Flash Charger And Direct Method For Charging Ultracapacitor

U.M.Sonekar[1], P.S.Vaidya[2]
Department of Electrical Engineering
G.H.RAISONI COLLEGE OF ENGG

Abstract-*Flash charger charging methods are studied in the paper. Ultracapacitor requires fast charging which can be meet by flash charging circuit. The desired aim is to obtain the fast charging of Ultracapacitor. flash charger is an efficient medium of minimizing the time required for charging. Low cost regulated integrated circuits are used to get appropriate voltage and current to match the requirement. Common chargers for Ultracapacitors requires current and voltage sensors along with their control which increases complications and its cost. Proposed charger board circuit is simple and does not require any special kind of circuitry. Through experimental testing, time needed to charge the Ultracapcitor is verified. Hardware circuit along with experimental results is presented by the following research*

I. INTRODUCTION

Ultracapacitors are also known as supercapacitors. Two main types of ultracapacitors are pseudocapacitor and double layer capacitor. Their structures are somewhere like a battery, which contains electrolyte with electrodes immersed. The positive and negative electrodes are separated by a separator. The electrodes are made with porous. Ulracapacitor are divided into two types-Double layer ultracapacitor Pseudo ultracapacitor Double layer capacitor –in this capaciotor their is no faradic reaction occurs.Pseudo capacitor-in this capacitor their is faradic reaction.

In ultracapacitor there is an electrolyte with electrods immersed.There are two types of electrodes positive and negative which is separated by separator and ions are travelling along the electrods.

II. CHARGING

1.1 Flash charging

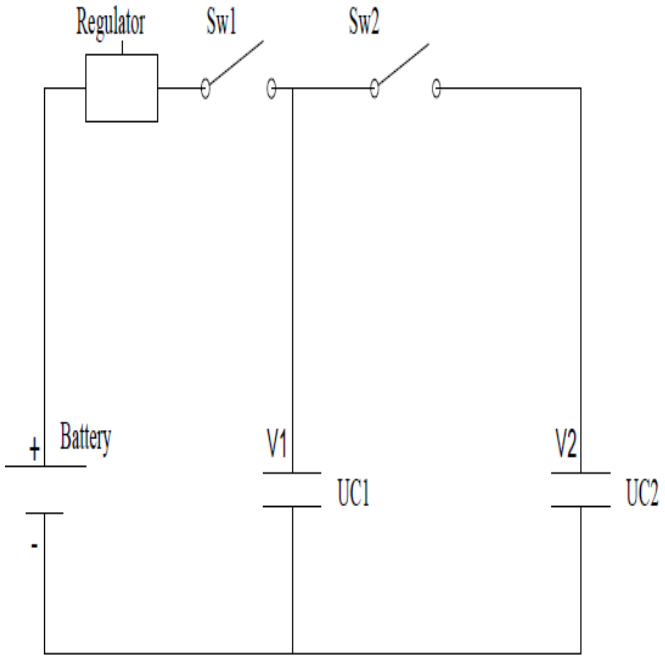

Fig 1: (a) Circuit to realize the flash

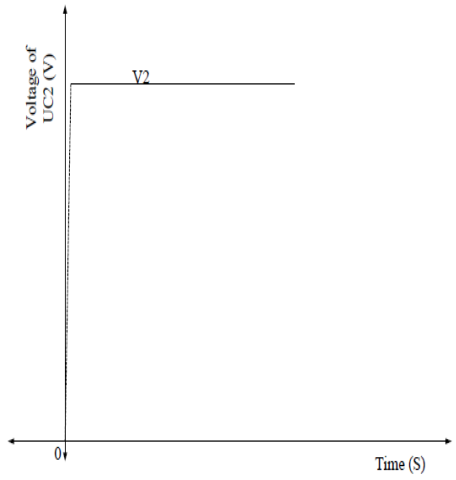

Fig 2:(b) Voltage graph of the Ultracapacitor during charging

The charging time during flash charging is very less. Regulator is used to regulate constant voltage.When switch 1 is closed ulracapacitor 1 is charged which is used for the charging of ultracapacitor 2.It uniformly delivers 400kW for 15 sec and flash charges the ultracapacitor on the bus .

