A Review on Power Generation System

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ABSTRACT
Electricity is major requirement for daily life activities. Without electricity the domestic and industrial operation cannot be performed. But there exists several issues during these processes. However lot of research have been made to solve issues but still there are some problems such as Lack of clean & reliable energy sources, Intraday load & need, no access to electricity, Pollution from thermal power plants, Poor pipeline connectivity & infrastructure, Inadequate last mile connectivity, Average transmission, distribution & consumer-level losses etc. In previous research SOLAR PV – WIND Hybrid power generation system approach has been used. As it is known that Renewable energy sources such as energy generated from solar, biomass, wind, geothermal, hydro power, and ocean resources have been considered as a technological option. It could help in generating clean energy. But there are certain limitations of tradition work such as solar energy is not available 24 hours. Even in winter the solar production is negligible.

Keywords: Solar power, Wind Energy, Hydraulic power, Nuclear power

1. INTRODUCTION

1.1 Electricity is considered as usually generated at a power station. It is done by electromechanical generators. That has been primarily driven by heat engines fuelled by combustion as well as nuclear fission. Different energy sources include solar photovoltaics & geothermal power. Electricity generation is known as process of generating electric power from sources of primary energy. It has been first stage in delivery of electricity to users for electric utilities in electric power industry. After those stages such as transmission, distribution, energy storage & recovery, using pumped-storage methods take place.

A characteristic of electricity is that it is not a primary energy freely present in nature in remarkable amounts & it must be produced. Production is carried out in power plants. Electricity is most often generated at a power station by electromechanical generators, primarily driven by heat engines fuelled by combustion or nuclear fission but also by other means such as kinetic energy of flowing water & wind. Other energy sources include solar photovoltaics & geothermal power.

2. Potential energy from falling water in a hydroelectric facility.
3. Wind energy.
4. Solar electric from solar (photovoltaic) cells.
5. Chemical energy from: fuel cells, Batteries.

Table 1.1 World's largest photovoltaic power stations as of 2015

<table>
<thead>
<tr>
<th>Name</th>
<th>Capacity (MW)</th>
<th>Location</th>
<th>Year Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longyangxia Dam Solar Park</td>
<td>850</td>
<td>Qinghai, China</td>
<td>2013, 2015</td>
</tr>
<tr>
<td>Kamuthi Solar Power Project</td>
<td>648</td>
<td>Kamuthi, India</td>
<td>2015</td>
</tr>
<tr>
<td>Solar Star I &amp; II</td>
<td>579</td>
<td>California, USA</td>
<td>2015</td>
</tr>
<tr>
<td>Topaz Solar Farm</td>
<td>550</td>
<td>California, USA</td>
<td>2014</td>
</tr>
<tr>
<td>Desert Sunlight Solar Farm</td>
<td>550</td>
<td>California, USA</td>
<td>2015</td>
</tr>
<tr>
<td>California Valley Solar Ranch</td>
<td>292</td>
<td>California, USA</td>
<td>2013</td>
</tr>
<tr>
<td>Agua Caliente Solar Project</td>
<td>290</td>
<td>Arizona, USA</td>
<td>2014</td>
</tr>
<tr>
<td>Mount Signal Solar</td>
<td>266</td>
<td>California, USA</td>
<td>2014</td>
</tr>
<tr>
<td>Antelope Valley Solar Ranch</td>
<td>266</td>
<td>California, USA</td>
<td>pending</td>
</tr>
<tr>
<td>Charanka Solar Park</td>
<td>224</td>
<td>Gujarat, India</td>
<td>2012</td>
</tr>
<tr>
<td>Mesquite Solar project</td>
<td>207</td>
<td>Arizona, USA</td>
<td>pending</td>
</tr>
<tr>
<td>Golmud Solar Park in Huanghe Hydropower</td>
<td>199</td>
<td>Qinghai &amp; China</td>
<td>2012</td>
</tr>
<tr>
<td>Gonghe Industrial Park Phase I</td>
<td>200</td>
<td>Gonghe County, China</td>
<td>2013</td>
</tr>
<tr>
<td>Imperial Valley Solar Project</td>
<td>200</td>
<td>California, USA</td>
<td>2013</td>
</tr>
</tbody>
</table>

2. LITERATURE

There are several researches made in this field in which some has been given below:

In 2003, Duane C., et al. [1] did Study of Hydroelectric Power. This study has been made From a Global Perspective to a Local Application.


