FABRICATIONS OF MICRO HYDRO GENERATOR

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ABSTRACT

Water turbines convert Mechanical rotary energy into Electrical energy. A mechanical interface, consisting of a step-up gear, water Pump and a suitable coupling transmits the energy to an electrical generator. The output of this generator is connected to the Battery or system grid. The battery is connected to the inverter. The inverter is used to convert DC voltages to AC voltages. The load is drawn current from the inverter.

Generator
Mains haft with Leafs
Gear Wheel Arrangement

Water power ratings can be divided into three convenient grouping, small to 1kW, medium to 50 kW and large 200 kW to megawatt frame size.

I. INTRODUCTION

Man has needed and used energy at an increasing rate for its sustenance and well being ever since he came on the earth a few million years ago. Primitive man required energy primarily in the form of food. He derived this by eating plants or animals, which he hunted. Subsequently he discovered fire and his energy needs increased as he started to make use of wood and other bio mass to supply the energy needs for cooking as well as agriculture. He added a mew dimension to the use of energy by domesticating and training animals to work for him.

With further demand for energy, man began to use the wind for sailing ships and for driving windmills, and the force of failing water to turn water wheels. Till this time, it would not be wrong to say that the sun was supplying all the energy needs of man either directly or indirectly and that man was using only renewable sources of energy.

The industrial revolution, which began with the discovery of the steam engine (AD 1700), brought about great many changes. For the first time, man began to use a new source of energy, viz. coal, in large quantities. A little later, the internal combustion engine was invented (AD1870) and the other fossil fuels, oil and natural combustion engine extensively. The fossil fuel era of using non-renewable sources had begun and energy was now available in a concentrated form. The invention of heat engines and then use of fossil fuels made energy portable and introduced the much needed flexibility in mans movement.

II. WORKING PRINCIPLE

The block diagram of pelton wheel turbine is consisting of a boiler unit, 12 voltage batteries, an inverter and a florescent lamp. As we studied from the generator gives a D.C. output of 12V this D.C. output is not always constant there is some variation in this D.C. output this cannot be given to the battery storage it may weaken the life of the battery. So in order to get constant D.C. output and also to avoid the reverse flow of current to the panel in the case of no load a charge controller have been used this help us to allow only the constant voltage of 12V D.C. to the battery and also it act as an blocking diode and protect the motor principle.

By this way the battery gets charged then this D.C. storage is given to an inverter this inverter inverts 12V D.C. to input in to AC output, step upped in to 230V.The 230V AC supply is given to the supply to the lamp. The lamp used for street lighting is 230V, 50 Hz, single-phase supply.

III.ADVANTAGES

- Steam is produced by the simply the water pumping system
- This is a Non-conventional system
- Battery is used to store the generated power
- Low cost power generation system

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IV. APPLICATIONS

Direct heat applications

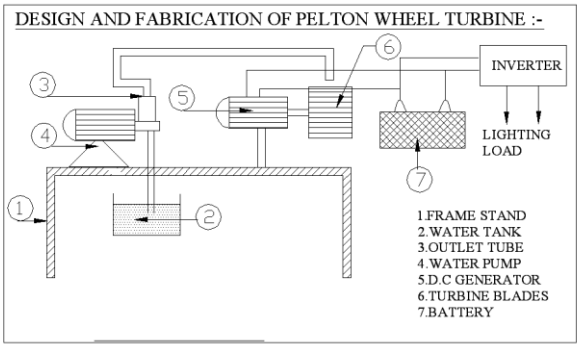
Mechanical motion derived from water power can be used to drive heat pumps or to produce heat from the friction of solid materials, or by the churning of water or other fluids, or in other cases, by the use of centrifugal or other types of pumps in combination with restrictive orifices that produces heat from friction and turbulence when the working fluid flows through them. This heat may then be stored in materials having a high heat capacity, such as water, stones, eutectic salts, etc.,

A home heating system that uses a water powered pump and a restrictive orifice to derive direct heat for a building, without first generating electricity also has been developed.

Electric Generation Applications:

Water power can be used in centralized utility applications to drive synchronous A.C. electrical generators. In such applications the energy is fed directly into power networks through voltage step-up transformers.

This unit can be integrated with existing hydro electrical networks and used in a "water-saver" mode of operation. When the water is blowing, electrical an amount equal to the being can reduce generation at the hydroelectric plants in the network produced by this unit. Thus, the water turbines supply part of the network load that is ordinarily produced by the hydroelectric generators. Under these conditions some of the water that would have been used by the hydroelectric plant to supply the load is saved in the reservoir and made available for later use when the water is not blowing.



As energy becomes the current catchphrase in business, industry, and society, energy alternatives are becoming increasingly popular. Hydroelectricity exists as one option to meet the growing demand for energy and is discussed in this paper. Numerous consideration factors exist when building hydropower plants; whether the concerns are global or local, each has been measured when discussing this renewable energy source. From environmental and economic costs of constructing such plants to proposing the addition of hydropower generating capabilities in Pennsylvania, the authors have used personal experience from field studies and intensive research to cover the topic of hydroelectricity.

V. CONCLUSION

After investigating the various impacts of a hydroelectric plant, we were able to determine the feasibility of implementing a hydroelectric plant at the Flat Rock Dam. Since most environmental concerns stem from construction of the dam, this location would not be greatly affected by the installation of a hydropower generating facility. Also, taking into the consideration that this is a highly scenic site of recreational value, we will only partially disrupt the volume of water over the dam, using about 19 percent of the flow. Most environmental concerns are mitigated by the fact that the area is already partially developed for a project such as this.

Economically speaking, this project would benefit the community by providing energy as well as employment opportunities. Construction costs are relatively low, especially when compared to the high price of building a new dam. Because the residents of Manayunk will benefit, any economic costs incurred by the building of a hydropower plant are justified.

Based on the environmental and economic considerations discussed, Flat Rock Dam would be a promising potential site for a hydropower plant. It would be classified as a small hydro project generating 2.5 MW of electricity. All materials involved in the construction would be readily available. There are many companies that service small hydropower plant projects and component parts would be easily accessible. Overall, the Flat Rock Dam site appears to be a good candidate for a hydropower plant due to its environmental, economical, and engineering feasibility. Through our research we have seen numerous applications of hydroelectric power from large scale projects to those on a smaller scale. From international power generating stations to a potential local opportunity, we have realized the vast opportunities of this natural resource.

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