AVANTHI INSTITUTE OF ENGG & TECHONOLOGY

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

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IMPLEMENTATION OF COAL FIRED THERMAL POWER PLANTS EFFICIENTLY

Technologies for determination and control of transit losses for operating cost reduction

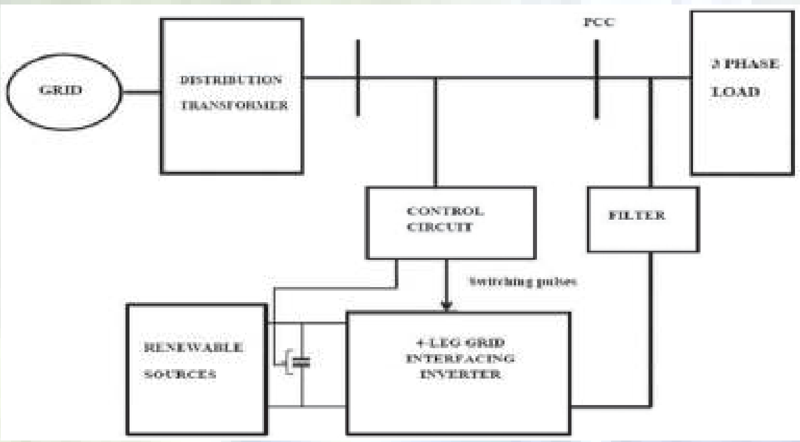
The technology of computing transit loss in many of the stations is obsolete and involves analog outdated machinery and manual recording at several places and also double recording resulting in wastage of manpower for recording purposes when it can easily be automated. Manual intervention increases chances of errors which are difficult to track and

reconcile. Presently, the time constant to compute and realise the magnitude of the transit loss takes around 3-5 days.
The technology of the pit type weigh bridges is obsolete and involves manual recording of analog signals. Printout in the fo0rm a dot matrix
printer is also obsolete. Human intervention is inevitable in the measurement process. Though the accuracy is adequate the overall uncertainty
is depending on the reliability indices of average
interruption frequency and duration indices on an annual basis. Since the disposal rate of a rake is 4-8 hours, an outage of the weigh bridge
for 1 day will lead to an uncertainty of 3 rakes.

The power stations would benefit by going in for technology up gradation in this critical area of their operation. Global positioning system technology for precisely mapping and tracking the movement of the trains for effective tracing the origin and location of the transit loss is an appropriate solution. ***Rail tracking system*** through GPS
or alternativetechnologies needs to be adopted. Rail signature system at the sending end and receiving end are also essential to ensure that there is no tampering. Rail signature systems are usually installed at the entrance to the coal yard at the tippler hopper area

Implementation Of Carrier Based SVPWM For Grid Connected PV System

BLOCK DIAGRAM



System Model And Assumptions

A. System Configuration

Different blocks for the system under consideration are mentioned in Fig.1. Here we are using 11kV, 50Hz grid. For injecting output of PV at distribution point, we are using 3phase 4 wire transmission network. A voltage source inverter is used for converting DC output of PV system to AC. In addition to this, DC link capacitor is used for having control on 2 sides of the inverter namely; grid side and load side. Control circuit is having logic implemented for carrier based SVPWM. Here, we are analysing the carrier based SVPWM results for both linear as well as non linear load. Lastly, LC filter is also used to minimise harmonics arising due to non linear load switching.

B. Overall Model of the System

By following the above block diagram we have prepared simulink model as shown in Fig. 2. System parameters are mentioned in Ta ble I.

C. Solar Photovoltaic Model

Inverter block shown in above model consists of subsystem of solar panel as well as SVPWM control scheme for inverter. It is as shown in Figure 2

