

# VLT® Power Options Sine-wave filter



### The perfect solution for:

- Applications with older motors
- Aggressive environments
- Applications with frequent braking

### Range

- 3 x 200 – 500 V
- 3 x 525 – 690 V

### Sine-wave Filters provide a sinusoidal phase-to-phase motor voltage.

Sine-wave Filters reduce motor insulation stress and switching acoustic noise from the motor. Bearing currents are also reduced, especially in larger motors. This filter does not operate in common mode and the leakage currents are not reduced, therefore it does not enable the use of unlimited motor cables lengths.

### Prevent disturbing pulses

Sine-wave reactors prevent disturbing pulses to be transmitted to downstream motors. Capacitances in screened motor supply cables e.g. can otherwise cause high oscillating circuit currents through motor bearings, vaporising lubricant and causing damage to the bearings. The eddy current losses in the motor can also be minimised in this manner.

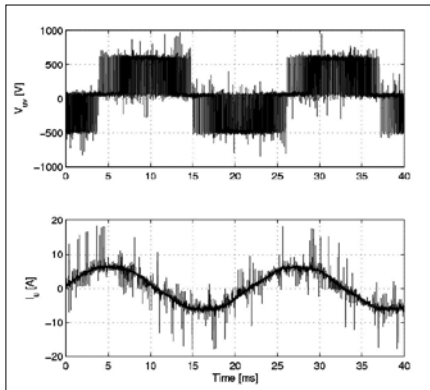
### Protects the drive

In addition to protecting the motor, the sine-wave filter also provides protection for the inverter, because the lower pulse load is reflected in lower semiconductor losses.

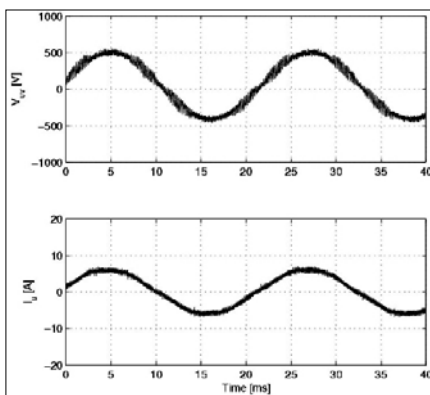
### Advantages:

- Protects the motor against dU/dt stress which prolongs the lifetime
- Lower the frequency depending losses in the motor, eddy current losses and stray flux losses
- Diminishing acoustic switching noise on the motor
- Reduces semi conduct losses in the drive with long motor cables
- Decrease electromagnetic radiated emissions on unshielded motor cables
- Reduce voltage peaks
- Reduce electrical discharges in the motor construction thus prolonged bearing life time

| Features  | Benefits  |
|---|---|
| • Reduce voltage peaks in motor   | • Prevent flashover in motor windings                   |
| • Diminish over voltages and voltage spikes caused by cable reflections           | • Protects the motor insulation against premature aging |
| • Reduces dU/dt stresses  | • Increases motor service interval                      |
| • Lower the magnetic interference propagation on surrounding cables and equipment | • Troublefree operation                                 |
| • Eliminates accoustic noise in motor   | • Boiseless operation                                   |
| • Reduces high frequent losses in motor   | • Prolongs service interval of motor                    |



Voltage and current without filter

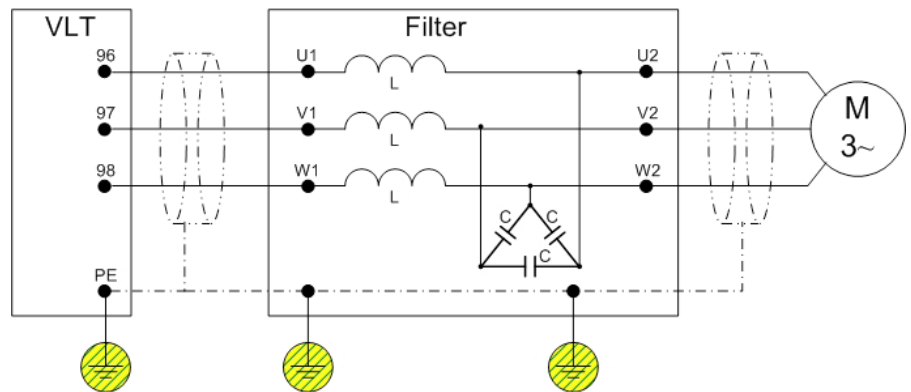


Voltage and current with filter

## Specifications

|                               |  |
|-------------------------------|--|
| Voltage rating                | 3 x 200 - 500 V and 3 x 525 - 690 V                          |
| Nominal current $I_N$ @ 50 Hz | 2.5 – 1200 Amp<br>for higher power modules can be paralleled |
| Motor frequency               | 6-60 Hz without derating<br>120 Hz with derating             |
| Ambient temperature           | -25° to 40°C without derating                                |
| Min. switching frequency      | $f_{min}$ 1,5 kHz – 5 kHz<br>depending on filter type        |
| Max. switching frequency      | $f_{max}$ 8 kHz  |
| Overload capacity             | 150 % for 60 sec every 10 min.                               |
| Enclosure degree              | IP00 and IP20  |
| Approvals                     | CE, UL508  |

## Connection diagram



|                    | Currents    |          | Cabinet  | Dimensions  |            |            |
|--------------------|-------------|----------|----------|-------------|------------|------------|
|                    | 500V [A]    | 690V [A] |          | Height [mm] | Width [mm] | Depth [mm] |
| Wall Mount [IP20]  | 2,5-4,5     |          | A1       | 181         | 75         | 205        |
|                    | 8-10        |          | A2       | 246         | 90         | 205        |
|                    |             |          | A3       | 246         | 120        | 205        |
|                    | 17          |          | A4       | 246         | 130        | 205        |
|                    | 24          |          | B1       | 260         | 150        | 260        |
|                    | 38          | 13       | B2       | 380         | 150        | 260        |
|                    |             |          | B3       | 285         | 170        | 260        |
|                    | 48<br>62-75 |          | B4<br>B5 | 460<br>540  | 170<br>170 | 260<br>260 |
| Floor Mount [IP21] |             |          | F1       | 463         | 610        | 440        |
|                    | 115-180     | 28-115   | F2       | 522         | 640        | 500        |
|                    |             |          | F3       | 522         | 670        | 500        |
|                    |             |          | F4       | 602         | 740        | 550        |
|                    |             |          | F5       | 602         | 770        | 550        |
|                    | 260-480     | 165-260  | F6       | 782         | 910        | 650        |
|                    |             |          | F7       | 856         | 1150       | 860        |
|                    | 660-1200    | 303-940  | F8       | 1152        | 1260       | 800        |
|                    |             | 1320     | F9       | 1302        | 1304       | 860        |