International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 04 | Apr 2020 www.irjet.net p-ISSN: 2395-0072

MAGMATRICITY: An Approach Towards Fuel Less Electricity generation

Mr. Ankit Pratap Singh[1], Mr. Ankit Raj[2]

[1]*Student of Dept. of Production, B.V. (D.U). C.O.E. P, Maharashtra, INDIA*
[2]*Student of Dept. of E&TC, B.V. (D.U). C.O.E. P, Maharashtra, INDIA*

Abstract - *Electricity is the soul of todays modern world, but generation of this energy has a cost. We the people of earth are paying the price of this energy by our deposits of fossil fuel. The major power generation technique is thermal power plant. The fuel utilized in warm force plant is coal. It is cheap and easily available, but this is the problem due to it's the problem due to its easy availability it is used at a very mass level worldwide. This is making the coal and other fossil fuel go extinct. According to research conducted by business standard .com, the fossil fuel such as coal will be depilated in 110 to 120 years. One of the most important sources of green energy is geothermal energy, but the problem while harnessing the geothermal energy is reaching at a proper depth in ground. Hence, we are presenting this paper on harnessing the geothermal energy from volcanos. We are trying to harness heat energy from lava and then generating electricity from that thermal energy. Our motto to develop this project is for social welfare.*

Key Words: Electricity, Magma, Thermal energy, Magmatricity, Result

1. INTRODUCTION

Geothermal force is produced utilizing steam or a hydrocarbon fume to turn a turbine-generator set to deliver power. A fume overwhelmed (dry steam) asset can be utilized straightforwardly, though a high temp water asset should be flashed by decreasing the strain to deliver steam, typically in the 15–20 % run. A few plants use twofold and triple flashes to improve the proficiency. At times, utilizing a bottoming cycle (a little parallel plant utilizing the wastewater from the primary plant) might be more productive. On account of low-temperature assets, those that are by and large beneath 180 degree Celsius, the utilization of an optional low-breaking point liquid (hydrocarbon) to create the fume is required, bringing about a paired or natural Rankine cycle (ORC) plant. Typically, a wet or dry cooling tower is utilized to gather the fume after it leaves the turbine to expand the temperature and weight drop between the approaching what's more, cordial fumes and along these lines increment the productivity of the activity. Dry cooling is frequently utilized in parched territories where water assets are constrained. Air cooling typically has lower efficiencies throughout the late spring months when the air temperatures are high what's more, dampness is low. In this paper we are developing a way to generate electricity using geo thermal energy. We will use a non-active volcano for the extraction of thermal energy. We will dig the volcano to a depth at which temperature is about 500 to 700 degree Celsius. We will plant a tungsten pipeline up to the level where the temperature goes up to 500 degree Celsius to 700 degree Celsius. The pipeline would be laid seamless i.e. it should have minimum number of joints to make it more and more durable. Rest of the methodology is discussed further in methodology section of the paper.

2. MATERIALS USED

The heart of this power generation system is the pipelining. For pipelining we are using the material called tungsten. So, let's see what is the significance of titanium in this power plant.

TUNGSTEN

Tungsten, or wolfram, is a substance component with the image W and nuclear number 74. The name tungsten originates from the previous Swedish name for the tungstate mineral scheelite, tungsten which signifies "overwhelming stone". Tungsten is an uncommon metal found normally on Earth solely joined with different components in concoction mixes as opposed to alone. It was distinguished as another component in 1781 and first confined as a metal in 1783. Its significant minerals incorporate wolframite and scheelite. The free component is amazing for its strength, particularly the way that it has the most elevated liquefying purpose of the considerable number of components found, dissolving at 3,422 °C (6,192 °F; 3,695 K). It likewise has the most elevated breaking point, at 5,930 °C (10,710 °F; 6,200 K). Its thickness is 19.25 occasions that of water, similar with that of uranium and gold, and a lot higher (about 1.7 occasions) than that of lead. Polycrystalline tungsten is a naturally weak and hard material (under standard conditions, when uncombined), making it hard to work. Nonetheless, unadulterated single-crystalline tungsten is progressively pliable and can be cut with a hard-steel hacksaw. Tungsten's many compounds have various applications, including brilliant light fibers, X-beam tubes (as both the fiber and target), anodes in gas tungsten bend welding, superalloys, and radiation protecting. Tungsten's hardness and high thickness give it military applications in entering shots. Tungsten mixes are likewise regularly utilized as mechanical impetuses. Tungsten is the main metal from the third change arrangement that is known to happen in biomolecules that are found in a couple of types of microbes and archaea. It is the heaviest component known to be fundamental to any living life form. In any case, tungsten meddles with molybdenum and copper digestion and is to some degree harmful to increasingly recognizable types of creature life.

