrying electric current can attract or repel another wire next to it that's also carrying electric current. The attraction is magnetic, but no magnets are necessaryfor the effect to beseen. He went on to formulate Ampere's Law of electromagnetism and produced the best definition of electric current of his time.

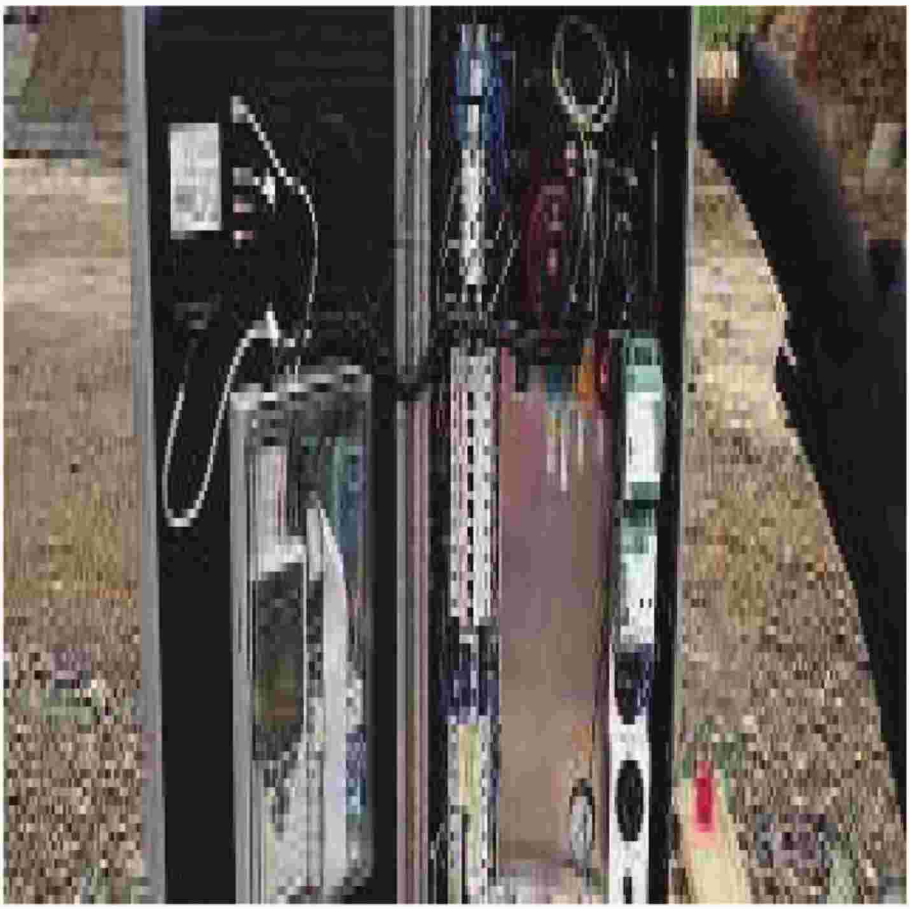
THALES

Long before any knowledge of electricity existed, people were aware of shocks from electric fish. Ancient Egyptian texts dating from 2750 BCEreferred to thesefish asthe "Thunderer of the Nile", and described them asthe "protectors" of all other fish. Electric fish were again reported millennia later byancient

Thermal response test device

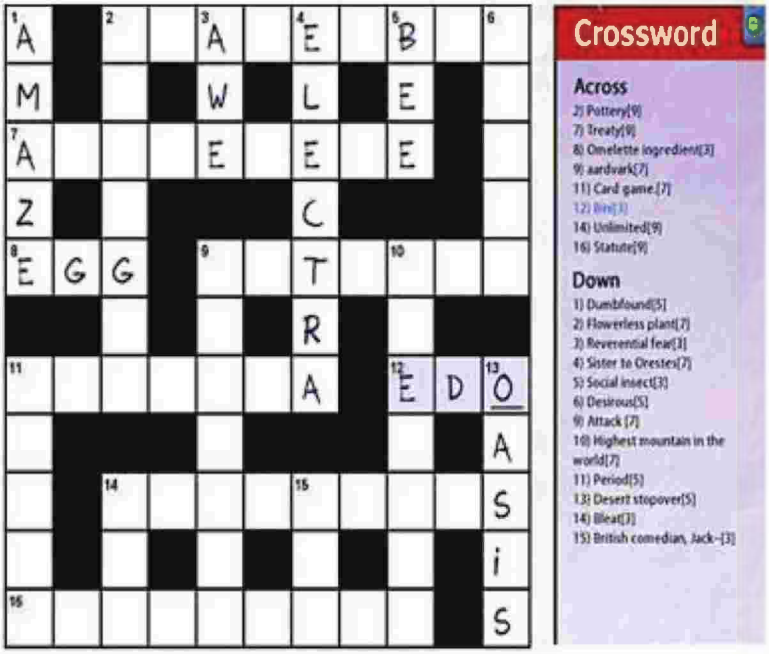
Athermal response test (TRT) is

used to determine the thermal properties of the ground. There is no direct way to measure ground thermal conductivity and borehole therm al resistance. The TRT is vital for designing ground source heat pumps and seasonal thermal energy storage (STES) systems. A TRT is an indirect (in-situ) measurement method which is the simplest and most exact way to determine precise thermal properties (Gehlin 2002). Thermal response tests were first suggested by Mogensen (1983) at an international conference in Stockholm. Mogensen suggested a simple arrangement in which heat at constant power is injected into (or extracted from) a borehole while the borehole mean temperature is measured.a



Sudoku

	4	3	2	6				
		6						3
	8	9	1		5			
	3		6					4
4	7			1			3	8
8					4		7	
			7		6	1	8	
1						9		
				9	1	3	2	



Fun factors

- Electricity travels at the speed of light - more than 186,000 miles per second!
- A spark of static electricity can measure up to three thousand (3,000) volts.
- A bolt of lightning can measure up to three million (3,000,000) volts, and it lasts less than one second!
- Electricity always tries to find the easiest path to the ground.
- Electricity can be made from wind, water, the sun and even animal poop.
- A 600 megawatt natural gas plant can power 220,000 homes.

Hindu Prasanna (IV EEE)

D Janaradhan (III EEE)

K Sai Dhana Sree (II EEE)

A .Arjun Rao (HOD- EEE)

G.Prasanth (Asst. Professor)

NVN Anusha (Asst. Professor)

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