STEAM POWER GENERATION

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ABSTRACT

A power station (also referred to as a generating station, power plant, or powerhouse) is an industrial facility for the generation of electric power. Power plant is also used to refer to the engine in ships, aircraft and other large vehicles. Some prefer to use the term energy center because it more accurately describes what the plants do, which is the conversion of other forms of energy, like chemical energy, gravitational potential energy or heat energy into electrical energy. However, power plant is the most common term in the U.S., while elsewhere power station and power plant are both widely used, power station prevailing in many Commonwealth countries and especially in the United Kingdom

Keyword : - *Steam,Thermal,Water,Turbine*

1. INTRODUCTION

A power station (also referred to as a generating station, power plant, or powerhouse) is an industrial facility for the generation of electric power. Power plant is also used to refer to the engine in ships, aircraft and other large vehicles. Some prefer to use the termenergy center because it more accurately describes what the plants do, which is the conversion of other forms of energy, like chemical energy, gravitational potential energy or heat energy into electrical energy. However, power plant is the most common term in the U.S., while elsewhere power station and power plant are both widely used, power station prevailing in many Commonwealth countries and especially in the United Kingdom. At the center of nearly all power stations is a generator, a rotating machine that converts mechanical energy into electrical energy by creating relative motion between a magnetic field and a conductor. The energy source harnessed to turn the generator varies widely. It depends chiefly on which fuels are easily available and on the types of technology that the power company has to access.

1.1 Steam power

During the Industrial Revolution, **steam power** replaced water power and muscle power (which often came from horses) as the primary source of power in use in industry. Its first use was to pump water from mines. The early engines were not very efficient, but a modified version created by James Watt gave engines the power to become a driving force behind the Industrial Revolution. Steam power was not only used in engines but also in furnaces and other factory appliances that were difficult to implement prior to the invention of steam power.

1.2 Hydro power

Energy in water (in the form of kinetic energy, temperature differences or salinity gradients) can be harnessed and used. Since water is about 800 times denser than air, even a slow flowing streamof water, or moderate sea swell, can yield considerable amounts of energy.

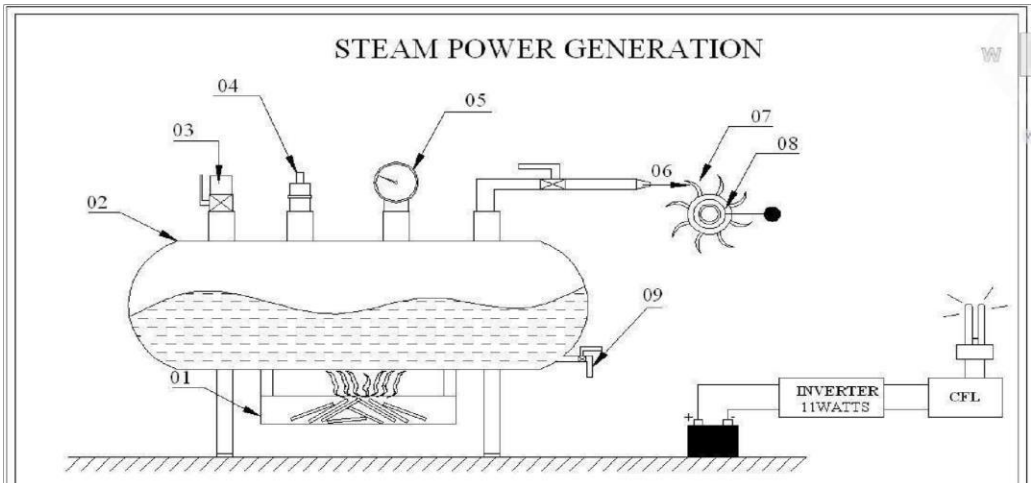
2. DISCRIPTION AND EQUPMENTS

A water turbine is a rotary engine that takes energy from moving water. Water turbines were developed in the nineteenth century and were widely used for industrial power prior to electrical grids. Now they are mostly used for electric power generation. They harness a clean and renewable energy source.