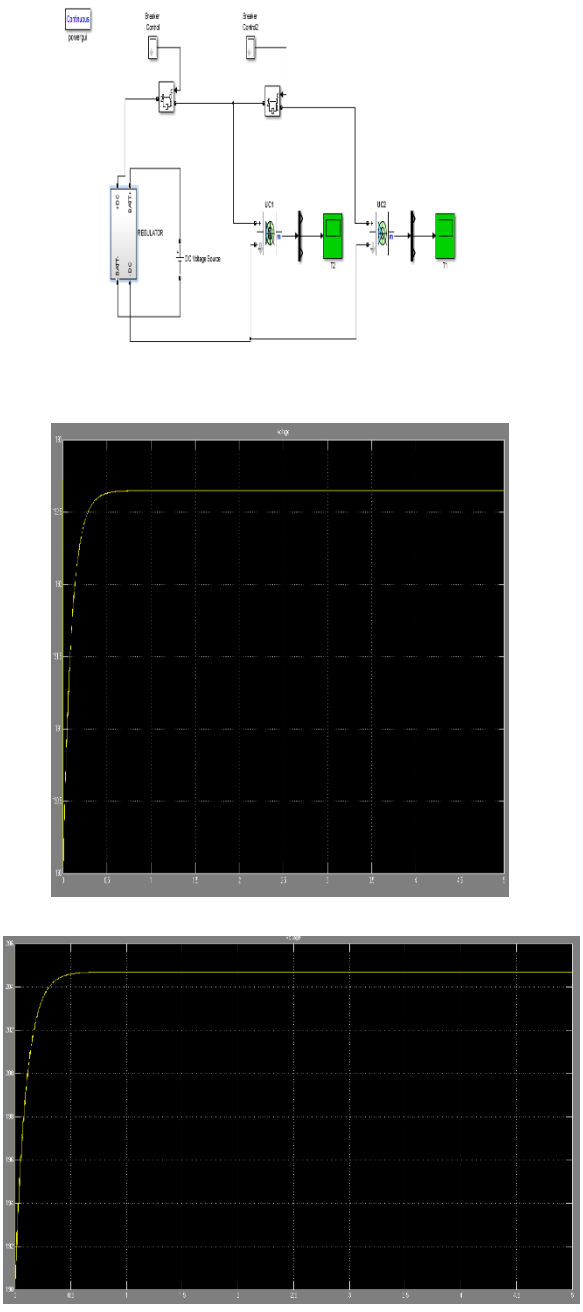

Fig 1: (3) Matlab Simulation For Flash Charger

1.2 Direct Charging

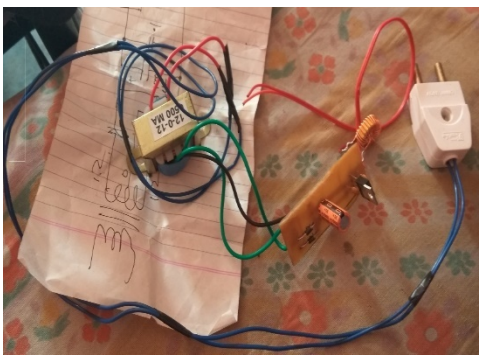

Fig 2: Direct charging method

For direct charging two capacitor are connected in series of 0.001F . 1500Watt transformer is directly connected to diodes and 1000F capacitor. voltage regular is connected for applying constant voltage all over the capacitor. It is most common method for charging ultracapacitor.

IV. CONCLUSION

The charging of ultracapacitor in less time is much necessary in electric vehicle industry. In this paper flash charging and direct charging is studied on the basis of time. The comparison other method on the baisis of time is explained further.

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