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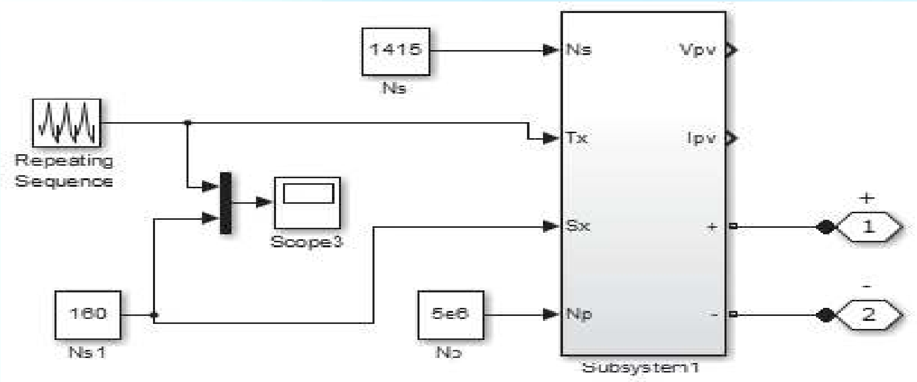


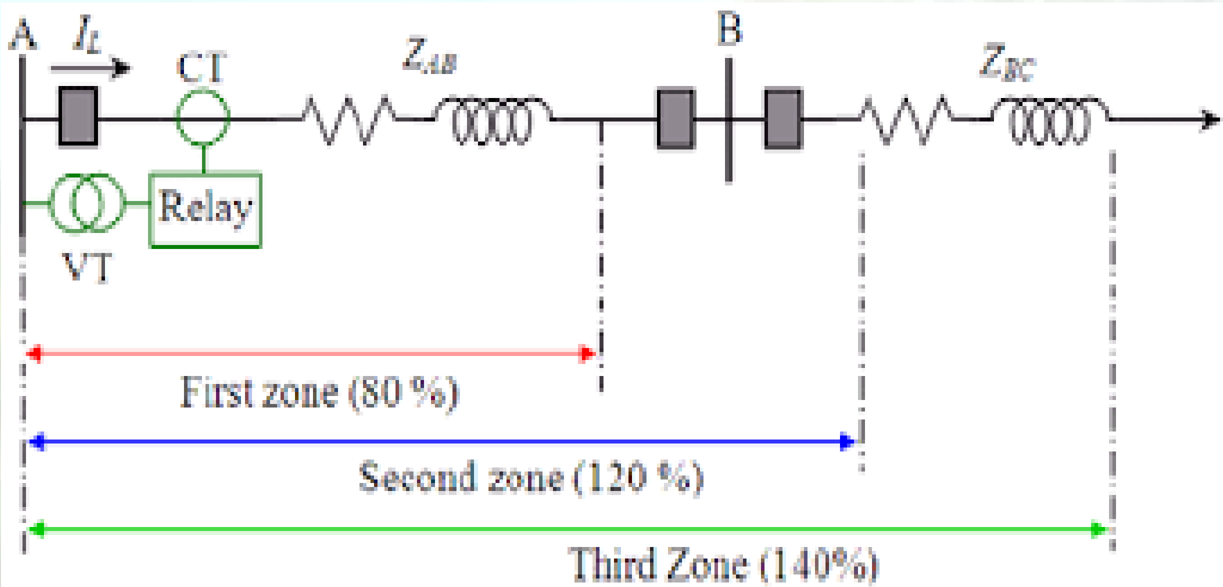
ELECTRIC VEHICLE

Solar Powered Charging Station

***Abstract* — A solar powered charging station is designed so that devices can be charged outdoors and in an environmentally friendly way. This system converts solar energy to electricity and stores it in a battery bank. A microcontroller prevents the batteries from being overcharged and prevents the system from being used when the batteries need charging**

