

# SineFormer Technology

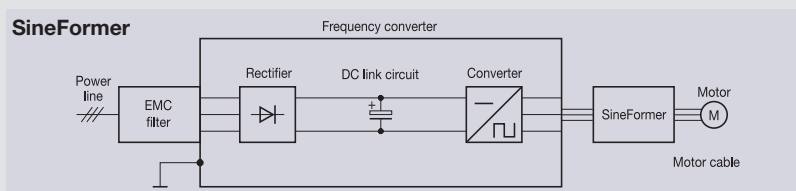
## Sine-wave EMC Output Filters

With its new SineFormer® EPCOS is introducing a fully new output filter technology for frequency converters. In contrast to conventional filter topologies the new SineFormer simultaneously converts the phase-to-phase voltages into a sinusoidal signal, damps the common mode currents and also forms the conductor-to-ground voltage to sine-shaped voltage. This offers users a number of key benefits. Voltage peaks that are harmful for the motor windings are suppressed and bearing currents are reduced to negligible levels, thus significantly increasing the operating life of the motors.

The most important benefit is the cost savings. Because SineFormer practically eliminates EMC problems. Motors protected by the new filter do not require expensive shielded motor cables or special cable ducts.

### Technical data

Rated voltage	520 V AC (up to 180 A) 600 V AC (320 A)
Rated current	11 A to 320 A
Clock frequency	4 to 8 kHz (up to 180 A) 2.5 to 3 kHz (320 A)
Approvals	UL, CSA (up to 180 A)
Voltage drop	5% (11 A) to 10% (320 A)
Vibration	to IEC 60068-2-6
Rated temperature	40 °C
Type	B84143V*R127



More detailed information at [www.sineformer.com](http://www.sineformer.com)

# SineFormer Technology – Sine-wave EMC Output Filters

## Advantages

- Unshielded motor cables can be used, thus reducing/cutting assembly expenditures and cable costs, while increasing the operating life
- Motor size can be reduced
- Motor operating life can be significantly increased
- Longer motor cables possible
- No maintenance costs, as the SineFormer does not need forced ventilation
- Compact filter solution
- Improved performance of the line filter
- Increased equipment availability
- Also suitable as a retrofitting set

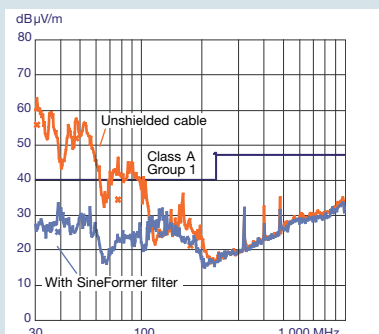
## Benefits

- Reduction of the  $dv/dt$  to  $<500$  V/ $\mu$ s
- Reduction of the acoustic motor noise
- Significantly lower eddy current losses
- Significant reduction of bearing currents
- Avoidance of interference coupling from the motor cable to other power and signal lines
- Improved EMC performance compared with shielded cables
- Radiated interference within normative limits
- Optimum reduction of interference (conducted and radiated) compared to other output filter solutions
- No feedback loop to DC link of the frequency converter is necessary

## Measurements

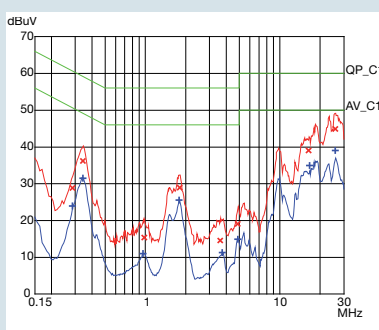
### No need for shielded motor cables

Converter and unshielded cable (with and without SineFormer)

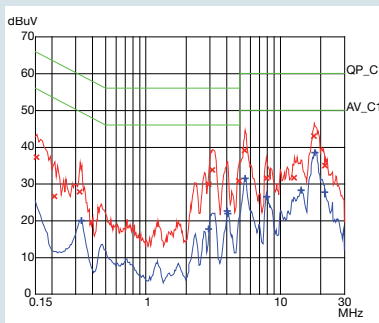


### Improved performance of the line filter

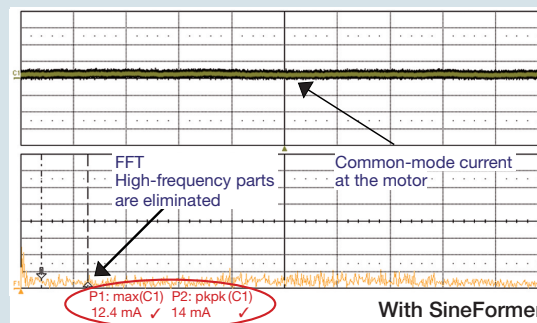
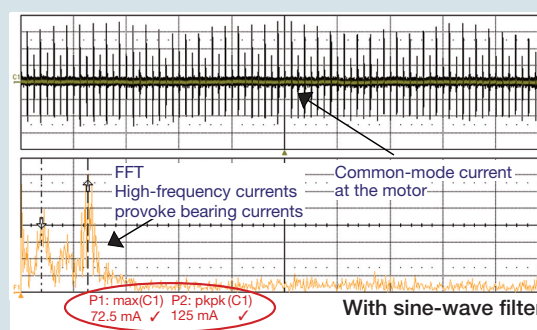
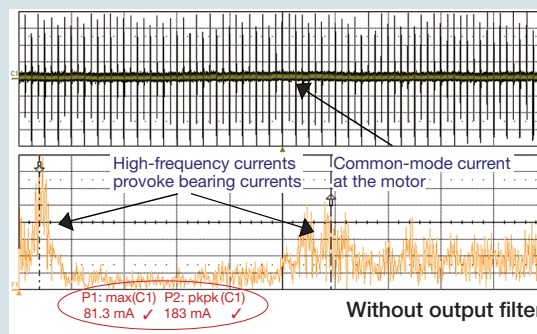
Frequency converter with line filter and shielded cable 100 m acc. to EN 61800-3 cat. C1



Improved performance with SineFormer and unshielded motor cable 250 m acc. to EN 61800-3 cat. C1



### Minimization of bearing currents



**Important information:** Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products. We expressly point out that these statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. It is incumbent on the customer to check and decide whether a product is suitable for use in a particular application. This publication is only a brief product survey which may be changed from time to time. Our products are described in detail in our data sheets. The Important Notes ([www.epcos.com/ImportantNotes](http://www.epcos.com/ImportantNotes)) and the product-specific warnings and cautions must be observed. All relevant information is available through our sales offices.