

Possibilities of Geothermal Energy in Bangladesh & competitiveness with others energy

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Abstract— Among the varied new and renewable energy sources, heat energy is understood to be one amongst the clean energy while not smoke and additionally while not environmental hazards. Though its importance is complete long back in different countries, its exploitation continues to be isolated in our country in the main because of lack of information on the deep subsurface structure and deep drilling technology in air mass, warmth regions. GSI and NGRI have created joint efforts in distinctive these resources in numerous components of our country for doable exploitation of the energy supply. Within the gift paper, the main points of heat energy, its importance and usage in different countries area unit mentioned with calculable potential in our country.

Keywords- power demand, scope in Bangladesh, geothermal conversion, economical Benefits, used in Geothermal

INTRODUCTION

Today, for various reasons, such as the rising energy prices or environmental laws, people try to use renewable energy when possible [1]. There are many removable sources of solar, wind, geological etc.

Bangladesh is a developing country with a huge energy demand. Electricity is a must for the recent development of Bangladesh. Electricity connection is available among only 10% of the rural households and it is predicted that some parts of Bangladesh which will not get the taste of electricity from the national grid within next 30 years [1]. Presently, 53% of the public sectors and 47% of the private sector organizations produce electricity in Bangladesh [2]. To meet the high demand, maximum 2087 MW generation in 1995-1996, this increased to 4037 MW in next decade and could not remove power crisis in the country.

Geothermal is the most medium clear biography Bangladesh compared to some other sustainable power source. Due to the intensity of emergency and the amount of electricity produced from geological power, Bangladesh has a tremendous scope for discovering the initiative for geological life in the Department of Power. With rapid industrialization and more than two decades of development in Bangladesh, the control control has increased substantially.

POWER DEMAND IN BANGLADESH

The power crisis in Bangladesh has become one of the main problems, even though it has so many major problems, for example. Poverty over the population, terrorism. The average maximum electricity demand in 2006- 07 was 5,112 MW, 6,765 MW in 2010- 11 and 7,518 MW in 2011- 12 with average annual electricity demand

Demand Supply Situation

Generation: 5000 – 5300 MW (Capacity- 7119 MW)

Highest so far: 5244 MW (August 29, 2011)

Gas shortage causes 400 - 600 MW less Power Generation

Peak Demand: 6000 MW (with DSM)

Load shedding up to 800 MW during hot summer days (with DSM)

Figure 1 power Generation in 2011

Again, this demand varies from east to west, and electricity demand in the eastern region is much higher (more than twice) compared to the western region. The demand of electricity in the Eastern Zone has increased by 18,3 percent per year. In the western region, the growth during this period was 9.1 percent [4].

For example solar energy depends on sunshine, wind energy depends on air flow, and hydroelectric power causes lower flow rate of down rivers as we use dams, which is very harmful for our agriculture. So we need a safer but powerful renewable energy source where geothermal energy can play an important role [5].

SCOPE IN BANGLADESH

Due to lack of proportional increase in the interest of the age of electricity, there is lack of real supply in Bangladesh; There is a shortage of 6,000 megawatts of the largest electricity during the summer days and collection and water management season. Along with the production of control conditions, almost always increasing. [6]

