

Highly Efficient Power Supply System with High Dielectric Strength

New powerful semiconductor modules with high reverse voltages facilitate modern medium-voltage applications. Auxiliary components such as power supplies are increasingly becoming vital key components.

Surprisingly, it is not the silicon of the power semiconductors that presents the biggest problems in applications involving high operating voltages. Rather, it is the standard auxiliary components that are required, such as coolers, capacitors, clamping devices or even power supplies that do not meet the requirements in respect of their insulation properties in medium-voltage applications.

voltage applications for clearance and creepage distances according to DIN/IEC must be taken into account.

The new highly efficient power supply GPSS from GvA Leistungselektronik GmbH precisely takes account of these market requirements in an ideal way. Its scalable 2-channel platform can easily be



Figure 1: The GvA Power Supply System (GPSS) supplies 150W per channel and at the same time provides insulation for up to 21kV partial discharge free.

Auxiliary power supplies are used, for example, to feed driver boards for IGBT, IGCT or GTO, and to supply power or voltage sensors and other auxiliaries. It is essential here to have secure galvanic isolation between the secondary medium-voltage level and the supply level from which the auxiliary power supply is fed. Depending on the application, the insulation requirements are in the double-digit kV range. In addition, at all operating points a defined freedom from partial discharges (<10pC/50Hz) must be ensured in order to prevent premature ageing of the insulation barrier. When it comes to implementing the product, particular attention is therefore paid to the high requirements placed on the insulation materials and the field distribution in the device. Last but not least, the insulation requirements in medium-

extended to 4 or 6 output channels. An insulation voltage of 35kV with a freedom from partial discharges of at least 21kV (higher values on request) and the high output power of 150W per channel cover a very wide range of applications. With a supply voltage of 24V, GPSS provides an output voltage of 35V. Low power consumption and a level of efficiency of up to 94% ensure operation with low power losses. Independently controlled temperature and short-circuit or overloading and operating states for all connected devices simplify the entire system monitoring and guarantee a high level of operational reliability.

www.gva-leistungselektronik.de