Chart -1: Design and Drawing

The steam power generation is consists of the following components to full fill the requirements of complete operation of the machine.

- Turbine
- Dynamo
- Battery
- Water tank
- Fire tray



S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME
01	HEATING TRAY	04	SAFTEY VALVE	07	TURBINE	▶—	TO CONTROL UNIT
02	TANK	05	PRESSURE INDICATOR	08	DYNAMO	●—	TO BATTERY
03	WATER INLET	06	STEAM OUTLET	09	DRAIN PORT		

Fig -1: Block diagram

2.1 Dinamo

Dynamo is an electrical generator. This dynamo produces direct current with the use of a commutator. dynamo were the first generator capable of the power industries.The dynamo uses rotating coils of wire and magnetic fields to convert mechanical rotation into a pulsing direct electric current. A dynamo machine consists of a stationary structure, called the stator, which provides a constant magnetic field, and a set of rotating windings called the armature which turn within that field. On small permanent magnets; larger machines have the constant magnetic field provided by one or more electromagnets, which are usually called field coils..

2.2 Battery

In our project we are using secondary type battery. It is rechargeable Type. A battery is one or more electrochemical cells, which store chemical energy and make it available as electric current. There are two types of batteries, primary (disposable) and secondary (rechargeable), both of which convert chemical energy to electrical energy. Primary batteries can only be used once because they use up their chemicals in an irreversible reaction. Secondary batteries can be recharged because the chemical reactions they use are reversible; they are recharged by running a charging current through the battery, but in the opposite direction of the discharge current. Secondary, also called rechargeable batteries can be charged and discharged many times before wearing out. After wearing out some batteries can be recycled.

3. WORKING PRINCIPLE

This type of project is used to steam storage areas. When the high pressure of steam flow through the turbine in that turbine will be rotate the rotating speed is depends upon the pressure of stem flow. For this tank we are using pressure gauge it is maintain the tank or steam pressure. Heater using heat water Dynamo is coupled with turbine it is a permanent magnate with a coil arrangement whenever the turbine is rotating the moving coil in the dynamo also rotate. Due to that alternating voltage is generated. Then AC voltage is given to rectifier circuit to convert the DC voltage. After that the rectified voltage is fed to filter circuit in order to filter the AC ripples. Then the filtered DC voltage is stored in the Battery. This steam power converts to inverter and activate the CFL lamp. This stored DC voltage used to different application. Through this way electric power is generated and compensated to the electric demand. So this project is steam power plant.

3.1 List of materials

The material selected must posses the necessary properties for the proposed application. The various requirements to be satisfied Can be weight, surface finish, rigidity, ability to withstand environmental attack from chemicals, service life, reliability etc. The following four types of principle properties of materials decisively affect their selection

a. Physical

b. Mechanical

c. From manufacturing point of view

d. Chemical

The various physical properties concerned are melting point, thermal Conductivity, specific heat, coefficient of thermal expansion, specific gravity, electrical

The various Mechanical properties Concerned are strength in tensile, Compressive shear, bending, torsional and buckling load, fatigue resistance, impact resistance, eleastic limit, endurance limit, and modulus of elasticity, hardness, wear resistance and sliding properties.

The various properties concerned from the manufacturing point of view are,

- Cast ability
- Weld ability
- Surface properties
- Shrinkage
- Deep drawing etc.

4. CONCLUSIONS

This project is made with pre planning, that it provides flexibility in operation. It is very useful for the market is growing for many forms of renewable energy. This innovation has made the more desirable. This project “fabrication of hydro power plant” is designed with the hope that it is very much economical and help full. This project helped us to know the periodic steps in completing a project work. This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task which has also been provided. Thus we have completed the project successfully.

5. REFERENCES

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