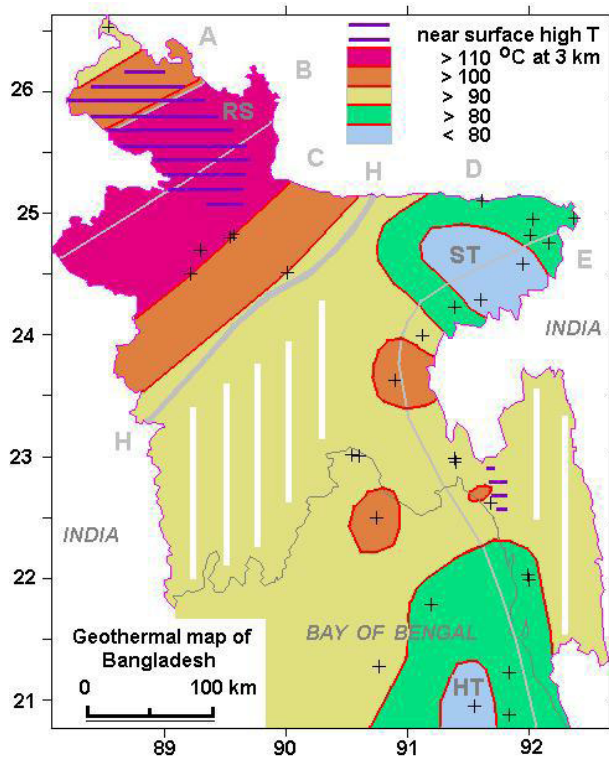


Figure 2 Geothermal Location in Bangladesh

In this conditions there is no option of sustainable power source and Bangladesh have an incredible chance to Produce power from geothermal vitality to beat this control emergency. Coordinate utilization of warmth vitality is increasing quality and along these lines the previous decade has seen an unbelievable development all through this innovation. the principal important utilization of warmth vitality has been house warming quite in nations with cool atmospheres. In any case, very surprising direct uses like drying, nursery warming and fish cultivating are being rehearsed. every one of these Immediate use applications has its wants as far as the geothermal liquid temperature. the usage of warmth vitality wants the utilization of explicit instrumentality that square measure referenced all through this paper.[7]

GEOHERMAL ENERGY CONVERSION

- A. *At the Converting the mechanical energy of astrological energy:* The thermal energy is transferred from a geothermal source to a steam turbine. A synchronous engine is then powered by a thermal turbine. Turbine shafts rotate mechanically on an angular speed [8]
- B. *Mechanical Energy into Electrical Energy:* The planned architecture, illustrated in Figure 2's geothermal generator block [5] Generator Stator provides three-level control voltage at three terminals, B, C. Simuling square generator shows PMSG permanent magnets synchronous machine[

6] with Geothermal steam turbine mechanical torque input TM. Mechanical- TM TORK Negative(Figure 3) acts as a continuous magnet synchronous motor generator.

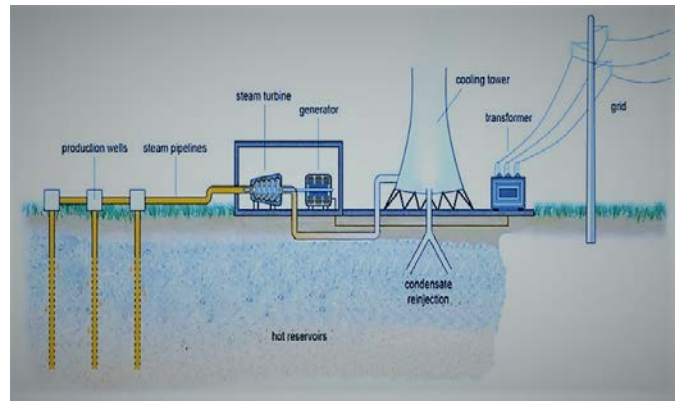


Figure 3 Geothermal energy conversion system

C. Electric Power Generation: There are several different main types of geothermal plants.

- 1. Dry steam 2. Flash Steam
- 3. Binary Cycle 4. Dobule Flash

Worldwide power power stations account for about 9 gigabytes, with about 60 TBA affiliate annually generating electricity, but like the world's electricity demand chronicles. Energy heating plants have an estimated global capacity of 18,000 megawatts and about 63 TBs are manufactured every year..

DEPLOYMENT

Using geological control cycles started in 2007, geological plants range from 1,000 megawatts, about 10 percent of the total geological limit was introduced for almost 50 years. The breakdown of 1,000 MW power in the business operation is as follows: 60mv O.R.C. Plants have been built or made by halt, hatched and barbar-nicolas; 2 megawatt and 900 megawatt orrc and a chalion cycle plant of the consolidated cycle tree.

ECONOMIC BENEFITS

Geothermal energy produces very little cleaning, production or emission. Hot water used for injection is recovered and reused, which results in a durable system.. Unlike solar power, geothermal power can be made 24 hours a day, the IDDP can be recorded as a follow-up of the possible financial benefits of the task. [9]

- 1. Increased power yield per well, maybe by a request of size, and creation of higher-esteem, high-weight, high-temperature steam..
- 2. Knowledge of penetrability inside penetrate fields further than 2-3 km profundity.

3. Development of a naturally kind, high enthalpy energy source underneath right now delivering Geothermal fields
4. Industrial, instructive, and financial turn off'.

GEOTHERMAL ENERGY USED

Geothermal power is often employed in every direct and indirect manner. The method of selection is set in the given temperature, resource supply, goals and economic context. Direct use of geothermal power: Consumers use square measure directly below the thought:

1. Abuse by drilling holes are soaked from subterranean suppression. [6]
2. The exchange of heat from device erosion Application form [6]
3. To make a recyclable water once [6], drill holes come back to the underground air.

