



## A REVIEW ON POWER GENERATION, TRANSMISSION DISTRIBUTION SYSTEM IN INDIA

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In this paper we study and present power scenario in India. Also a various type of power generation technique in India out of which one is beneficial and good to overcome and solve the load demand. We present rural distribution network to examine the benefits of de-centralised for meeting the rural road we used single line diagram the transmission and distribution system for actual fedals in India to overcome the problems of losses reduction and system improvement having decentralise generation available. This paper shows starting point to utilize for developing country for the better planning of this system by using renewable and non-renewable type. Electricity generation is the process of generating electric power from sources of primary energy. For utilizes, it is the first process in the delivery of electricity to consumers. The other process as transmission, distribution energy storage and recovery using pumped-storage methods are normally carried out by the electric power industry. The word is facing problems of power Generation shortage, operational cost and high demand in these days. The main aim of these article is to know power generation method, techniques and economical strategy which method are suitable for indivisible country on the base its own natural resources, technical expertise and economic these article providing guiding a best opportunity to select the right methods and technique for right and economic power generation after study power generation, methods, Techniques and economical strategy. The growing energy demand in developing nations has triggered the issue of energy security. This has made essential to utilize the untapped potential of renewable resources.

**Index Terms:** Power scenario, resource, Industries, Transmission and distribution system, Economical Strategy.

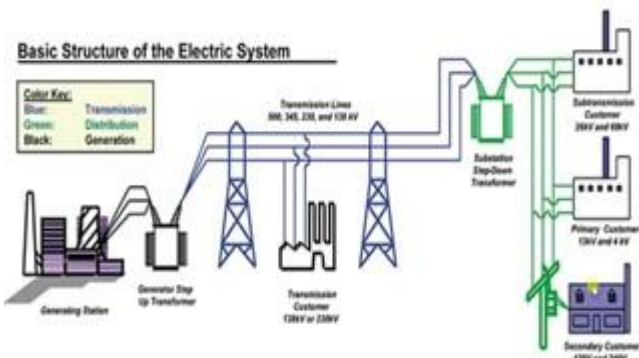
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**1. INTRODUCTION**

As the power supply in India has been lagging in terms of service and penetration. Rural household basically often 28% of the electricity and supply frequent power cuts, fluctuations in voltage and frequency known as black outs. The ratio of supply and demand in India 18% peak demand and 9.5% of average load, which are highly subsidized, on average load. In this paper, various types of power generation techniques are discussed as conventional and non-conventional power sources, also we are discussing the various types of generations used in India, out of this, which one is beneficial for tremendous power generation giving highly output efficiency. A single line diagram for the power flow in distributed electrical network is discussed in this paper. A part of power generated is transferred to the loads by using transmission system is described in this paper. To overcome the problems of power supply, the current policies of generations and distributed network are

clearly helpful to us, cut in future. Energy exist in various forms like mechanical energy and, electrical energy, thermal energy and so on. one form of energy can be converted into another form by suitable arrangements. Out of this forms, electrical energy is preferred due to the following reasons:

- 1) It can be easily transported from one form to another.
- 2) Losses in energy transportation are minimum.
- 3) It can be easily controlled and regulated to suitable requirement.



**Fig.1.1: Basic Structure of Electric System**

**1. Energy resource in India**

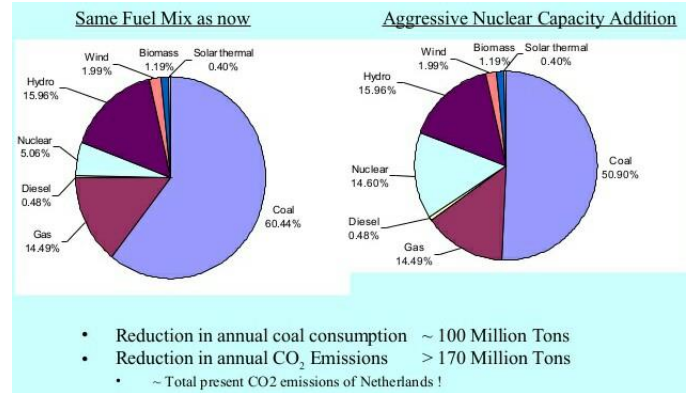
The natural resources for electricity generation in India are unevenly dispersed & concentrated in few pockets. Hydro resources are located in the Himalayan foothills & in the north-east region (NER). Coal reserves are concentrated in Jharkhand, Orissa, West Bengal, Chhattisgarh, parts of Madhya Pradesh, whereas lignite is located in Tamilnadu & Gujarat. North-eastern region, Sikkim and Bhutan have vast untapped hydro potential estimated to be about 3500MW in NER, about 8000MW in Sikkim and about 1500MW in Bhutan. Energy resource map in India is shown at Fig. 1.1

The distribution of energy resource and consumption centres are extremely unbalanced. The load centres are scattered far from resource-rich areas.

**2. Power Generation Techniques:-**

There are different methods and techniques to generate power and electricity in the world with the help of machinery and equipment as below.