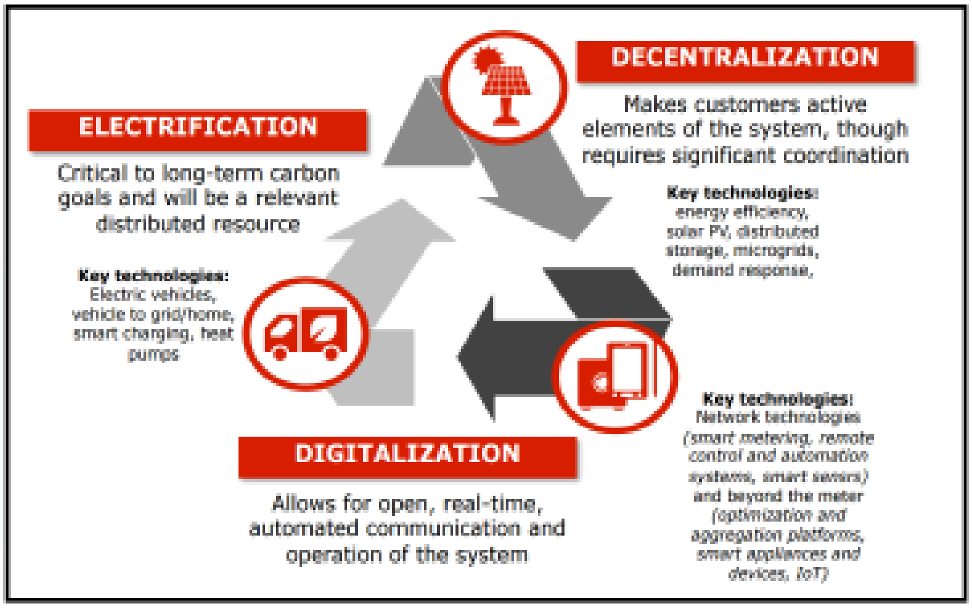
DISTANCE PROTECTION RELAY IN PRESENCE OF STATCOM

Distance relay is most popular in protection of High Voltage and extra high voltage transmission lines science many decades. In this paper analysis of distance protection relay employing with STATCOM on transmission line is done by using the simulation. Also effect of static synchronous compensator (STATCOM) on the distance protection relay under normal and abnormal conditions is investigated. However traditional updating of transmission lines is difficult. To fulfill power demand on the system need to utilize existing power system with the help of flexible alternating current transmission system (FACTS), but this will affect the traditional protection scheme for transmission lines. Simulation result clearly shows the impact of STATCOM on distance protection scheme during fault conditions. A typical 400KV, 300KM long transmission line with 100MVA STATCOM in MATLAB/Simulink is studied.



One of the most important equipment employed in the protection of power system are protection relay. These are one of the most flexible, economic and well known device that provide International Journal of Electrical Engineering and Technology (IJEET), ISSN 0976 – 6545(Print), ISSN 0976 – 6553(Online) Volume 6, Issue 5, May (2015), pp. 14-20 © IAEME 16 reliable, fast and inexpensive protection. Distance relay have been using successfully from many years and most popular type of protection for transmission lines. Distance relay operation based on the measurement of impedance at the relay point to fault point and compare it with predefine set value. In conventional protection scheme measure impedance by a distance relay depends only on the length of the line section located between the fault and the relaying located point. But in case of FACTS employing transmission line protection scheme impedance depend on FACTS operation during fault condition

FUTURE OF ELECTRICITY-NEW TECHNOLOGIES TRANSFORMING GRID EDGE



Three factors fuel the potential for disruption by these grid edge technologies: 1. Their exponentially decreasing costs and continuous technical enhancements 2. Their enabling role for innovative business models, built around empowered customers 3. The sizeable improvement to the asset utilization rate of the electricity system, which is typically below 60% in the United States; electric vehicles alone could add several percentage points to system asset utilization (as noted below) Figure 1. The three trends of the grid edge transformation Critical to long-term carbon goals and will be a relevant distributed resource ELECTRIFICATION Key technologies: Electric vehicles, vehicle to grid/home, smart charging, heat pumps Makes customers active elements of the system, though requires significant coordination Key technologies: energy efficiency, solar PV, distributed storage, microgrids, demand response, DECENTRALIZATION Allows for open, real-time, automated communication and operation of the system Key technologies: Network technologies (smart metering, remote control and automation systems, smart sensrs) and beyond the meter (optimization and aggregation platforms, smart appliances and devices, IoT) DIGITALIZATION The Future of Electricity 5 Together, these grid edge trends pave the way towards a system where traditional boundaries between producers, distributors and customers are blurred, increasing the complexity of system governance. Customer preferences and expectations are shifting towards fewer carbon emissions, greater choice, real-time interaction and sharing, always-on connection, higher transparency, experiences and learning opportunities through services more than products, better reliability and security.