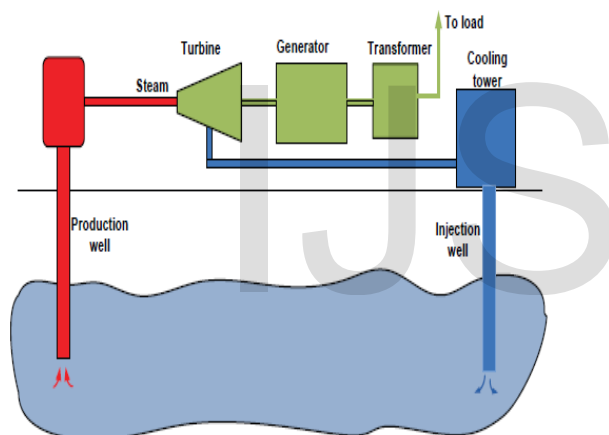


Figure 4 Main work formula in geothermal

Indirect use of heat: The indirect use of heat generally changes the power of the johorderm in electricity. This may be dead by death, deep deep submarine exists between three to five kilometer depth. However, in special areas (eg island), deep drilling is not required. These geothermal applications are applied in about 24 countries, such as the United States, Australia, Philippines, New Zealand, Costa Rica and many other European countries [6].

GEOGRAPHICAL LOCATION OF BANGLADESH

Bangladesh is found in the northeast in the southeastern part. Bangladesh and India's Burmese territory unit Bangladesh neighbors Bangladesh. It will divide the most lasting three geographical boundaries (4000 km) with the latitude (e) north (n) and 90 ° 0 '0 "in the Mainindian E line with 24 ° 0' 0" north latitudes. Myanmar is the southern margin of south-south and

additional region's bay. Geographically, it is mostly landed by the Brahmaputra and the Ganges River stream zone, lined by the lowland land delta and occupied a land measuring 147,570 square meters [10].

| SI/No. | Well name | °C/km |
|--------|---------------|-------|
| 1 | ARCO A1 | 26.1 |
| 2 | Atgram 1 | 20.1 |
| 3 | Bakhrabad 1 | 23.9 |
| 4 | Bangora 1 | 21.2 |
| 5 | Beani Bazar 1 | 19.8 |
| 6 | Begumganj 1 | 25.4 |
| 7 | BINA 1 | 25.2 |
| 8 | BODC 1 | 25 |
| 9 | Chattak 1 | 21.1 |
| 10 | Cox's Bazar 1 | 25.6 |
| 11 | Fenchuganj 2 | 20.7 |
| 12 | Feni 1 | 23.8 |
| 13 | Feni 2 | 23.5 |
| 14 | Habiganj 1 | 20.5 |
| 15 | Jaldi 1 | 20 |
| 16 | Jaldi 3 | 22.5 |
| 17 | Kailashtila 1 | 19.8 |
| 18 | Kamta 1 | 23.5 |
| 19 | Kutubdia 1 | 26.4 |
| 20 | Muladi 1 | 26 |
| 21 | Muladi 2 | 24.4 |
| 22 | Patharia 5 | 20.4 |
| 23 | Rashidpur 1 | 21.7 |
| 24 | Saldanadi 1 | 27.2 |
| 25 | Semutang 1 | 27 |
| 26 | Shabajpur 1 | 29.5 |
| 27 | Sitakund 5 | 24.7 |
| 28 | Sylhet 7 | 19.9 |
| 29 | Titas 11 | 23.1 |
| 30 | Hazipur 1 | 24.2 |

Table 1: Geothermal gradients (°C/km) for the deep wells along the Bengal Foredeep region .

AREA OF PRIME INTEREST

Recently, the Ministry of Power, Energy and natural resources has approved the institution of the primary ever geothermic station (200MW) within the country. A Dhaka based mostly personal company named Anglo MGH Energy has initiated this project at Saland of Thakurgaon district [11]. The rangpur lime saddle, Bogra shelf doubtless offers sensible conditions for geothermic power comes. though value the value the price} of putting in place a geothermic station is high thanks to the high cost of drill- ing wells, it may be

reduced by victimization the abandoned on-shore dry wells that have adequate extreme temperature gradient (like over 30K/km).

CONCLUSION

The power emergency of Bangladesh is expanding step by step. it's time that sustainable power source started to investigate in our nation. warm vitality is one among the chief promising sustainable power sources in Bangladesh. it should assume a critical job to diminish control emergency of Bangladesh.

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