



AN APPROACH TOWARDS POWER MANAGEMENT OF SUPER CAPACITORS

Kirmani Murthuja¹, Sk.Gouse Basha²

¹M.Tech Student, Dept of EEE(PE), Nimra College of Engg. & Technology,
Nimra Nagar, Jupudi, IBM, Vijayawada, A.P, India

²Assistant Professor, Dept of EEE(PE), Nimra College of Engg. & Technology,
Nimra Nagar, Jupudi, IBM, Vijayawada, A.P, India

ABSTRACT:

Super capacitors are storage devices which facilitate to provide the peaks of power to hybrid vehicle for the duration of the transient states. The benefit of hybrid electric vehicles is during braking, the energy can possibly be engrossed by the electrical system, instead of changing all kinetic energy into heat by means of friction brakes. To fully make use of the super capacitor, a voltage converter is essential which unsurprisingly should be as competent and uncomplicated as possible. To make sure a high-quality power management in hybrid vehicle, the topologies of the converters of multi boost and multi full bridge and their organizing are developed. The strategy of multi boost converter control makes sure the super capacitor modules release with uneven current. The reference current of super capacitors is gained starting from the power management among batteries and hybrid vehicle DC-link and this approach includes the super capacitors and batteries present control loops. On the other hand, topology of converters of multi boost and multi full bridge is well appropriate in the direction of adjusting the level of existing voltage towards the DC-link. Due to the ease and outlay, the converters of multi boost for the most part motivating topology concerning the multi full bridge converter. It facilitates a high-quality power management in hybrid vehicle. Topology control law of the multi boost converter results from the boost converter modeling.

Keywords: *Super capacitors, Hybrid vehicle, Multi boost and Multi full bridge converters, DC-link.*

1. INTRODUCTION:

In a process distressed with significant power losses, a conventional vehicle by means of an internal combustion engine converts chemically stored energy into kinetic energy. Connecting the internal combustion engine by means of storage of electric energy and drive structure can possibly get better the fuel effectiveness all the way through numerous means [4]. The system of electrical propulsion allows the combustion engine to function closer to its most favourable operating point all the way through providing the wheels by means of extra power when needed and take up power when the internal combustion engine produces surplus power. The advantage of hybrid electric vehicles is during braking, the energy can possibly be engrossed by the electrical system, instead of changing all kinetic energy into heat by means of friction brakes [7]. The electrical energy storage characteristically consists of a battery through added or less complex support-electronics intended for charge control and error deterrence. The storage unit has to stock up comparatively great amounts of

energy and hold high power. By means of present battery expertise, the energy storage capability comes at a charge of decreased power potential and the existence of the modern batteries is responsibility of the charge cycles [1]. To fully make use of the super capacitor, a voltage converter is essential which unsurprisingly should be as competent and uncomplicated as possible. It is also achievable with the converter to encompass complicated control of the power flows, which can get better the system if appropriate strategies are used. By commencing a super capacitor as aid, the battery could be out of danger from the power heights and consequently permit the battery to be optimized intended for energy storage or expand the duration of a given battery, which consecutively could lesser the expenditure of the entire unit [9]. Super capacitors are storage devices which facilitate to provide the peaks of power to hybrid vehicle for the duration of the transient states. For the rationale that of the high power, the converters of multi boost and multi full bridge will be explored and to confirm a premium power management in hybrid vehicle, the topologies topology of

converters of multi boost and multi full bridge and their organizing are developed [3]. Due to the ease and outlay, the converters of multi boost for the most part motivating topology concerning the multi full bridge converter. It facilitates a high-quality power management in hybrid vehicle [5]. Topology control law of the multi boost converter results from the boost converter modelling. The scheme of multi boost converter control makes sure the super capacitor modules release with uneven current. For the period of the steady states, batteries will make available the energy applied for and this line of attack enables to cut the weight and adds the lifespan of the batteries [2]. Hybridization by means of batteries and super capacitors intended for transport requests is necessary when energy and power supervision are requested throughout the states of transient and steady states.

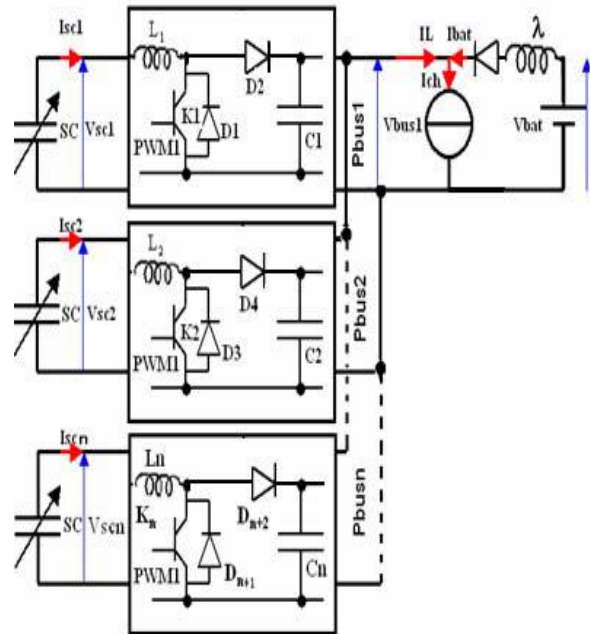


Fig1: An overview of topology of multi boost converter.