Grid Edge Actionable Framework

Principle 1

Redesign regulatory paradigm Change the rules of the game, advancing and reforming regulation to enable new roles for distribution network operators, innovation and full integration of distributed energy resources

Principle 2

Deploy enabling infrastructure Ensure timely deployment of the infrastructure to enable new business models and the future energy system

Principle 3

Redefine customer experience Incorporate the new reality of a digital, customerempowered, interactive electricity system facilitating customer engagement by making the experience easier, convenient and economical

Principle 4

Embrace new business models Pursue new revenue sources from innovative distribution and retail services, and develop business models to adapt to the Fourth Industrial Revolution

CONCLUSION

Grid edge technologies are paving the way towards a new energy system that will unlock significant economic and societal benefits. However, there is a great risk for value destruction if the system fails to efficiently capture the value of distributed energy resources, which could leave generation or network assets stranded and see customers defect from the grid. This risk represents one more reason to identify and take the right actions that will accelerate and make the transition cost effective

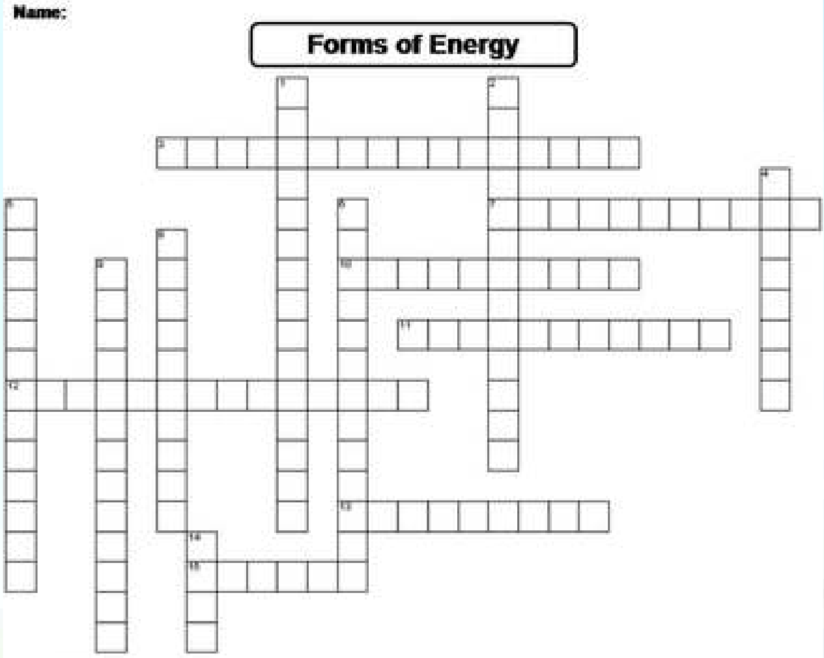
MICHAEL FARADAY

Michael Faraday, 1842, by Thomas Phillips

Born	22 September 1791 Newington Butts, England
Died	25 August 1867 (aged 75) Hampton Court, Middlesex, England
Nationality	British
Awards	Royal Medal (1835 and 1846) Copley Medal (1832 and 1838) Rumford Medal (1846) Albert Medal (1866)
Scientific career	
Institutions	Royal Institution
Signature	

PUZZLES

Name:



ACROSS
3 The energy carried by moving electrons
7 The average kinetic energy of particles in an object
10 Circular motion when warm material rises, cools, and sinks
11 Energy from the vibrations of an object
12 The energy stored in the bonds of atoms and molecules
13 Electromagnetic waves that carry energy
15 The ability to do work

DOWN
1 Stored energy or energy at rest
2 The energy of motion
4 The force that resists the movement of objects
5 The energy stored in something stretched or squashed
6 The energy stored in the nuclei of atoms
8 Heat transferred by direct conduct of solids
9 The energy that comes from heat
14 Energy transferred between objects

FACTS

- Electicity travels at the speed of light-more than 186,000miles/sec!
- A spark of static electricity can measure upto 3000bolts
- Electricity always tries to find the easiest path tp the ground
- A 600MW natural gas plant can power 220,000homes
- Electricity can be made from wind,water,sun and even animal poop

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Md Anwar- III EEE

Mohan Kireety- II EEE

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