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Addressing rural power shortage problems innovatively



Non conventional: Gear box and pulleys fixed at the end back of a bullock cart.- Photo: special Arrangement

Power shortage is nothing new to India.

“Though our country claims to have developed in terms of science and technology, erratic power supply or complete breakdown for hours together has almost become routine today,” says Mr. Chandrakant Pathak, inventor and manufacturer of non conventional energy equipment in Pune.

“Almost all States face electricity shortage in terms of a low voltage or complete breakdown and calls to the local EB office rarely fetch a proper response.

Helpless situation

“If this be the case for urban dwellers, think about the farmers living in remote villages. They need power for irrigating their crops, or lighting their cattle sheds. What can they do?” he asks.

To address such significant problems, Mr. Pathak developed a method for generating electricity using an old bicycle and bullock cart. By using these 'devices' the innovator says

“farmers can overcome the power shortage problems they face.”

Explanation

Explaining how to generate power from a bicycle, Mr. Pathak says: “Take any bicycle and remove the mudguard and tyre-tube from the rear wheel. Attach a double stand to the cycle so that it remains stable in one place.

Fix a V shaped belt (commonly available in automobile shops) from the rear rim and connect it to the dynamo or alternator kept on the carrier of the bicycle.

A 12 volt dynamo, alternator or brushless D.C. generator are easily available in the market.

An hour of pedalling generates about 36 watts (12 volt X 3 amp) that can power three C.F.L. lamps (4 watts) approximately for three hours or three L.E.D. lamps (two watts) for five to six hours.”

Called Vanarai

This portable device named Vanarai can be easily carried to the field or placed near any water body (5 to 7 mts from ground level) and the pump can discharge 30 to 40 litres of water per minute.

Regarding power generation from bullocks the innovator says, “for a moment, bullocks can provide approximately 15 horse-power energy.”

The power generating machine from two bullocks consists of differential gear box and pulleys and is kept at the centre.

The bullocks are made to rotate around the machine in the same way as the earth rotates around the sun. They complete two rounds in approximately one minute.

“Any bullock cart having wooden, iron or rubber tyre wheels is useful for this purpose,” he explains.

A brushless D.C. generator of 12 Volt capacity can be fitted on the backside of the cart and helps in charging batteries.

A pulley fitted on the inner side of the wheel is connected to another one on the generator. A V belt speed is attached to the pulley generating a voltage of 12 volt D.C. and 4-5 amp current.

Suitable

“A centrifugal water pump of 3 hp can be run by using this energy machine,” says Mr. Pathak.

This mechanism is especially useful in irrigation or for supplying water to a village. Besides this a small flour mill or grass chopping machine can be run using this energy.

“Similarly we can float a small wooden platform in the canals for irrigation purpose with a rope tied to it. Using bearing and shaft, a small turbine wheel can be put on the floating platform. It will run on flowing water. If a pulley or small gear box is fixed to the shaft of turbine wheel, 200 watts of power can be generated,” he says.

Best innovator

“Prof Anil Gupta and the National Innovation Foundation, Ahmedabad are encouraging us till date in terms of referring enquiries, documenting our work and also honouring us during their annual award ceremony as as the best innovator award,” says Mr. Pathak.

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