FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
AND
THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See Section 10; rule 13)

TITLE OF THE INVENTION

"BYPASS SWITCH FOR A BOOST DEVICE"

APPLICANT

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The following specification particularly describes
the invention and the manner in which
it is to be performed

WHAT IS CLAIMED IS:

1. A system comprising:

a compensation device for connection to a bus of a power system; and

a boost device coupled to the compensation device, the boost device comprising multiple portions, each of the multiple portions comprising:

at least one electrical element; and

a solid-state switching device electrically connected to the at least one electrical element, wherein the solid-state switching device is connected in parallel with the at least one electrical element such that closing the solid-state switching substantially prevents current flow to the at least one electrical element.

2. The system of claim 1, wherein the boost device further comprises a mechanical bypass switch electrically connected in parallel to the solid state switching device and the at least one electrical element.

3. The system of claim 1, wherein the at least one electrical element comprises multiple capacitors.

4. The system of claim 1, wherein the at least one electrical element is a single capacitor.

5. The system of claim 1, wherein the at least one electrical element comprises multiple components that, taken together, have an overall capacitive output.

6. The system of claim 1, wherein the at least one electrical element comprises multiple inductors.

7. The system of claim 1, wherein the at least one electrical element comprises multiple components that, taken together, have an overall inductive output.

8. The system of claim 1, further comprising a connection configured to electrically connect the compensation device to the power system.

9. The system of claim 8, wherein the connection is configured to electrically connect the compensation device to the power system through a circuit breaker that, when opened, disconnects the compensation device from the power system.

10. The system of claim 1, wherein the solid-state switching device comprises a thyristor.

11. The system of claim 1, wherein the solid-state switching device comprises one or more power electronic components.

12. The system of claim 2, wherein the solid-state switching device is configured to close to short circuit the at least one electrical element, and the mechanical bypass switch is configured to close after the solid-state switching device is closed.

13. The system of claim 12, wherein the solid-state switching device is configured to open after the mechanical bypass switch is closed.

14. The system of claim 12, wherein the solid-state switching device closes within about one cycle and the mechanical bypass switch closes after the solid-state switching device closes.

15. The system of claim 10, further comprising a monitor configured to monitor current flow through the thyristor and to provide a signal to cause the mechanical bypass switch to close when current flows through the thyristor.

16. The system of claim 15, wherein the monitor comprises a current sensing device.

17. The system of claim 1, further comprising a control system coupled to the solid-state switching device, the control system configured to provide a signal to cause the solid-state switching device to open or close.

18. The system of claim 2, further comprising a control system coupled to the solid-state switching device, the control system configured to:

provide a signal to cause the solid-state switching device to open and close, and

provide a signal to cause the mechanical bypass switch to open and close.

19. The system of claim 1, wherein the solidstate switching device is configured to close in response to a system contingency.

20. The system of claim 2, further comprising a discharge coil coupled to the mechanical bypass switch.

21. A compensation device for connection to a bus of a power system, the compensation device comprising a boost device, the boost device comprising:

one or more portions, each portion comprising:

multiple electrically connected capacitors;

a solid-state switching device electrically connected in parallel to the multiple electrically connected capacitors; and

a connection interface configured to electrically connect the compensation device to the bus of the power system,

wherein closing the solid-state switching device of one of the one or more portions short circuits the capacitors of the portion and causes a voltage on the capacitors of another of the portions to increase, thereby increasing the VARs provided by the compensation device to the power system through the connection interface.

22. The compensation device of claim 21, wherein at least one of the one or more portions further comprises a mechanical bypass switch electrically connected in parallel to the solid-state switching device and the multiple capacitors.

23. A method for providing VARs to a power system, the method comprising:

receiving a triggering signal; and

causing a solid-state switching device in a portion of a boost device of a compensation system connected to the power system to close in response to receiving the triggering signal, the closing of the solid-state switching device resulting in an electrical element included in the boost device to be short circuited and a VAR output from the compensation device to change.

24. The method of claim 23, further comprising

causing a mechanical bypass switch electrically connected in parallel with the solid-state switching device to close after the solid-state switching device is closed.

25. A kit for installing a boost device in a compensation device, the kit comprising:

a solid-state switching device;

a fitting to connect the solid-state switching device such that the solid-state switching device is in parallel with a capacitor or inductor of the boost device; and

a control system coupled to the solid-state switching device, the control system configured to produce a signal to cause the solid-state switching device to open or close.

26. The kit of claim 25, further comprising a mechanical bypass switching device electrically connected in parallel with the solid-state switching device and coupled to the control system, and wherein the control system is further configured to produce a signal to cause the mechanical bypass switching device to open or close.

27. The kit of claim 25, wherein the boost device is a capacitor bank that includes multiple capacitive components.

28. The kit of claim 25, wherein the boost device is an inductor bank that includes multiple inductive components.

29. The kit of claim 25, further comprising a monitor configured to measure current flowing through the solid-state switching device, wherein the monitor is coupled to the control system.

30. A boost device comprising:

multiple portions, each of the multiple portions comprising:

at least one electrical element; and

a solid-state switching device electrically connected to the at least one electrical element,

wherein the solid-state switching device is connected in parallel with the at least one electrical element such that closing the solid-state switching device substantially prevents current flow to the at least one electrical element.

31. A system as described above.

32. A boost device as described above.

33. A compensation device as described above.

34. A method as described above.

35. A computer program product to implement a process described above.

36. A controller to implement a process described above.

37. A control system to implement a process described above.

38. A user interface configured to allow a user to communicate with a process described above.

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