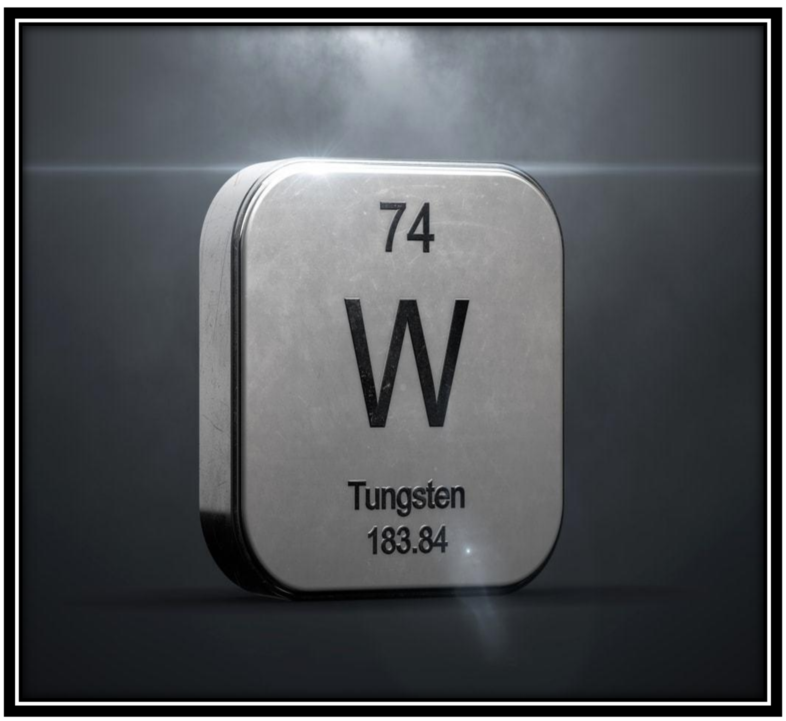

Figure 1 tungsten

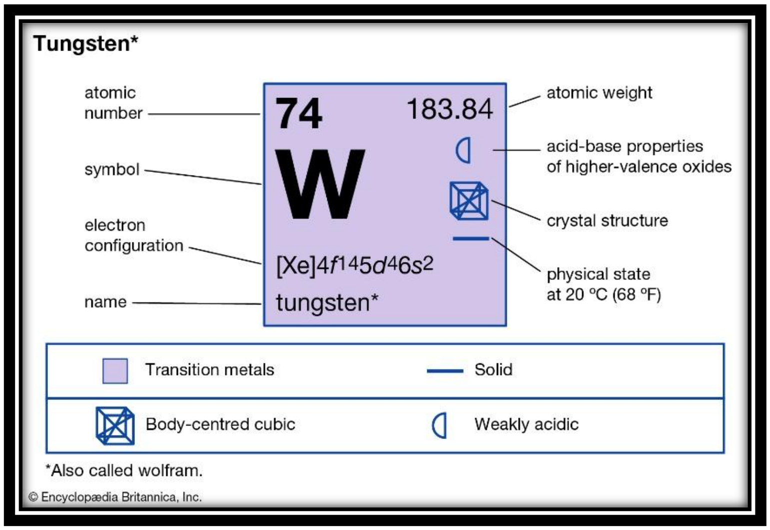

Figure 2 tungsten Properties

So, we are using tungsten as the material of our piping system due to its higher melting point and pressure exaction capability. It can sustain the heat and pressure inside the volcano or ground.

