



# SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## *DEPARTMENT OF MECHATRONICS*

### **19MCB302 -IE- INDUSTRIAL ELECTRONICS**

III YEAR V SEM

#### **UNIT 1 – PHASE CONTROLLED CONVERTER**

#### **TOPIC –Battery Charging Circuit**

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# Empathy Collection



Empathy	Source
<ul style="list-style-type: none"><li>• Frequent Maintenance of IC Engine</li><li>• More Vibration</li><li>• Create Messy Environment due to oil leakage</li><li>• Increase in cost of refilling.</li><li>• Improper fuel supply.</li><li>• <b>Failure in Battery Charger.</b></li></ul>	Mr.Prince Roy, Caption-Go-Kart 2017-18, (NKRC-2)
	Mr.Dharshan, Power Train Team- Go-Kart 2017-18, (NKRC-2)
	Mr.R.Suseendran, Driver- Go-Kart 2018-19, (NKRC-3)
	Mr.A.Vijayakrihnsraj, Electrical Team- E-Kart 2017-18, (E-NKRC-1)





# APPLICATION



Battery



Charger

How its Work without wire.....?





# Types of Charger



## Battery charging Circuit



# Design of Battery Charging Circuit

TABLE 2: BATTERY VOLTAGES AND ENERGY CAPACITIES		
Battery type	Nominal voltage (V)	Amp/hour (mAh)
Alkaline long-life	1.5	2122
Zinc-carbon	1.5	591
Nickel-cadmium	1.2	1000
Nickel-metal-hydride	1.2	2100
Lithium-ion	3.6	853

## SO OUR TARGETED OUTPUT

- 1.2 to 3.6V
- DC Output
- Constant output



# Design of Battery Charging Circuit



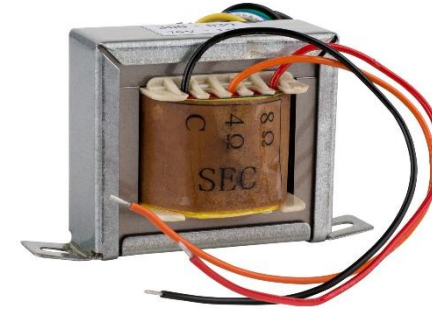
<b>We Want</b>	<b>1.2 to 3.6 V</b>	<b>DC Current</b>	<b>Constant Voltage</b>
<b>We Have</b>	TNEB Single phase Voltage = 230 V	AC Supply	Fluctuating Voltage



# Design of Battery Charging Circuit



For Voltage reduction



*Step down transformer*– Used to convert the 230 V AC into 15V AC

For AC-DC Conversion



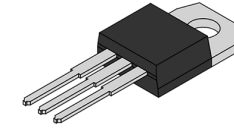
*Bridge rectifier* – Used to convert the 15 V AC into 15V DC



# Design of Battery Charging Circuit



For Constant Voltage



7812 - 12V  
VOLTAGE REGULATOR

IC7805– Regulate the constant voltage to the battery

For Indication

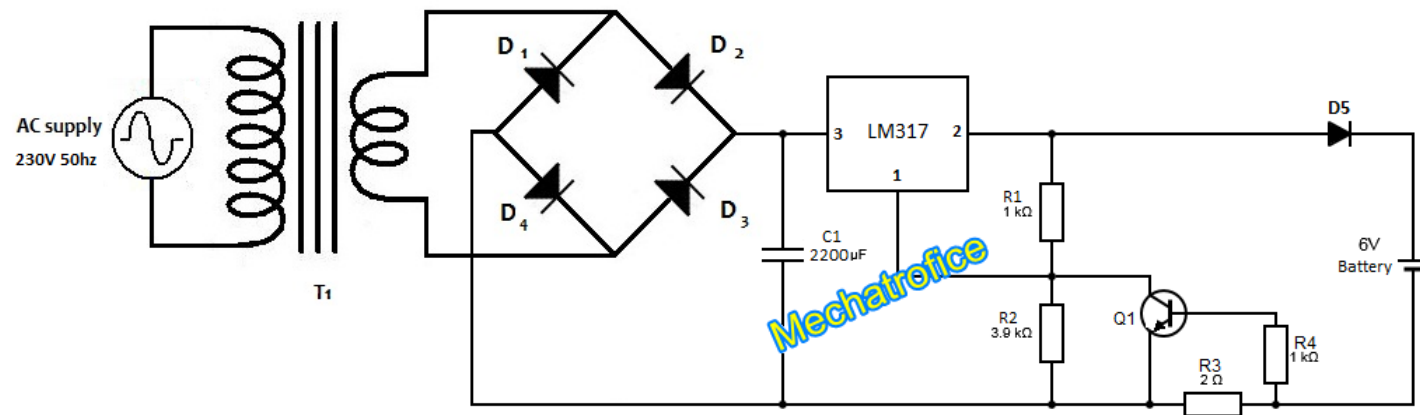
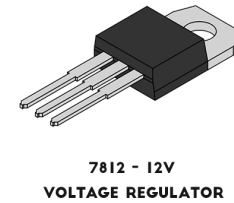
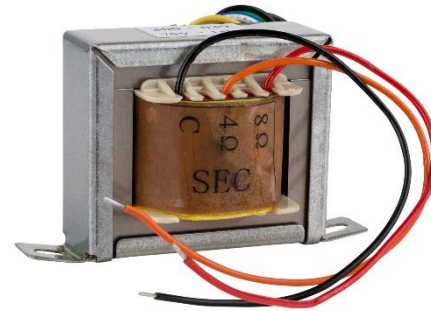
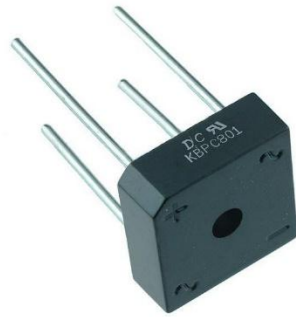


