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Generation of Power by Using Hydrogen Collected Through Human Urine

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ABSTRACT: This generator used the hydrogen gas as the fuel and produces the electricity. In this topic the main fuel is urine. In this way we generate electricity from urine, this also called as pee powered generator. Here the urine is passed to the electrolytic cell and from which hydrogen gas is releases, after electrolysis which is main component of generation.

Now urine is produce everywhere and a lot of it to humans alone is estimated to produce 6.4 trillion a year. This idea had a strong local flavor Normally, the urine is majorly water in addition to other chemicals like ammonia, sulphate, uric acid and urea etc. Generally chemical formula of urea is CH_4N_2O .

Now in urea is also a major component after water renewable energies such as solar and wind that is only cost effective in certain areas. Hydrogen can be produced from a variety of domestic the sources such as natural gas nuclear power biomass and renewable energy power like solar and wind.

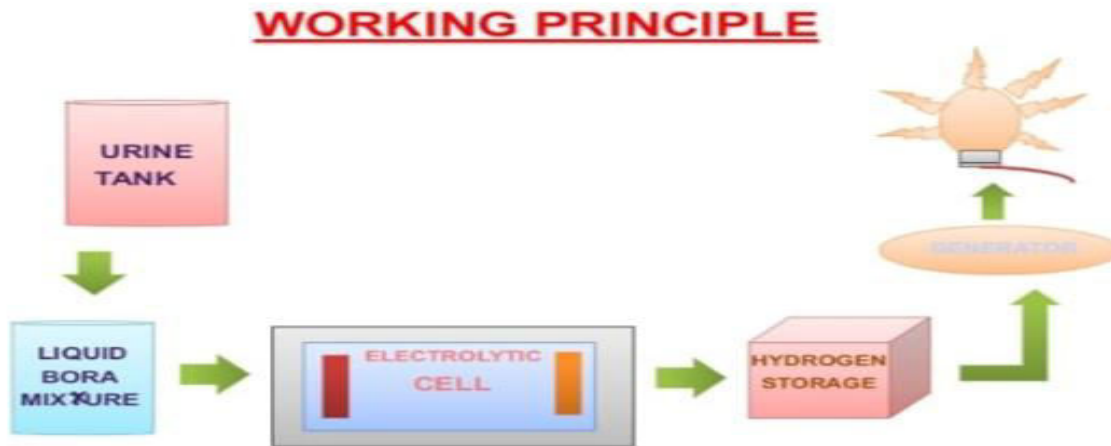
I. INTRODUCTION

As we already know the fuel's decreases day by day. Because se of this we are source like solar, wind, hydrolytic power, but this required high cost causes of that many research is going on for a low cost generation scientist for and some fuel that is nothing but a urine it's free of cost it's major west part of body it's a low cost fuel. With help of urine we generate electricity very easily. There are different source of renewable energy a) geothermal b) biomass c) solar power d) wind power. Urine can produce hydrogen gas to run electric generator it contained organic compound there is a urine concentrated urea which is for hydrogen atom per molecules urine contains organic compound that can based as a fuel for energy it contain urea ($(NH)_2CO$) which has for hydrogen atom in each molecule in it consists hydrogen gas there are specific gravity of urine may range from 1.002 to 1.037 don't mean calorific content of urea may be approximately 100 KCL per day. Working it work on main principle of electrolysis urine major consists urea which in food producer for hydrogen atom molecules electrolysis to break the molecule a part developing a new nickel base electrode to selectively and efficiently oxidize the urea the break the molecule down a voltage of 0.47 v needs to be applied across the sale marches than the 1.23v needed to split water during the electrochemical process the urea gets add sort on to the nickel electrodes surface which passes the urea gate adsorb on the nickel electrode surface which passes the electrons needed to break to the molecule pure hydrogen is involved at a or third which nitrogen plus or trace of oxygen and hydrogen.



II. METHODOLOGY OF UROLYTIC HYDROGEN GAS POWER GENERATOR

A) BLOCK DIAGRAM OF PROPOSED SYSTEM



1) WORKING PRINCIPLE :