- 2.1: thermal power generation
- 2.2 hydro power generation
- 2.3 nuclear power generation
- 2.4 diesel power generation
- 2.5 wind power generation
- 2.6 solar power generation
- 2.7 biomass power generation



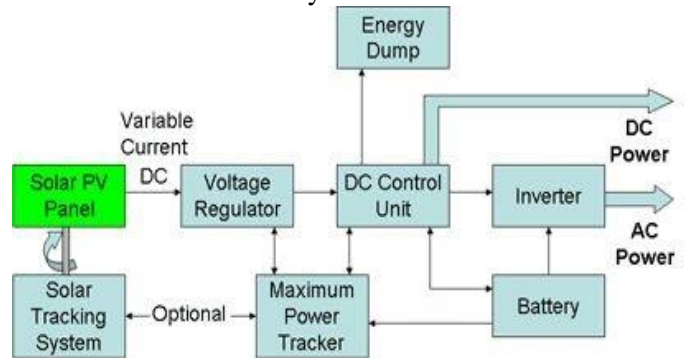
**Fig.1.2 Energy scenario**

**3 Solar Power Generation:-**

The main type of solar power generation is-

**2.1. Photovoltaic solar power generation -**

This method uses photovoltaic cells that absorb direct sunlight just like solar cells you see on some calculators. As light hits the solar panels, the solar radiation is converted into direct current electricity (DC). The direct current flows from the panels and is converted into alternating current (AC) used by local electric utilities. Finally, the electricity travels through transformers, and the voltage is boosted for delivery into the transmission lines so local electric utilities can distribute the electricity to homes and businesses.



**Fig.2.1: Photovoltaic Solar power Generations**

**2.2 Solar thermal power generation –**

This also uses a solar collector. It has a mirrored surface that reflects the sunlight into a receiver that heats up a liquid. This heated liquid is used to make steam that produces electricity. Solar collectors capture and concentrate sunlight to heat synthetic oil called thermal, which then heats water to create steam. The steam is piped to an onsite turbine generator to produce

electricity,

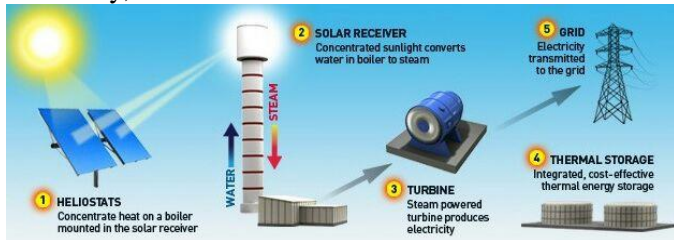


Fig.2.2:solar thermal power generations

**TRANSMISSION AND DISTRIBUTION FORELECTRICAL POWER:**

Transmission of electrical power:

Transmission system are renewable and conventional source with original and loco distribution system electricity is from the distribution system be the electricity is than livered from the household overlant the electricity is exclusive transmitted using high voltage over headline and only in special cases via underground cables one important element overhead line are pylons they carry the conductor .The 50Hz content in 14000PYLONS in particular two level pylons where the conductors are range in tri angle thus forming a system point in other word the electrical circuit conductor have to be isolated from the earth pylons where there are fixed with isolated normally the difference between 200kv and 380kv line can be pin pointed checking the number wise leader 220kv frequently have to 380kv line be a isolators we electricity transferred to conductors in form a small electrons with a negative charge the line conductors are in a conduction material with wire are attached to the top of the pylons will not transferred the electricity but protect the line conductors against lighting street over headline.

**Distribution of electrical power:**

Electrical power distribution is the last 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 ranging between 2Kv and 35kv with the use of transformeroften several customers are supplied from one transformer to secondary distribution. Commercial and residential customers are connected to the secondary distribution.

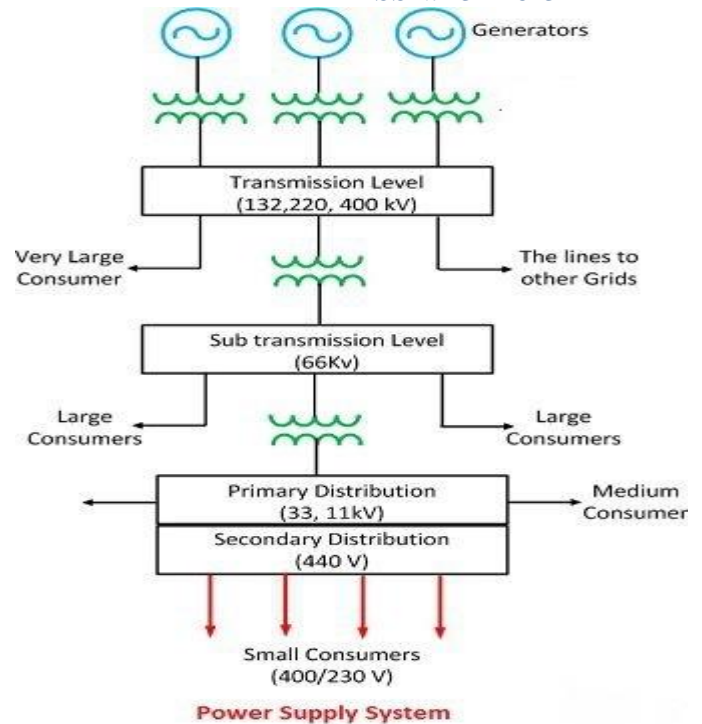


Fig.3.1: Single line diagram for power transmission

In power plant the power is generated this power is 11Kv .this power is cannot be used in household applications. Because the distance of power plant and the power is used is far away. Due to this we need step up transformer. The work of step up transformer is to convert low power to high power. The 11kv is converted into 132kv or 440kv or 220kv as our requirement .This operation is called primary transmission. For secondary we required 33kv. This is obtain by step down of 132kv.some receiving station required 33kv because of this the secondary transmission is needed the industrial consumer required 11kv then again the power is step down with help of transformer .In hose hold application we required 415v and this is done by transformer.There is a maximum step up or step down is used.

**CONCLUSION:**

In this paper it is discussed that the generation, transmission and distribution of power along over a transmission line. From generating station to the consumer or load. Also according to the various type of generation station now the solar power generation is beneficial to over the other power generation and single line diagram is discussed for transmission and distribution.

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