LED– Used to Indicate the circuit ON state





# Design of Battery Charging Circuit

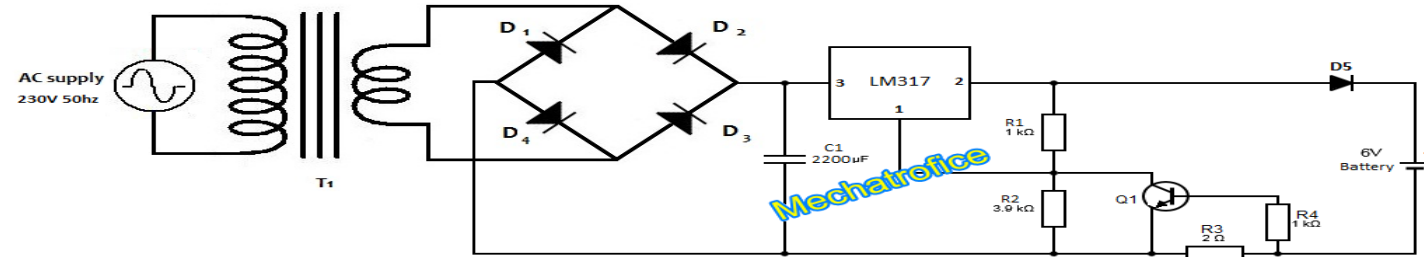




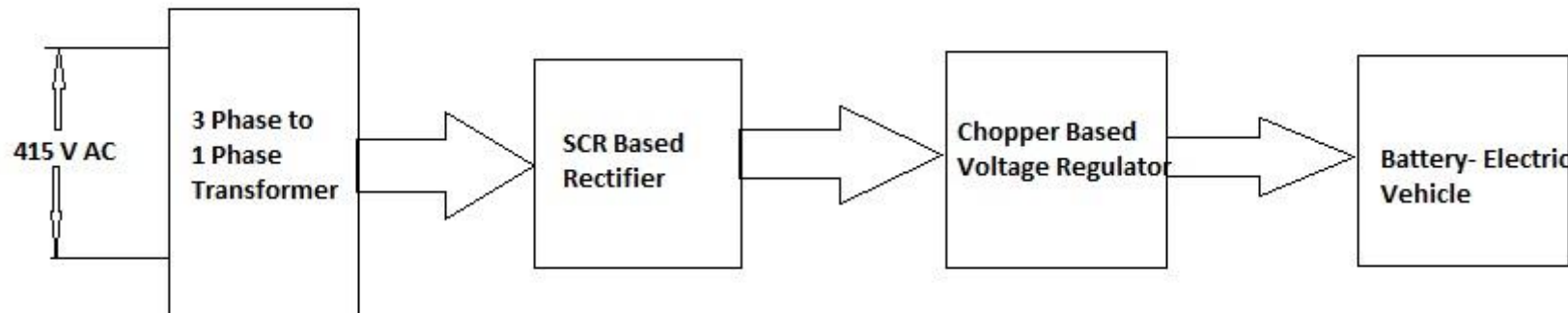
Similarly.....



