

CLAIMS:

- 1) A system for storing instant regeneration in electric vehicles, comprising:
 - an energy storage device;
 - an energy regulating device coupled to the energy storage devices;
 - 5 a source of regenerative power for capturing regenerative energy during a regenerative power event of the vehicle;
 - and a motor control unit (MCU) coupled to the energy regulating device, wherein the control unit is configured to:
 - transfer the generated electrical energy to the energy storage device on estimating the
 - 10 generation of the regenerative power using the energy regulating device.
- 2) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the source of regenerative power is one of a generator, an alternator, a pulse width modulation motor, or any combination thereof.
- 15 3) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the motor is a Permanent Magnet Synchronous Motor of the configuration 150-270 Kw, 1200-2400 rpm and has a peak torque of 2400.
- 4) The system for storing instant regeneration in electric vehicles as claimed in claim 20 1, wherein the motor control unit is of the configuration 300 to 380 KW, 500-600 V.
- 5) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the energy storage device is a relatively high power storage device having capacity 250 to 300 KWH.

- 6) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the energy storing device consists of 10 Modules and each module having 36 cells.
- 5 7) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the energy regulating device consist of MCU which converts the current from AC to DC & vice-versa.
- 10 8) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the motor control unit based on the battery consumption ascertains when the next regenerative power event will occur.
- 15 9) The system for storing instant regeneration in electric vehicles as claimed in claim 1, wherein the prediction is based on at least one of a statistical driving model, a detected type of driving style including speed and acceleration, stored energy data, and routing information.
- 20 10) A method for storing instant regeneration in electric vehicles comprising:
- estimating when a next regenerative power event during a current trip will occur;
 - estimating when energy storage device connected for receipt of regenerative energy will be in an optimum condition to receive regenerative energy.
 - storing the generated regenerative energy produced when the next regenerative power event during a current trip occurs;
 - storing the generated regenerative energy produced when energy storage device is
- 25 connected for receipt of regenerative energy in an optimum condition.
- 11) The method for storing instant regeneration in electric vehicles as claimed in claim 10, wherein automatic estimation is based upon at least one of:
- a current state of the vehicle during the trip including at least one of vehicular speed
 - 30 and acceleration; and
 - route information of the current trip.