

# WATER FROM AIR USING P TYPE SEMICONDUCTOR AND SUPPLYING ELECTRICITY TO THE GRID

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## ABSTRACT

*To supply water to draught hit areas of India for agriculture, the methodology uses dew point of air to convert it in to water. The dew point depends on relative humidity and temperature which are not constant and depends on the field conditions. In this proposal some values of relative humidity and temperature are taken from previous weather data. Electricity produced in this process is supplied to the grid.*

**Key words:** P type semiconductor, water from air, dew point, power supply to the grid

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<http://www.iaeme.com/IJARET/issues.asp?JType=IJARET&VType=11&IType=10>

## 1. INTRODUCTION

From Ref[1]

One room cold due to P-type Semiconductor air considered. Heat flows from high temperature top of the room to bottom cold of the room.

## 2. METHODOLOGY

$Q = mC(T_2 - T_1)$  heat I joules

Volume of air considered = 1 meter cube

1 meter cube = 1 meter square

then mass of air = 1.22kg

$C_p = 1020$  joules/kg C

$T_2 = 27.4$  C .....from dew point calculator

$T_1 = 35$  C

## Water from Air using P Type Semiconductor and Supplying Electricity to the Grid

$$\Delta T = T_2 - T_1 = -7.6$$

$$Q = 1.22 \times 1020 \times (-7.6) = -9457 \text{ joules}$$

$$V \cdot I \cdot t = -9457 \text{ joules}$$

$$\text{Supply voltage} = 415 \text{ volts}$$

$$\text{Time} = 1 \text{ milli second}$$

$$\text{Current } i = -9457 / (415 \times 0.001) = -22787.9 \text{ A}$$

Calculator.net FINANCIAL FITNESS & HEALTH

home / other / dew point calculator

### Dew Point Calculator

This calculator estimates the temperature to which air must be cooled to become saturated with water vapor, and form dew.

Please provide **any two** of the three variables below to calculate the third.

**Result**

Dew Point Temperature: **27.4°C** (81.3°F or 300.6K)

Water Vapor Pressure : 3,657 Pa

Saturation Water Vapor Pressure: 5,627 Pa

Absolute Humidity: 25.7187 g/m<sup>3</sup>

Moisture Volume Concentration: 36,097 ppm (3.6097%)

Moisture Weight Concentration: 22,447 ppm (2.2447%)

Air Temperature: 35 Celsius °C

Relative Humidity: 65 %

Dew Point Temperature: Celsius °C

Calculate Clear

Here current  $I$  is negative, indicating that it acts as a current source and hence adds power to the grid as a generator.

P type semiconductor is modelled as negative resistance,  $R = 415 / 22787.9 = 0.018211$  ohms

Resistivity = 100 ohm-cm

Length = 2.5cm

$R = \text{resistivity} \times \text{length} / \text{area}$

$\text{Area} = \text{resistivity} \times \text{length} / R = 100 \times 1.76 / 0.018211 = 9664 \text{ sq-cm} = 0.9664 \text{ sq-m} \approx 1 \text{ sqm}$

For 1 milli second water produced = 10.99 grams

The screenshot shows the LENNTECH website's relative humidity calculator. The navigation bar includes 'Applications', 'Processes', 'Systems', 'Products', 'Industries', 'Services', and 'More'. The breadcrumb trail is 'Home / Calculators / Relative Humidity'. The calculator fields are: Outside temperature: 19 °C, Relative humidity outside: 80 %, and Calculated grams of H<sub>2</sub>O per kg of air: 10.99 g/kg.

For 1 second water produced = 10.99\*1000 grams= 10.99 kg of water  
 For 1 year water produced=365\*24\*60\*60\*10.99=346,580,640 kg of water  
 1 cubicm=997 kg of water  
 1 kg of water=0.001 cubicm  
 346,580,640 kg of water=346,580 cubicm  
 1 cubicm of water=1000 liters  
 346,580 cubicm=346,580,640 liters

Foodstuff	Quantity	Water consumption, litres
Chicken meat	1 kg	4,325
Cheese	1 kg	3,178
Olives	1 kg	3,025
Rice	1 kg	2,497

346,580,640 liters=346580640/2497=138,798.8 kg of rice  
 1 kg of rice=45 rupees  
 Selling price=6,245,955 rupees  
 For 6 years selling price of rice=36,000,000 rupees

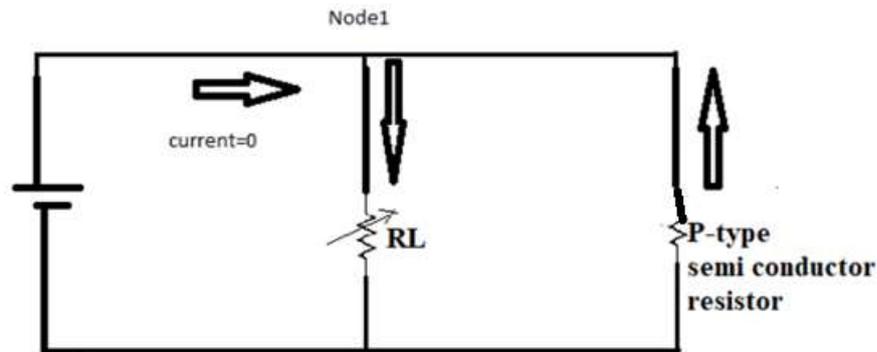
1 megawatt=1000000/(1.5\*0.5).....AA battery 1.5 V, 0.5 A  
 1 megawatt=1,333,334 batteries  
 9 MW battery =12,000,000 batteries  
 AA battery cost=12,000,009\*10 rupees=120,000,000  
 Reference 3: Nippo AA battery price

9 MW inverter cost= $9 \times 9.5 \times 10^6 = 85,500,000$

Shelf life of AA battery= 6 years

Kwh selling price=Rs2

$9,000 \text{ kw} \times 8760 \times 2 \times 6 = 473,040,000$  rupees



**Figure 1** Water from air is produced by P type Semi-Conductor. Electricity is Supplied to the grid by RL

### 3. CONCLUSION

Water from air is produced from P type semiconductor. Electricity is supplied to the grid

### REFERENCES

- [1] <https://physics.stackexchange.com/questions/18889/which-direction-does-air-flow>
- [2] [www.lenntech.com](http://www.lenntech.com)
- [3] [www.weather online.com](http://www.weather online.com)
- [4] <https://www.calculator.net/dew-point-calculator.html>