In 2010 Eric H. et al [6] Investigated the Hydroelectric Generator: Clean, Powerful Alternative Energy. Through this project, two hydroelectric generators were created which operated quietly, effectively, & continually.

In 2011 Joseph K., et al [7] did research on Promoting re latest able power & power efficiency in Central Africa: Cameroon case study. Central Africa owns important re latest able power potential. This important potential is still suffering from poor development.

In 2011 Parson Brinckerhoff [8] wrote Electricity Generation Cost Model. This research provide information for following to update of cost assumptions for this Technical inputs for DECC Liveliest Electricity Cost Model to Current state of technology & any expected future changes.


In (2012) Chiyembekezo S. K., et al. [10] did research on potential of Small-Scale Hydropower for Electricity Generation in Sub-Saharan Africa. The importance of electricity such as small hydropower is increasing.

In 2012 Dennis Woodford, P et al [11] presented the power electronics for wind energy application. With attention now focutilized on damaging impact of greenhouse gases, wind energy is rapidly emerging as a low carbon, resource efficient, cost-effective sustainable technology in many parts of world.

In 2013 J. Godson, et al., [12] has made research on Solar PV-Wind Hybrid Power Generation System.

In 2013 G.K. Singh [13] stated the solar power generation by PV (photovoltaic) technology. They provided a review on this topic. Different forms of solar energy are solar photovoltaic, solar heat, and solar thermal electricity. In this research the proposed SOLAR PV–WIND Hybrid power generation system.
In 2013 Xiaobo Y., et al. [14] proposed the Hydro Power Integration with direct current Power Plant Technology. The Renewable power technologies & sources have possible to offer solutions to longstanding energy issue being faced by developing countries like as India.

In 2013 Yogesh Murthy [15] provided a Review on Power Electronics Application on Wind Turbines. This paper is reviewing power electronic applications for wind power systems.

In 2014 Subhash Chander Swami, et al. [16] wrote on Power Generation from Waste Sources of Thermal Plant. There is increasing interest related to environmental issues of emissions.

In 2014 Shahrroz A., et al. [17] provided a Review of Re latest able power Supply & power Efficiency Technologies. Electricity consumption could comprise an increasing share of global power demand during next two decades.

In 2016 Belqasem A. [18] proposed the Recent Trends in Hydroelectric Power Technology. This paper traces an overview of hydroelectric power & history of hydroelectric power.

In 2016 Bhushan D. Agarkar et al. [19] presented a Review on Hybrid solar/wind/ hydro power generation system. They studied various re latest able power resources & which could be utilized for development of electricity.

In 2016 Deepak K., et al. [20] discussed the environmental sustainability of run of river hydropower projects. They provided a study from western Himalayan region of India. This research paper presents a public perception cum data collection study on environmental impacts of small & huge RoR hydropower projects located in western Himalayan region of India.


A comprehensive review of solar photovoltaic systems has been carried out to explore their application in future generation systems.

In 2017 Deepak Purohit, et al. [22] provided a Review Paper on Solar Energy System. The plant which converts solar energy to light energy from sun into electrical energy is called a solar power plant process.

3. RESEARCH SCOPE

It would increase reliability and consistency of electricity production. According to proposed model there is no need to depend only on wind and sun. Proposed model would be capable to produce electricity in absence of wind and sun. This system would reduce consumption of fossil fuels and production of greenhouse gases. System is good for remote application: satellites, rural hospital equipment in developing counties, telecommunication equipments, etc. It would reduce the loss of electricity due to power line resistance because it can be sited where the electricity is used. System reduces water consumed in electrical generation processes by displacing electrical demand.

REFERENCES


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