3. METHODOLOGY

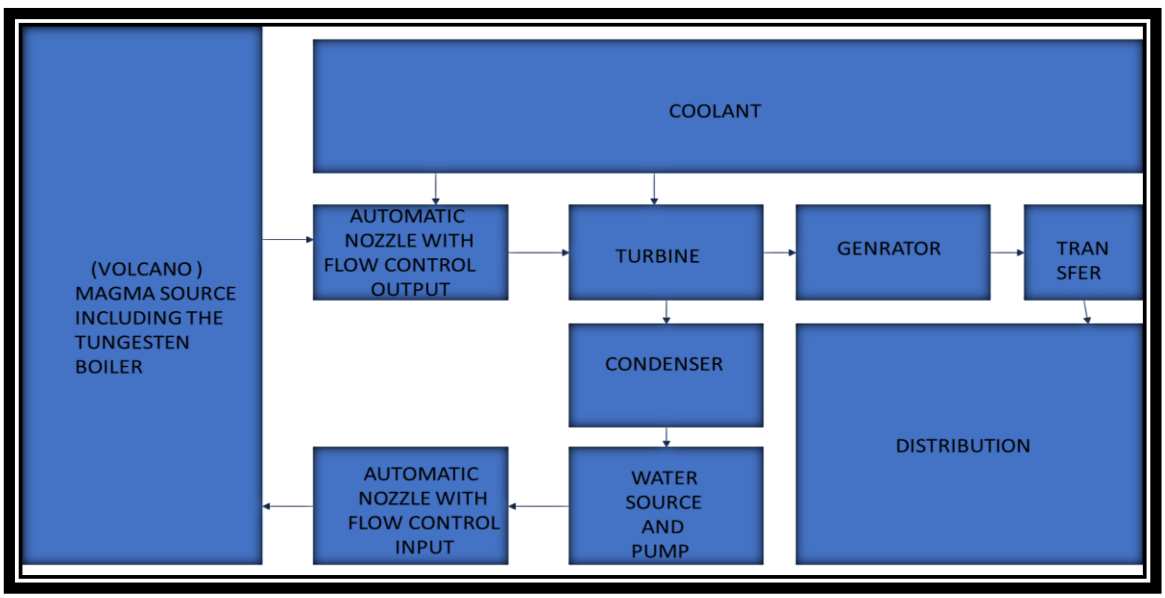

Figure 3 System to be implemented

So, our proposed system will work as follows. First of all, we will have a large water source, the water source will provide water for the power plant. We will use a pumping system to pump water from the reservoir toward the nozzle. We are using automatic nozzle with flow control unit. The nozzle is used here for generating pressure in the water. The nozzle is automated and will adjust it's opening and water flow according to the system requirement. The pressurized water then is sent toward the boiler section in the volcano using titanium pipeline system. Titanium is used due to it's high melting point and its high-pressure durability. When the water goes down the surface immediately it gets converted to vapor above 300 degree Celsius and the temperature inside the ground is about 500 degree Celsius to 700 degree Celsius.

Figure 4 tungsten Pipes

The vapor then is passed to the nozzle which is attached to a coolant block. The nozzle opens and then projects the vapor to the turbine wheels and moves the turbines wheels at a very high velocity. The coolant at the output nozzle is an emergency coolant and works in the case of emergency when the temperature of nozzle or turbines exceed the limited temperature. The moving turbine wheel generate electricity through generation block. The electricity is then transferred to the distribution system. The condenser connected to the turbine will condense the vapor and convert it to water. The water then will be again transferred to the water source.

WHY TUNSTEN PIPES ?

- Extremely high softening point
- Low fume pressure at high temperatures so it doesn't darken within the bulb
- Keeps up great quality at high temperatures; a lot more grounded than carbon

