CLAIMS

1. A DC power supply system comprising first and second DC power distribution bus sections and a DC power switching assembly comprising a plurality of series connected power switching units and a current limiter; each power switching unit comprising a first power switching unit terminal and a second power switching unit terminal and two symmetrical power switching sub-units to control current flow between the first power switching unit terminal and the second power switching unit terminal; each sub-unit being electrically connected on one side to one of the first and second power switching unit terminals and on the other side to the other sub-unit; wherein the power switching sub-units each comprise a semiconductor device and in parallel with the semiconductor device, a series connected diode and capacitor; wherein a first power switching unit terminal of the assembly is electrically coupled to the first bus section of the power distribution bus and the second power switching unit terminal is electrically coupled to the second bus section of the power distribution bus; and wherein the voltage at one side of the power switching assembly is greater than or equal to 1kV.

2. The DC power supply system according to claim 1, wherein the current limiter comprises an inductance.

3. The DC power supply system according to claim 1 or claim 2, wherein the current limiter is provided between one of the first and second power switching unit terminals and an adjacent power switching unit.

4. The DC power supply system according to any preceding claim, wherein one or each of the sub-units further comprise a resistor in series with the capacitor.

5. The DC power supply system according to any preceding claim, wherein one or each of the sub-units further comprise a damping circuit in series with the capacitor.

6. The DC power supply system according to any preceding claim, wherein the semiconductor device comprises one of a diode, or a transistor.

7. The DC power supply system according to any preceding claim, wherein the semiconductor device comprises an insulated gate bipolar transistor.

8. The DC power supply system according to any preceding claim, wherein the voltage at one side of the power switching assembly is within the range 1KV to 10KV.

9. A method of operating a DC power supply system according to any of claims 1 to 8; the method comprising monitoring system voltage and current during operation; if a short circuit is detected, opening the power switching units to block current from the short circuit side of the system; monitoring for an indication that the short circuit has been cleared, closing the power switching units to allow current to pass through the power switching units; and continuing to monitor the system for indications of a short circuit.