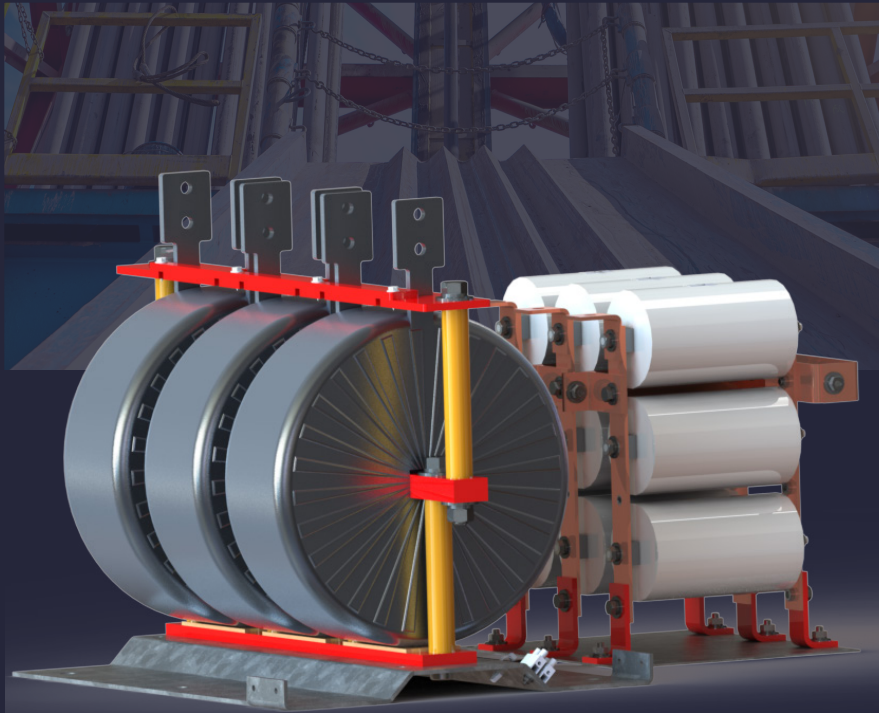


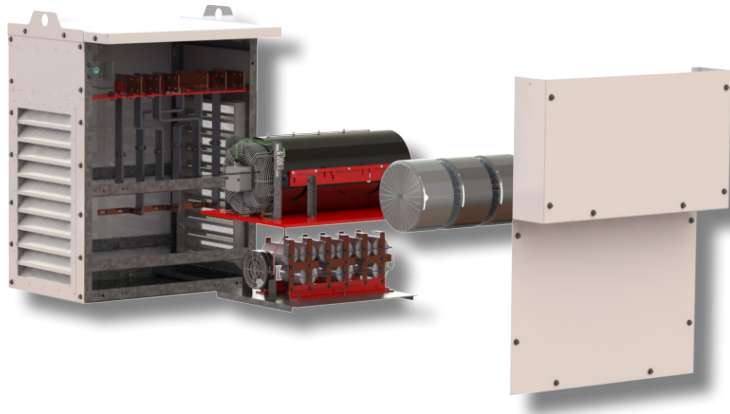
FLEXSINE®

SINE WAVE FILTER
(0 - 120Hz)



**THE OPTIMAL SOLUTION FOR HIGH FREQUENCY
MOTOR PROTECTION**

Flexsine® Sine Wave Filters (0-120 Hz)



CTM Magnetics' FlexSine sine wave filters are meticulously crafted for peak performance, catering to both line frequency (60 Hz) and 120 Hz motors. This product line is specifically engineered to meet the demands of contemporary 60 Hz induction motors while seamlessly accommodating the operation of higher frequency permanent magnet motors. Embrace the present and future-proof your investment with Flexsine®.

