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ELECTRO CHEMISTRY- A NEW ECO-FRIEDLY METHOD FOR EFFLUENT TREATMENT

By

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INTRODUCTION

- **This method is mainly aimed to reduce color load of effluents**
- **Color persists due to the presence of lignin content**
- **When electricity is passed through a solution, ions are liberated**
- **Oxygen ions are liberated at anode (+)**

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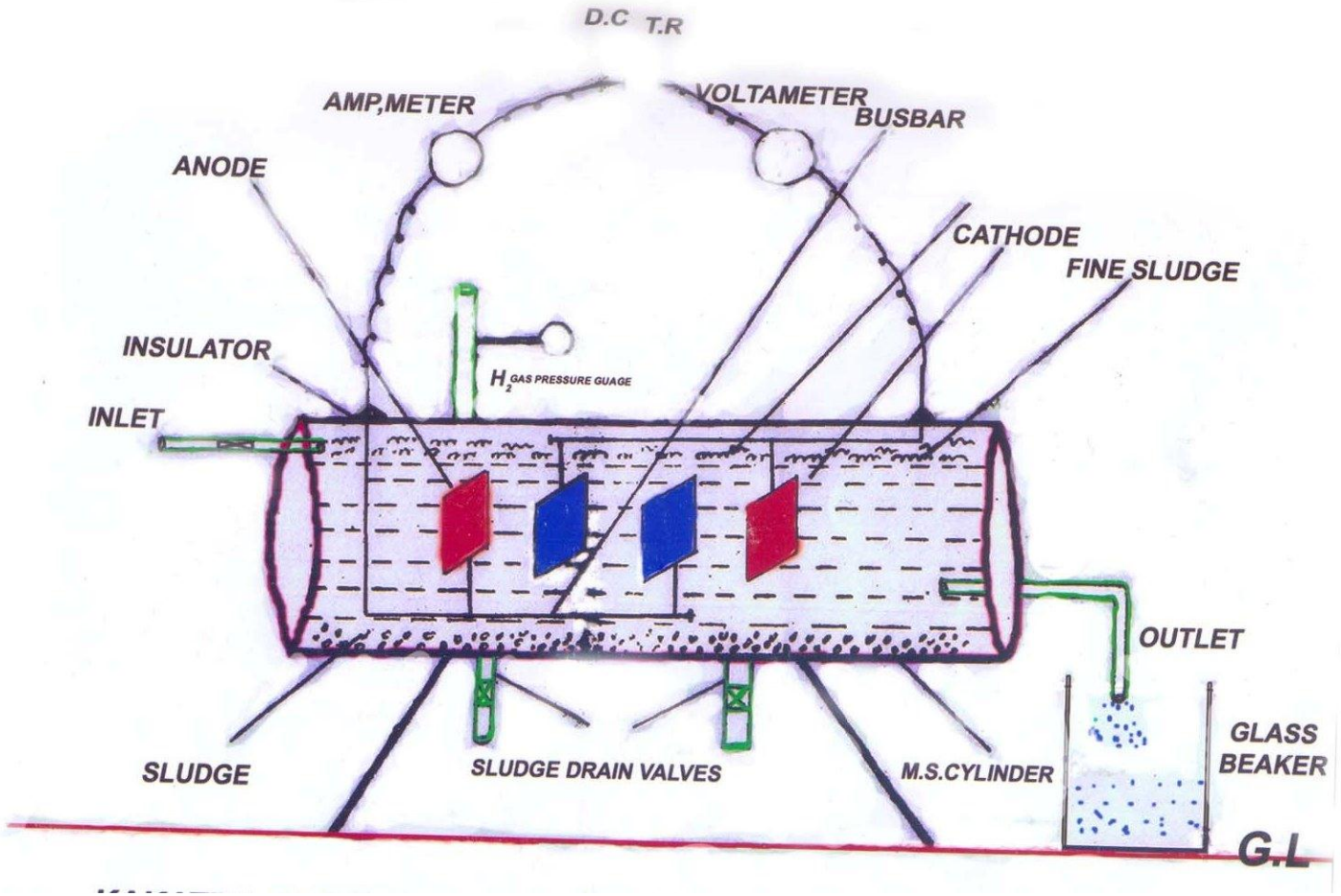
INTRODUCTION

- **Hydrogen ions are liberated at cathode (-)**
- **High molecular weight compounds of**
- **Effluents get converted into low molecular weight compounds**
- **Low M.W ions get themselves associated with H^+**
- **The H^+ will be moved to the surface and thus the effluents get decolorised**

BASIC LABORATORY DESIGN OF THE DEVICE



TREATMENT PROCESS

- Effluents were sent into the reactor through inlet pipe
- Then the electrodes are charged with the direct current
- should allow to get the reaction to occur for 5mnts
- after 5mnts the uncolored effluents starts flow out from out let

HOW IT IS ECO-FRIENDLY

Parameters (in ppm)	Before treatment	After KEC treatment
Colour (Pt.Co)	2100±50	63±2
COD	850±10	15±2
BOD	250±10	NIL
TDS	2200±10	100±5
TSS	200±5	2±0.05
TS	2400±10	102±5

ENERGY UTILIZATION

- **Solution Volume** **2 liters**
- **Lignin content** **400ppm**
- **Current Passed** **5.0amps**
- **Voltage of Sol.** **11 Volts**
- **Time required for reaction** **5 mnts**
- **Color reduction** **97%**

COST BENEFIT ANALYSIS

- This will applicable for 22,000 gallons per day
- current required 0.745 killo amperes
- electrolyte sol 11 volts
- total power required 11 x 0.745
  - » = 8.195 KWH
  - » = 8.195 Units
- total power required per day=8.195x24
  = 196.68 units/day

COST BENEFIT ANALYSIS

- Power charges per unit = 5 rupees
- For 22,000 gallons = Rs. 983.4/-
- Amount saved by the recycling of raw water
  = Rs. 400/-

- Effective cost of electro chemistry method
  = 983.4 – 400 = **583.4/-**

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CONCLUSION

- This process is Zero discharge
- EC process residue can use in land irrigation
- EC process is an environmental friendly
- By this we can fight against water crisis
- EC is cost effective method
- By using this method we can meet pollution control board standards

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THANK YOU