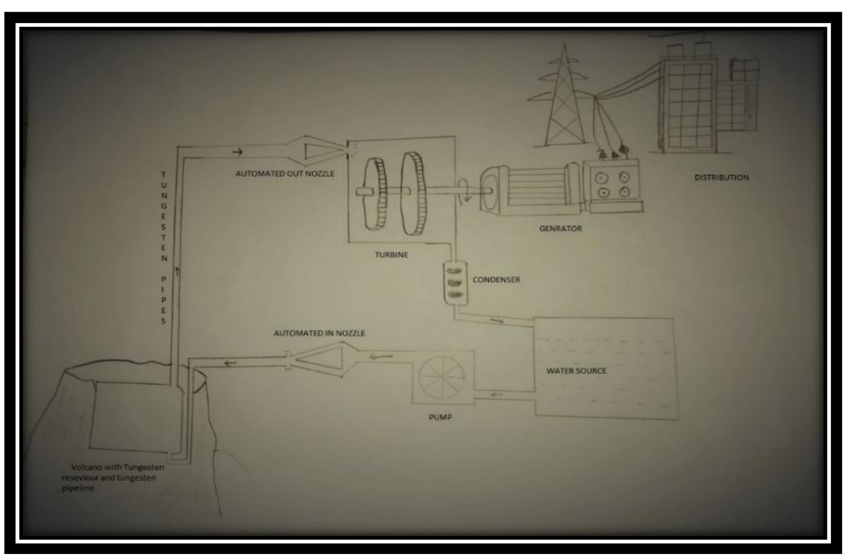

Figure 5 Proposed methodology

4. FUTURE SCOPE

- All the fossil fuel are at the verge of extinction and our dependency on fossil fuel will be a very big issue after the complete depletion of fossil fuel. Our project can decrease the dependency on the fossil fuel.
- It is ecofriendly hence no pollution will occur.
- Once installed it is almost cost free and economically an asset for the state.

5. LIMITATION

- The project is too expensive to install and maintain. It is basically a multimillion dollar project and is only possible to implement by the consent of state government.
- It has maintenance issues, issues regarding it's maintenance cost and frequency.
- It has installation risk which may include risk of life and property damage.
- Carelessness while installation and operation can activate an inactive volcano costing lives of millions.

5. CONCLUSION

So, we would conclude that our project is a major player in green and clean electric power generation, despite it has some limitations it can benefit the Nation and it's respective citizens in many ways.

6. ACKNOWLEDGEMENT

We would like to acknowledge our parents for there help both economically and emotionally, because without there help this research would have not been a success.

REFRENCES

[1]R.G. Allis, T.M. Hunt, Analysis of exploitation-induced gravity changes at Wairakei geothermal field. Geophysics 51, 1647–1660 (1986)

[2]. Bertani, Geothermal power generation in the world 2005–2010 update report. Geothermics 41, 1–29 (2012)

[3]GEO-Geothermal Education Office, Geothermal energy introduction (2001), http://geothermal. marin.org/index.html

[4]GEA, Global Energy Assessment – Toward a Sustainable Future. (International Institute for Applied Systems Analysis, Vienna, Austria and Cambridge University Press, Cambridge and New York, 2012), p. 1888

[5]B. Goldstein, G. Hiriart, R. Bertani, C. Bromley, L. Gutierrez-Negrin, E. Huenges, H. Muraoka, A. Ragnarsson, J. Tester, V. Zui, Contribution to special report renewable energy sources (SRREN), International panel on climate change (IPPC) (2012)

[6]H. Hjartason, R. Maack, S. Johannesson, GHC Bull.´ 26, 7–13 (2005)

[7]International Energy Outlook, U.S. Energy Information Administration, 292 (2011)

[8]J.W. Lund, D.H. Freeston, T.L. Boyd, Direct utilization of geothermal energy 2010 worldwide review. Geothermics 40(3), 159–240 (2010)

[9]M.J. O'Sullivan, K. Pruess, M.J. Lippmann, State of the art of geothermal reservoir simulation. Geothermics 30, 395–429 (2001)

[10]F. Pirajno, Hydrothermal Mineral Deposits (Springer, Berlin, 1992),

[11]p. 709 K. Pruess, C. Oldenburg, G. Moridis, TOUGH2 user's guide, version 2.0, report LBNL-43134, Lawrence Berkeley National Laboratory, Berkeley, CA (1999)

[12]H. Saibi, J. Nishijima, S. Ehara, Reservoir monitoring by repeat microgravity measurement at Obama geothermal field, southwestern Japan. Geothermal and volcanological research report of Kyushu University, 1, No. 14, 27–31 (2005)

BIOGRAPHIES

PHOTOS	BIOGRAPHY
	*Mr. Ankit Pratap singh is a student in Department of Production at B.V(D.U)C.O.E. Pune .He is persuing his B.Tech in Production.He was the project member throughout the project*
	*Mr. Ankit Raj is a final year student in Department of Electronics and Telecommunication at B.V(D.U)C.O.E. Pune .He is persuing his B.Tech in Electronics and telecommunication .He was the project member throughout the project .*