2. METHODOLOGY:

Super capacitors are storage devices which facilitate to provide the peaks of power to hybrid vehicle for the duration of the transient states. A voltage converter is important which naturally should be as proficient and uncomplicated as feasible in the direction of fully making use of the super capacitor and it is moreover attainable by means of the converter to include complicated managing of the power flows, that can get recover the system if suitable schemes are used [6]. The converters of multi boost and multi full bridge will be looked into for the reason that of the high power. Intended for range problems, traction

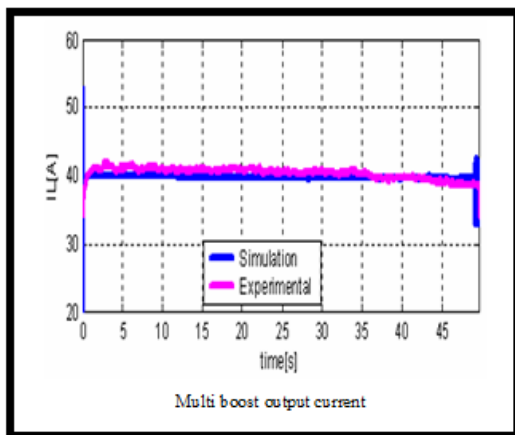
batteries used so far cannot convince the energy needed for upcoming vehicles. To make sure a high-quality power management in hybrid vehicle, the topologies of converters of multi boost and multi full bridge and their organizing and their organizing are developed. Because of the ease and outlay, the converters of multi boost for the most part motivating topology concerning the multi full bridge converter topology [10]. It facilitates a high-quality power management in hybrid vehicle. Fig1 demonstrates the topology of multi boost converter topology. The model of converter average has a nonlinear behaviour for the reason that of crosses among parameters of α_1 control variable and V_{bus1} . Topology control law of the multi boost converter results from the boost converter modelling. The strategy of multi boost converter control makes sure the super capacitor modules release with uneven current. The reference current of super capacitors is gained starting from the power management among batteries and hybrid vehicle DC-link and this approach includes the super capacitors and batteries present control loops [8]. The signal of PWM1 makes sure the control of multi boost converters throughout super capacitor modules release. These modules

being the same, the energy supervision among the modules and the DC-link of hybrid vehicle permits to write the super capacitors present references.

3. RESULTS:

In the single-phase inverter, every cell comprises two switches in addition to a capacitor of decoupling that is placed at the cell limits, presenting a dual role. It permits to generate an instant voltage source extremely close to the inverter. The capacitor connected to an inductor facilitates to sort out the harmonic machinery of the currents which are engendered by the inverter. Parasitic inductances continuing in the mesh comprises the internal inductance of semiconductors, capacitor inductance, and the electric association inductances. A superior choice of the components by means of a finest wiring enables to reduce parasitic inductances. By means of the semiconductors modules explains the association problems connecting components. Each and every attempt can become inadequate, if residual inductances stay put too elevated or else if the type of inverter is the small voltage and tough currents for which the voltage difference are

much vital. For the rationale that of the high power, the converters of multi boost and multi full bridge will be explored and to confirm a premium power management in hybrid vehicle, the topologies of the converters of multi boost and multi full bridge and their organizing are developed. The boost converters trial test is performed in the subsequent conditions such as: throughout the super capacitors release, the batteries current reference is unchanging, with the intention that, the super capacitors modules make available hybrid vehicle power request all through the transient states.



4. CONCLUSION:

The converters of multi boost and multi full bridge will be looked into for the reason that of the high power. Intended for range problems, traction batteries used so far

cannot convince the energy needed for upcoming vehicles. To make sure a high-quality power management in hybrid vehicle, the topologies of converters of multi boost and multi full bridge and their organizing are developed. Due to the ease and outlay, the converters of multi boost for the most part motivating topology concerning the multi full bridge converter. It facilitates a high-quality power management in hybrid vehicle. The experimental test conditions of full bridge were dissimilar from that of topology of boost converter; consequently at present it is not simple to make a good assessment connecting the two topologies. On the other hand, topology of converters of multi boost and multi full bridge is well appropriate in the direction of adjusting the level of existing voltage towards the DC-link.

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