MODULAR POWER-CONVERSION SYSTEM

Solution 1 - Diode-based architecture

Technological advantages

Simple/modular
Simplification of DC-DC converters.
Modular system.
Two stages: primary then post-regulator.
Requires fewer parts.
Easy to integrate in complex specifications.

Robust
Very robust, better guarantee against wear.
Stable power supply for all output.

Optimisation of power supply
Minimum loss of power.
Attractive modular electrical power conversion system for very low voltages.
A single primary stage followed by simplified post-regulator stages.
Independent galvanic insulation for each output (between primary and secondary and also between the different secondaries).

Summary of the invention

Linking transformers in parallel is incompatible with an asymmetric bridge system (saturation of transformer, losses, malfunctions).
The aim of this invention is to make a simple electrical power conversion and distribution system which overcomes this difficulty. It consists of the simplest possible multi-output power-conditioning system with galvanic insulation of the primary and secondary parts. It is extremely robust in the event of short-circuits and is very easy to implement. The invention is built using a diode-based architecture.

Commercial advantages

Simplified development
Solution for creating partitioned computers at the least cost while avoiding complete, complex and costly recompiling of middleware when porting to a new hardware platform.
The impact of evolution of the hardware platform input-output is concentrated at the level of the input-output drivers.
Accelerates the maturity curve for client application partitions.

A universal solution
Simplified portability
No space field-type specifications

TRL : 4-5

Patented invention available under licence

Potential applications

Space applications, avionics, automotive, train, scientific instrumentation and equipment.

Complementary inventions

Leaflet B 1126 - Modular power conversion system - Solution 2: Architecture with independent switches.