# ELECTRICITY GENERATION BY PRESSURIZED WATER USING PEDAL POWER

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*Abstract: As its name implies "Generation of electricity by pressurized water using pedal power " basically it's an idea to generate the electricity with the help of air and water without using any costly resources like pedal power and to reduce any extra cost regarding to electricity. Its completely safe because main factor that we are using air &water with pressure pedal. When water with compressor air strike over the vanes of turbine it cause and allowed to turbine to rotate at a greater speed and turbine is directly connected to generator with the help of spur gear which convert the mechanical motion into electrical energy.it is a great device to generate the electricity for domestic purpose without using any extra cost and avoid various expensive way which are not supportable and harmful for nature and human beings.*
*Keyword: Air tank, Air, Water, Pedal machine, Pelton Wheel Turbine, Spur Gear, Led light panel*

## I. INTRODUCTION

Compression system-Basically in compression system we are using two factor air & water in pressure form with the help of compressor tank using pressure pedal machine. When we fill the suitable ratio of air and water in the tank with help of pedal then water is allowed to come out from tank at a high pressure.

Electricity generation-This pressure has a tendency to rotate any turbine. This motion of turbine is used to generate the electricity. When dynamo rotate it cause the electricity generation without any fluctuation in speed.
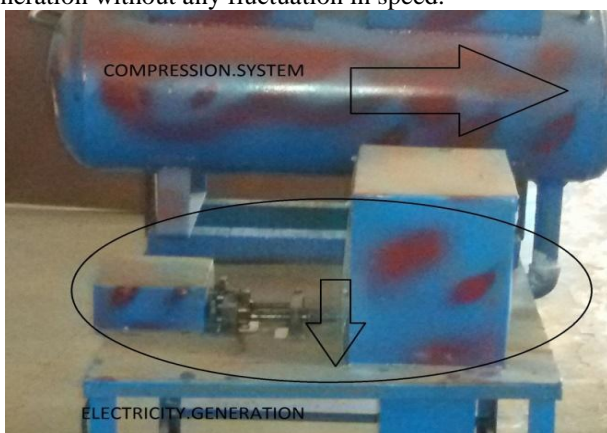


Fig-1 Electricity generation system

## II. CONSTRUCTION OF INSTRUMENT

Step-1
Firstly we constructed and assembled the water tank ,pedal pressure machine and its mountings.



Fig-2 Air & Water tank



Fig-3 Pedal pressure machine

Step-2
Leakage testing of water tank with the help of air and pressure gauge instrument.
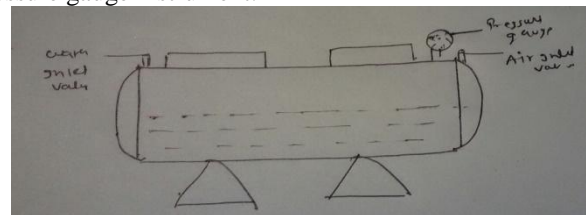


Fig-4 Air & Water tank with pressure

Step-3
We fix various mountings over tank and then it to supporting device with pedal.



Fig-5 Mounting over tank

Step-4

Now we construct and assemble the piping system and nozzle from tank.



Fig-6 Piping arrangement with nozzle

Step-5

Construction of pelton wheel turbine an its upper and lower casing.



Fig-7 Pelton Wheel Turbine

Step-6

Attachment of pelton wheel turbine to supporting device at its proper place with the help of bearing.



Fig-8 Arrangement turbine with tank

Step-7

We connect the whole piping arrangement from water tank to turbine

Step-8

R.P.M testing of pelton wheel turbine with the help of techometer.

Step-9

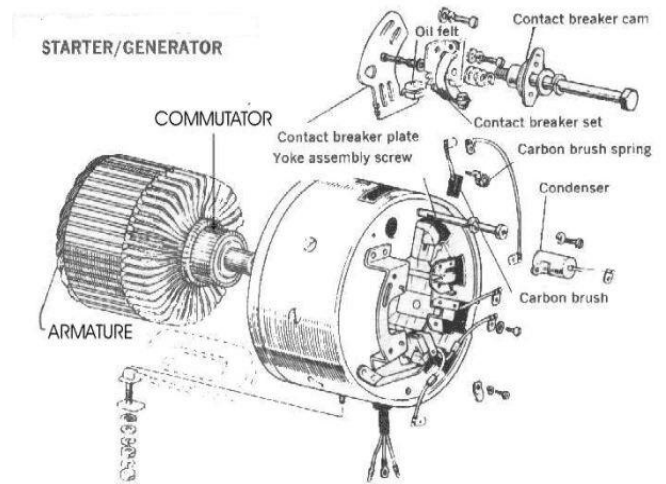Construction and assembling of dynamo for electricity generation.