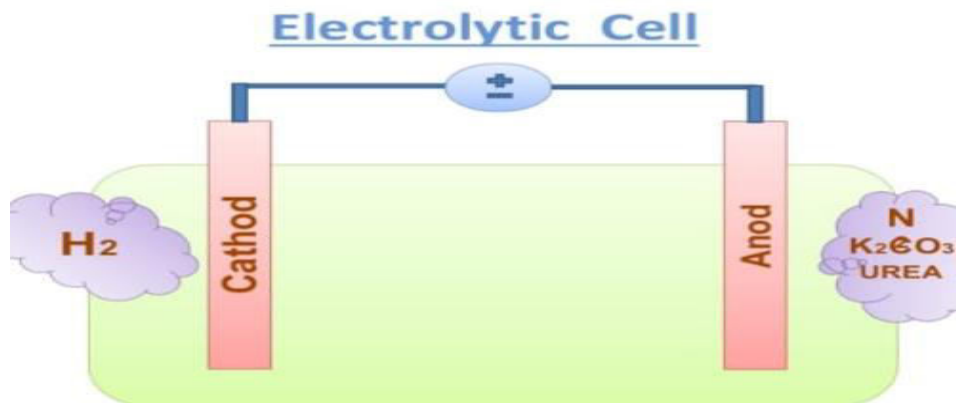
It works on the main principle of Electrolysis. Urine’s major constituent is urea, which incorporates four hydrogen atoms per molecule – importantly, less tightly bonded than the hydrogen atoms in water molecules. Bottle used electrolysis to break the molecule apart, developing a new nickel-based electrode to selectively and efficiently oxidize the urea. To break the molecule down, a voltage of 0.37V needs to be applied across the cell – much less than the 1.23V needed to split water.

During the electrochemical process the urea gets adsorbed on to the nickel electrode surface, which passes the electrons needed to break up the molecule, Pure hydrogen is evolved at the cathode, while nitrogen plus a trace of oxygen and hydrogen were collected at the anode. While carbon dioxide is generated during the reaction, none is found in the collected gasses as it reacts with the potassium hydroxide in the solution to form potassium carbonate.

Urea has an enthalpy of formation of -45.9KJ/mol. So it takes +45.9KJ/mole to split it into constitutes elements, including 2H₂. This hydrogen can be used to form two moles of H₂O: 2 x dB (f) H₂O = 2 x -241.8kJ/mole = -483.KJ This net process produces -483.KJ/mole + 45.9KJ/mole = - 437.7KJ/mole urea

Each liter of Urine contains about 9.3g of urea, and urea weighs 60.06g/mol. So each liter contains 0.155mol of urea. So a litter can theoretically produce 0.155mol/l * 437.7KJ/mole = -67.8 KJ/L.

2) ELECTROLYTIC CELL :

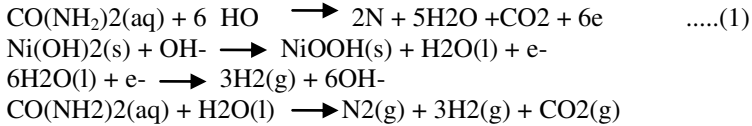


An electrolytic cell is an electrochemical cell that undergoes a redox reaction when electrical energy is applied. It is most often used to decompose chemical compounds, in a process called electrolysis. When electrical energy is added to the system, the chemical energy in increased. Similar to a galvanic cell, electrolytic cells usually consists of two half cells. An electrolytic cell ha three component parts: an electrolyte and two electrodes (a cathode and an anode).



In this the raw urine contains urea. The chemical formula of urea is CH₄N₂O. By this electrolytic cell we can produce the hydrogen gas by applying the electrical energy to the electrolytic cell.

ELECTROLYTIC CELL CHEMICAL REACTION



B) Characteristics of Urine

1) Quantity:

The quantity averages 500 to 2000 ml in an adult man daily. It may vary with the amount of fluid taken. In fact it is linked with the protein metabolism higher is the protein intake higher will be the urinary output, the urea produced from the protein needs to be flushed out from the body. Higher is the urea production in the body, the higher is the volume of urine to excrete it.

2) Colour :-

The color should be clear pale amber without any deposits. However, a light flocculent cloud of mucus may sometimes be seen floating in the normal urine.

urine this nothing but erred generator. Here in the urine has majorly ke ammonia, sulphate, ed to the electrolytic cell after electrolysis which in urine urea is also a ally urea is chemical gen molecules is weakly Is this hydrogen gas is purified gas is given to city.

3) Gravity:

Specific gravity it varies from 0.023 to 1.025 specific gravity is determined. With urine meter

4) Odor:- The odor is aromatic.

.Reaction:

The reaction of normal urine is slightly acidic with an average pH of 6.0. B. Composition of Urine

Urine is mainly composed of water, urea and sodium chloride. In adult taking about 100 g protein in 24 hours. The main components required for the generation of electricity is as follows:

- Electrolytic Cell
- Water filter
- Gas cylinder
- Liquid Borax Cylinder
- Generator

A. Electrolytic Cell

An electrolytic cell is an electrochemical cell that undergoes a redox reaction when electrical energy is applied. It is most often used to decompose chemical compounds, in a process called electrolysis. When electrical energy is added to the system, the chemical energy in increased. Similar to a galvanic cell, electrolytic cells usually consists of two half cells. An electrolytic cell ha three component parts: an electrolyte and two electrodes (a cathode and an anode).

In this the raw urine contains urea. The chemical formula of urea is CH₄N₂O. By this electrolytic cell we can produce the hydrogen gas by applying the electrical energy to the electrolytic cell.

B. Water Filter

When the hydrogen gas is pushed into the Water filter in the water filter the hydrogen gets purified and thus from this we can get the pure hydrogen gas.

