EMC components

LCL filters for recuperative frequency converter systems

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TDK Corporation presents a new series of EPCOS LCL filters (B84143*405) for recuperative frequency converter systems. These high-performance filters consist of a power choke, a capacitor bank with damping resistors and a robust choke. The corresponding filter circuits attenuate the clock frequencies so greatly that the IEC/TS 62578 recommendations for EMI emissions between 9 kHz and 150 kHz can be satisfied. Moreover, in combination with a recuperative frequency converter system, the LCL filters can significantly reduce the line-side harmonics to less than 5 percent. Thanks to the integration of the choke in the LCL filter, the recuperative unit can also be operated as a boost converter for higher DC link voltages.

The new LCL filters are designed for rated currents of 16 A, 66 A, 200 A, and 400 A at a rated voltage of 520 V. The two smaller versions (16 A and 66 A) are accommodated on a mounting plate for ease of use. The larger versions (200 A and 400 A) consist of two units: a separate storage choke and a mounting plate with power choke and capacitor bank. The filters are designed for clock frequencies of 7 kHz to 16 kHz for the feedback module and 4 kHz to 16 kHz for the motor-side frequency converter module. In addition, they are designed for a maximum motor lead length of 150 m or 6 axles and a maximum motor frequency of 100 Hz. Damping resistors integrated in the module prevent the development of natural oscillations. The filters are designed as open modules with convection cooling to protection class IP 00 (corresponding to IEC 60529 2001). Protective covers are available upon request under ordering code B84143Q*R405. Protection class IP 20 is consequently reached.

Compared with single power chokes, LCL filters are characterized by a significantly improved reduction of harmonics as well as of the voltage and current distortions with respect to the power line. Moreover, the LCL filters have a lower voltage drop and are more compact and lightweight than equivalent power chokes. The filters can be adapted to customer requirements if desired.

Main applications

- Recuperative frequency converter systems

Main features and benefits

- Rated currents up to 400 A, rated voltage of 520 V
- Reduction of harmonics to below 5 percent
- Reduced voltage and current distortion, low voltage drop
- Compact and lightweight

About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's portfolio includes electronic components, modules and systems* marketed under the product brands TDK and EPCOS, power supplies, magnetic application products as well as energy devices, flash memory application devices, and others. TDK focuses on demanding markets in the areas of information and communication technology and consumer, automotive and industrial electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2013, TDK posted total sales of USD 9.1 billion and employed about 80,000 people worldwide.

* The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites, inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors.

You can download this text and associated images from www.epcos.com/pressreleases.

Further information on the products can be found under www.epcos.com/filters_lcl.

Please forward reader inquiries to marketing.communications@epcos.com.

Contacts for regional media

Region	Contact		Phone	Mail
ASEAN	Mr. K. UNTERWEGER	EPCOS PTE LTD SINGAPORE	+65 6597 0618	klaus.unterweger@epcos.com
Greater China	Ms. S. SUEN	EPCOS LTD HONG KONG	+852 3669 8224	stella.suen@epcos.com
Europe	Mr. C. JEHLE	EPCOS Munich, GERMANY	+49 89 54020 2441	christoph.jehle@epcos.com
India	Mr. D. SAWANT	EPCOS India Private Ltd. Mumbai, INDIA	+91 253 2205182	deepak.sawant@epcos.com
Japan	Ms. M. KONISHI	TDK Corporation Tokyo, Japan	+813 6852 7102	pr@jp.tdk.com
North America	Ms. S. McSHEA	EPCOS Inc. Greenville, SC, USA	+1 864 232 4240	mcsheacp4@aol.com
South America	Mr. C. DALL'AGNOL	EPCOS do Brasil Ltda. Gravataí, BRAZIL	+55 51 3484 7158	candido.dallagnol@epcos.com