

New Slim Liquid Cooled Active Front End Drive technology increases power density by 100%

CG Drives & Automation introduces a new Active Front End Variable Frequency Drive under the brand of Emotron.

The new Emotron “Slim-LC” AFE makes use of advanced liquid cooling technology and unique PEBB (Power Electronic Building Block) modules engineered to form a more compact drive for higher powers where reliability and redundancy is key.

At 97% complete drive efficiency and THDi at <5% the drive is ideal for e.g. marine, power and renewable energy applications where space is limited and harmonic distortions must be kept to a minimum.

Unique power modules for redundancy and flexibility

All Emotron VFDs for powers from 200 kW are made up of one or more PEBB modules. The new modules are suitable for 400V and 365A, equivalent to 200 kW of electrical power. The 690V modules work with 250A or 250kW electrical power. Several of these PEBB modules can be connected creating capacities up to 4MW. The PEBBs are smart, self-monitored and interchangeable. In case of a failure, only one PEBB needs to be replaced and the replacement can be completed in 15 minutes. The drive can also run on reduced capacity with fewer PEBBs in place.

Increasing power density means decreasing size

The new liquid cooled PEBB modules has an increased power density by 100%. Additionally, PEBBs are mounted directly in the cabinet without frames, saving both space and material cost. As an example, a 2MW liquid cooled drive now fits in a 2.4m wide cabinet.

More efficient cooling

For the cooling of the new PEBB modules, a new closed liquid cooling system with water/water heat exchanger comes as a standard option. The internal cooling can be built into the cabinet and customers can have their own external cooling system. The cooling system further reduces heat losses to air, improving overall drive efficiency and saving the customer AC room investments.

The Slim-LC AFE cuts heat losses to a minimum. New IGBTs have lower switching losses and a newly developed substrate in the IGBTs improves heat dissipation.

Network Friendly Drive

The new Slim-LC AFE is available in two versions: as a frequency inverter with low harmonic distortion (FDUL) and as regenerative frequency converter (VFXR). In the new Slim-LC AFE the harmonic content is controlled by the IGBT bridge, which ensures a much lower THDi, now at less than 5 percent.

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