Fig-9 Dynamo

Step-10

Assembling and meshing of spur gear mechanism (i.e. pelton wheel shaft and dynamo shaft)
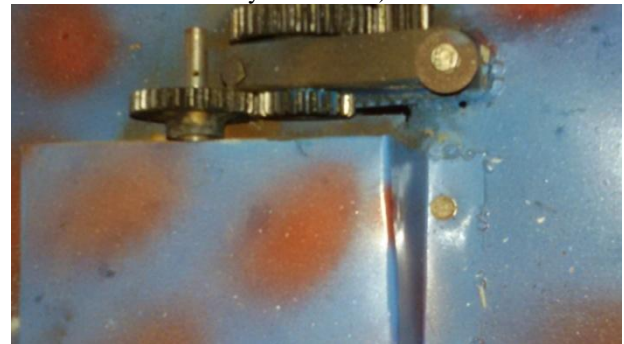


Fig-10 Gear(Spur) arrangement

Step-11

Wiring arrangement from dynamo to various load devices.
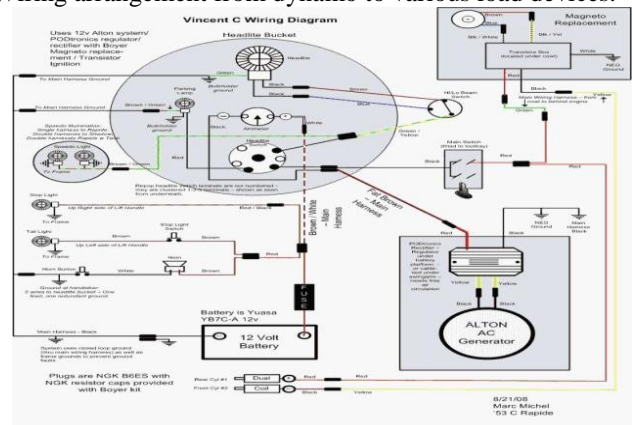


Fig-11 Wiring arrangement from dynamo

Step-12
Testing of dynamo output with the help of Multi Meter.



Fig-12 Dynamo reading

Components used
- Pressure gauge
- Pressure relief valve
- Air incoming valve
- Water tank
- Air compressor
- Spur gear mechanism
- Bearing
- Pelton wheel turbine
- Pipeping arrangement
- Nozzle
- Dynamo
- Holding table
- Electrical LED panel

Principal & working
Working of instrument consider in two sections.
(i)compression system (combination of air &water)
(ii)Electricity generation system and control mechanism
(i) Pressurized system
Turn on mode:During the turn on mode firstly the water `incoming valve is open and air incoming valve is close. And after it .the water valve is close and air valve is open and vice-versa
Turn off mode:After filling the both air and water both valve is close tightly to prevent any type of leakage
(ii)Electricity generation and control mechanism
This mode is active only when switch provided in mid of piping and nozzle is on/off.
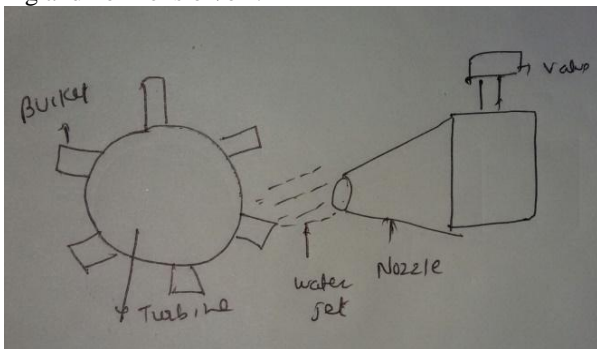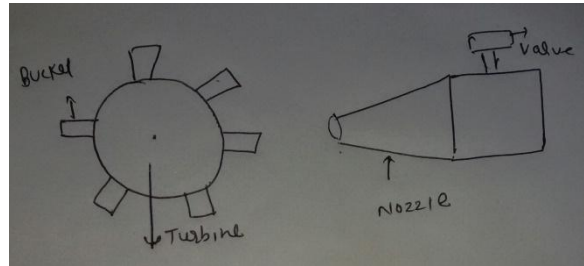


Fig-13 When nozzle is in working mode



Fig-14 When nozzle is in non-working mode



Fig-15 Complete arrangement of system

Calculation observation
Diameter of tank = 100.33cm
Length of tank = 90.17cm
Volume of water tank = 712655.95cm3
Volume of tank in liter = 71.2655
Inlet diameter of nozzle = 25.4mm
Outlet diameter of nozzle = 6mm
Total number of buckets of turbine = 15
Teeth of gear T1 = 11
T2 = 35
T3 = 22
T4 = 29
Velocity ratio   (N1/N2) = T2/T1
At N1 = 1050 rpm
Then by formula  N2 = 330 rpm
And by formula    N4 = 250 rpm
Since the gear ratio of dynamo is 24*1.
Then the rotation of dynamo shaft is 6008 rpm
At 6008 rpm dynamo gives 18-22 volts potential difference.

Calculation conclusion
There are various steps to be followed during the operating condition;
- Water and air ratio=(70:30)
- Given pressure=(80 to 90 psi.)
- Rpm of turbine=(1050)
- Output = (18-22 volts)

Scope for future use
After taking into consideration and going to the procedure of

whole project we arrived at following advantages.
- It can generate electricity for domestic purpose.
- Cheap, Economical and Environmental Friendly
- It has not use any resources so it is economical in cost.
- It has not leave any critical effect over human beings and environment
- It is most useful for light load purpose
- It is good for human being health due to pedal work.

### III.  CONCLUSION

The conclusion of our project is to provide the electricity generation without using any resources using pedal work and to avoid or reduce the cost of electricity generation. The main factors we are using "air &water" using pedal work and main motive of this instrument is to make it for domestic purpose and lighting and electrical purpose. This project is fully eco-friendly and there is no critical reaction over environment and human being and after testing and measurement we can say that it is suitable for domestic purpose and light load and it can operate lighter load for some time easily using some pedal work.

### REFERENCES

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