C. Gas Cylinder

This purified hydrogen gas is then passed to the gas cylinder where this hydrogen gas is stored in form of liquid hydrogen under high pressures at a very low temperature. And this given to the borax gas cylinder.

D. Liquid Borax Cylinder

When the hydrogen gas is passed into the liquid borax cylinder, this liquid borax cylinder removes the moisture in the hydrogen gas thus this hydrogen is given to the generator.



E. Generator

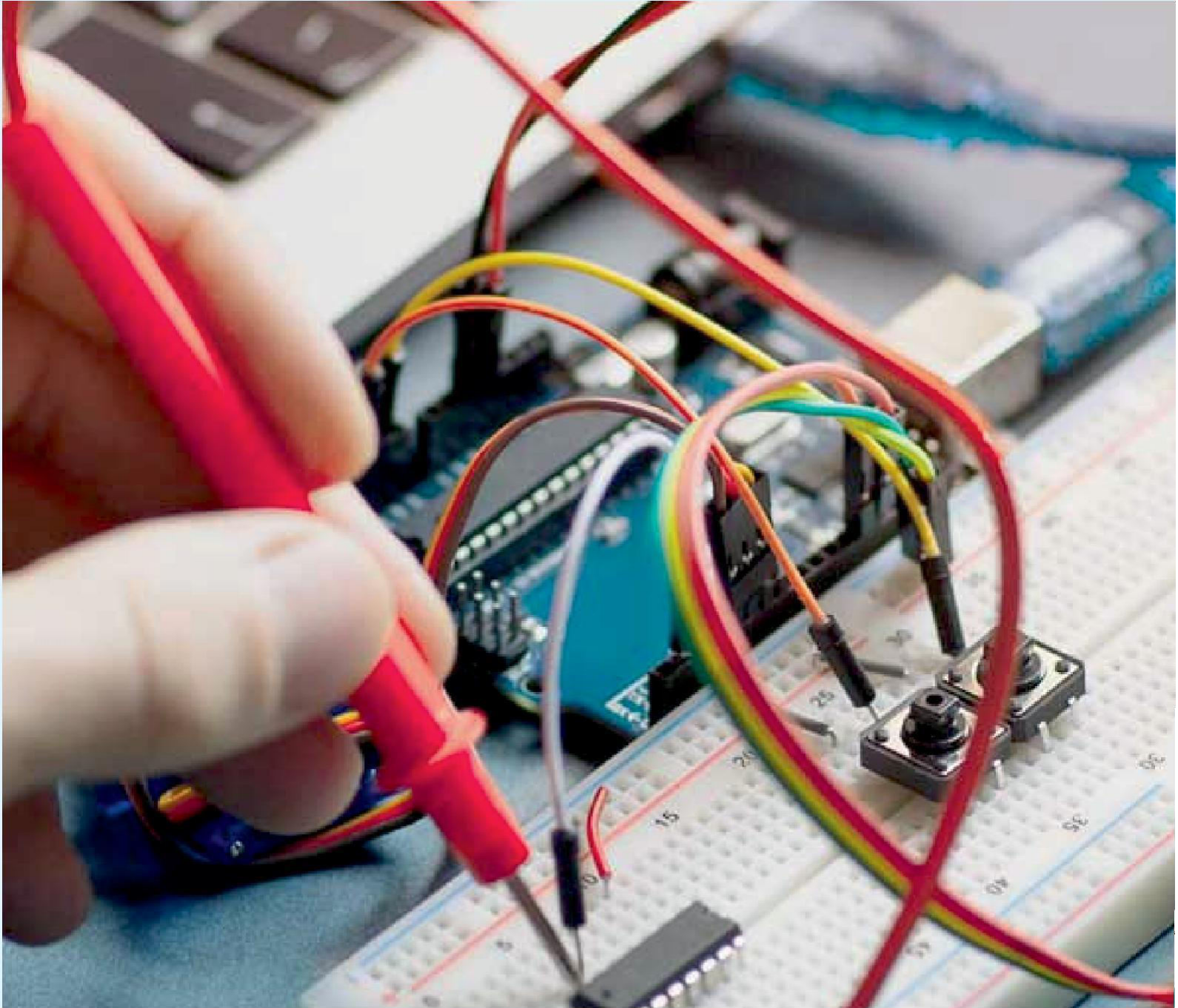
Thus the hydrogen pushed out from the liquid borax cylinder is then given to generator. This generator uses the hydrogen gas as the fuel and it produces the electricity.

III. CONCLUSION

Now a day the power generation from diesel, petrol, coal, water decreases day by day so we need to produce electricity from other type of power plants. When compared with the other generators it is pollution less and it does not affect the environment. It produces much electricity compared with other types of power plants (effectively) and mainly the waste Urea is used (it is cost less). In present generation this is the best way to produce power from this type of pee powered generator.

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