[0062] The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

1. A control apparatus for a power supply system operable at a fluctuating line voltage, the system further comprising an energy storage device, and the control apparatus further comprising a line voltage monitor and an energy storage device controller, wherein the control apparatus is configured whereby the energy storage device is at least partly discharged if the line voltage falls below a first predetermined voltage and the energy storage device is at least partly charged if the line voltage exceeds a second predetermined voltage and in which the first predetermined voltage is substantially lower than the second predetermined voltage.

2. A control apparatus for a power supply system according to claim 1, in which in the voltage region between the first and second predetermined voltages, the energy storage device is driven to a predetermined charge setting between a maximum charge setting and a minimum charge setting.

3. A control apparatus for a power supply system according to claim 1, in which the first and second voltages are determined relative to a mean line voltage.

4. A control apparatus for a power supply system according to claim 3, in which the mean line voltage is determined by a time average over a predefined rolling time interval.

5. A control apparatus for a power supply system according to claim 1, in which an idle charge is defined with a positive idlewindow above the idlecharge and a negative idlewindow below the idlecharge, whereby in a region between the first predetermined voltage and the second predetermined voltage the energy storage device is neither charging nor discharging as the charge decreases until the charges reaches the negative idlewindow when it charges to a charge between the positive idlewindow and the negative idlewindow, and then neither charges nor discharges until the negative idlewindow is reached.

6. A control apparatus for a power supply system according to claim 1, in which a third voltage below the first predetermined voltage defines a reduced discharge region between the first predetermined voltage and the third voltage, in which the energy storage device is discharged at a lower rate than in a discharge region in which the line voltage is lower than the third voltage.

7. A control apparatus for a power supply system according to claim 1, in which a fourth voltage above the second predetermined voltage defines a reduced discharge region between the second predetermined voltage and the fourth voltage, in which the energy storage device is charged at a lower rate than in a charge region in which the line voltage is higher than the fourth voltage.

8. A control apparatus for a power supply system according to claim 1, in which an energy storage device maximum charge is defined and a maximum charge idlewindow is defined below and in relation thereto, and the apparatus is configured whereby if the line voltage is above the second predetermined voltage, upon the energy storage device reaching maximum charge it is neither charged nor discharged until the energy storage device charge falls to the maximum charge idlewindow at which stage the energy storage device is charged.

9. A control apparatus for a power supply system according to claim 1, in which an energy storage device minimum charge is defined and the apparatus is configured whereby upon the energy storage device reaching the energy storage device minimum charge the energy storage device is neither charged nor discharged until the line voltage rises above the first predetermined voltage.

10. A control apparatus for a power supply system according to claim 1, in which the energy storage device is a flywheel.

11. A power supply system comprising a control apparatus according to claim 1.

12. A power supply system according to claim 11, in which the power supply system is for a transport system.

13. A method of controlling a power supply system operating at a fluctuating line voltage, the system further comprising an energy storage device, and the control apparatus further comprising a line voltage monitor and an energy storage device controller, whereby the energy storage device is at least partly discharged if the line voltage falls below a first predetermined voltage and the energy storage device is at least partly charged if the line voltage exceeds a second predetermined voltage and in which the first predetermined voltage is substantially lower than the second predetermined voltage.

14. A method of controlling a power supply system according to claim 13, in which in the voltage region between the first and second predetermined voltages, the energy storage device is driven to a predetermined charge setting between a maximum charge setting and a minimum charge setting.

15. A method of controlling a power supply system according to claim 13, in which the first and second predetermined voltages are determined relative to a mean line voltage.

16. A method of controlling a power supply system according to claim 15, in which the mean line voltage is determined by a time average over a predefined rolling time interval.

17. A method of controlling a power supply system according to claim 13, in which an idlecharge is defined with a positive idlewindow above the idlecharge and a negative idlewindow below the idlecharge, whereby in a region between the first predetermined voltage and the second predetermined voltage the energy storage device is neither charging nor discharging as the charge decreases until the charge reaches the negative idlewindow when it charges to a charge between the positive idlewindow and the negative idlewindow, and then neither charges nor discharges until the negative idlewindow is reached.

18. A method of controlling a power supply system according to claim 13, in which a third voltage below the first predetermined voltage defines a reduced discharge region between the first predetermined voltage and the third voltage, in which the energy storage device is discharged at a lower rate than in a discharge region in which the line voltage is lower than the third voltage.

19. A method of controlling a power supply system according to claim 13, in which a fourth voltage above the second predetermined voltage defines a reduced discharge region between the second voltage and the fourth voltage, in which the energy storage device is charged at a lower rate than in a charge region in which the line voltage is higher than the fourth voltage.