In BCC



In EV





# Reason for Failure of Battery Charger in E-Kart

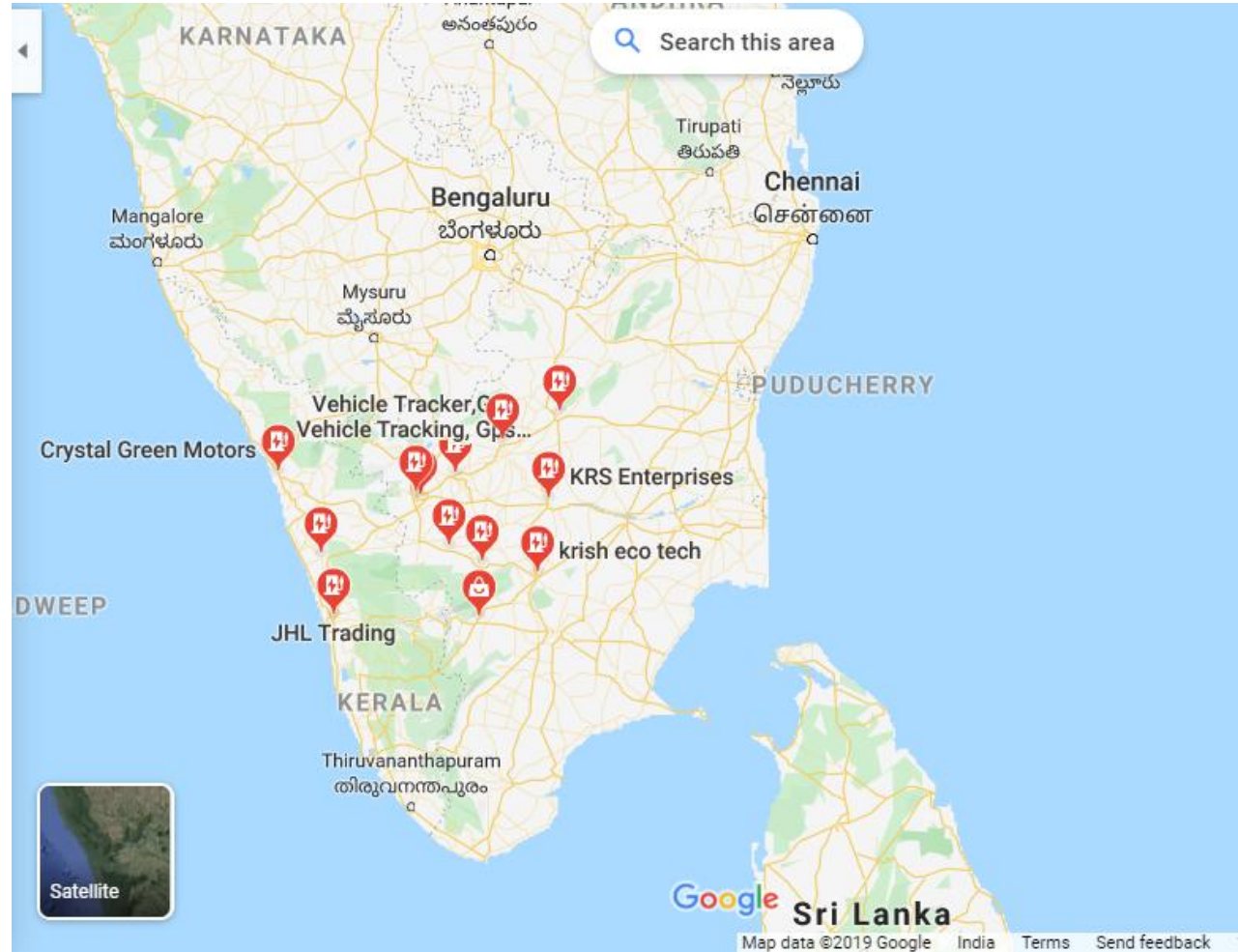


## Rectification Unit





# EV Battery Charging Station in South India





# References

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4. [https://www.ijareeie.com/upload/2017/december/19\\_Final%20Paper-E61212607.pdf](https://www.ijareeie.com/upload/2017/december/19_Final%20Paper-E61212607.pdf)
5. [https://www.researchgate.net/figure/Electrical-circuit-of-EV-and-charging-system\\_fig3\\_263317190](https://www.researchgate.net/figure/Electrical-circuit-of-EV-and-charging-system_fig3_263317190)
6. <https://www.youtube.com/watch?v=am7O0jD8kcU>

