GEOTHERMAL ENERGY

Rahul Rajput, Navdeep Kaushik
B. Tech Students, Department of Mechanical Engineering
Dronacharya College of Engineering, Gurugram, India.

Abstract- **The locomotive on 21 February 1804 in Wales was introduced by Trevithick. It achieved a speed of 8 km/h. In 1815, Englishman George Stephenson built the world's first workable steam locomotive. In 1825, he introduced the primary train which steamed along at 25 km/h (16 mph). Now a days trains can runs on the tracks at 500 km/h by not touching the tracks. There is no defined speed at which you'll call a train a high speed train but trains running at and above150 km/h are called High Speed Trains.**

I. INTRODUCTION

Historically, the primary application of heat were for space heating , cooking and medical purposes . The earliest record of space heating dates back to 1300 in Iceland .In the early 1800s , heat was used by the conte Franceso de Laderel to regain boric acid . The first mechanical conversion was in 1897 when the steam of the sector at Larderallo, Italy , was wont to heat a boiler producing steam which drove alittle steam engine . The first plan to produce electricity also happened at Larderello in 1904 with an electricity generator that powered four light bulbs. A condensating turbine was followed in 1912 and electricity was produced in 1914

Geothermal energy is additionally the one among the renewable energy sources, which are defined as those resource that draw on the natural energy floors of the world (another term THE ALTERNATIVE ENERGY SOURCES is also common in use). Renewable energy sources are so named because they recur , are seemingly inexhaustible, and are free for the taking . geothermal energy as practically no intermittency, has the very best energy density,& is economically shortly faraway from the traditional technologies .geothermal energy classified as renewable because the earth’s interior is and can continue within the process of cooling for indefinite future.

Thus there's a huge scope to use heat for coldness applications. The development of geo thermal plant in india is still at initial stage. There is more scope of geothermal plant in India. The hot spring or warm spring is represented by thermal areas in India. In India 340 thermal areas are known about. About 113 spring area, discovered thus far where geothermal power is out there . 46 of those systems are of heat type , which might be generate 1838 MW for a period of 30 years .

II. HOW DOES GEOTHERMAL ENERGY WORK

The heat which comes from the Earth core flows outward. It transfers (conducts) to the encompassing layer of rock, the mantle. The magma is formed when the pressure and temperature become high than the mantle rocks melts. Then, because it's lighter (less dense) than the encompassing rock, the magma rises (convects), moving slowly up toward the crust , carrying the warmth from below.

Sometimes the recent magma reaches all the thanks to the surface, where we all know it as lava. Below the crust the magma remains due to the heating nearby rocks and water. This is as hot as 370 degrees. This natural collection of predicament is named a geothermal reservoir.

III. NATURE OF GEOTHERMAL ENERGY FIELD

A. Liquid Dominated Geothermal Power Plant

Flash steam plants - take high-pressure predicament from deep inside the world and convert it to steam to drive the generator turbines. When the steam cools, it condenses to water and is injected back to the bottom to be used over and once again. Most geothermal power plants are flash plants. The geothermal reservoir condensate by the water which is injected in these

types of plants through the injection well and forces water at a heat (360°F) up through the assembly well. From the assembly well it's pumped through a series of pressure vessels which are at a lower internal pressure than the recent geothermal fluid, causing it to flash off into low, medium and high pressure steam. The steam then passes through the turbine condensing and being cooled as during a dry steam plant, returning to the geothermal reservoir along side the non-condensable gasses through the injection well.

B. Hot Dry Rock Resources

The known temperature of HDR Very between 150 to 290 degree of temperature . This energy , called petro thermal energy , represents far and away the most important resources of heat of any type, because it accounts for giant you look after geothermal resources . Much of the HDR occurs at moderate depths , but it's largely impermeable a stated above so as to extract thermal energy out of it , water will have to be pumped into it and back out to surface . It is necessary for the warmth transport mechanism that how be found to render the impermeable rock into a permeable structure with an outsized heat transfer surface . It is necessary for warmth rock into a permeable structure with a bigger heat transfer surface . A larger surface is especially necessary due to low thermal conductivity of the rock then fracturing by 1) high water or 2) nuclear explosives . Efforts in this direction are in progress.

IV. CONCLUSION

Hot, dry rock (HDR) is widespread and offers new resources in areas where geyser activity is un known .Direct low-temperature heat transfer for home systems is practical as long as low maintenance is meant into the system .Geothermal energy is restricted in extent as extracting the warmth usually exceeds the replenishment rate. Sources of heat water or steam are limited and therefore the cost of extraction, maintenance, and operation will remain high as compared with other