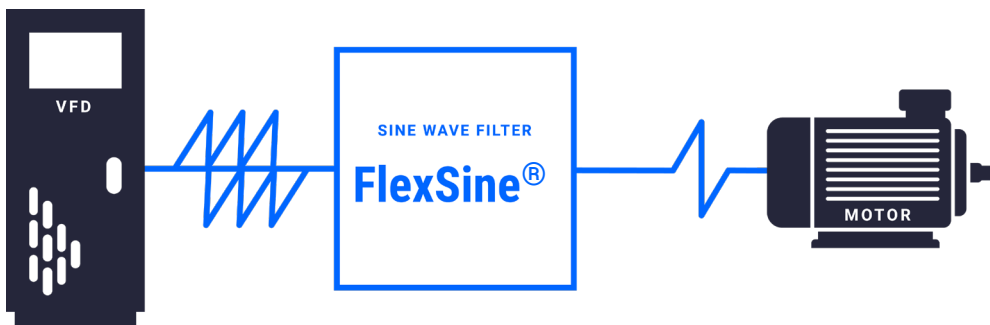
HIGH FREQUENCY

2.0 & 3.0 kHz PWM

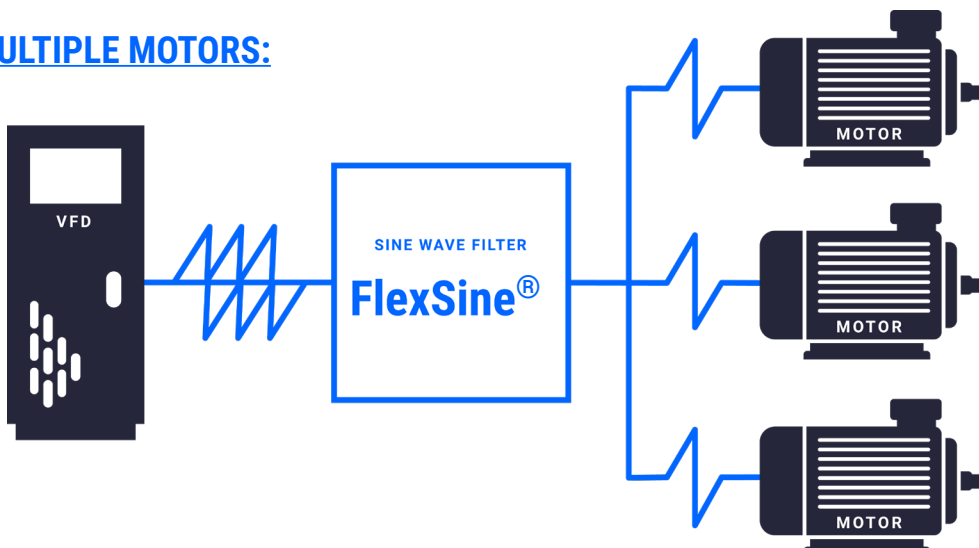
IM & PM Motors
60Hz & 120Hz

APPLICATIONS

VFD | MOTOR:



VFD | MULTIPLE MOTORS:



Flexsine® Cost Optimized Solution



No Derate Required:

- Reduce CAPEX & OPEX
- 1 filter for IM & PM motors 60Hz & 120Hz

Plug & Play:

- Simple 3-in/3-out connection
- No additional cooling required
- Use your current drive to upgrade to PMM frequencies

Reliable Performance:

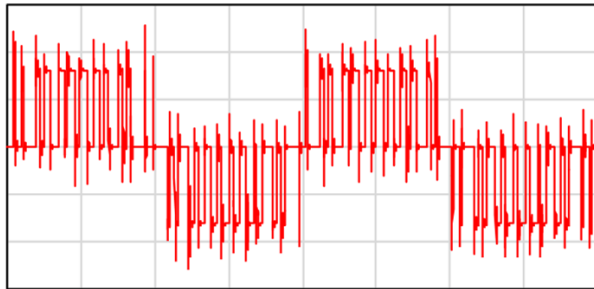
- Highly efficient patented inductors & capacitors
- No common mode noise

Unmatched Efficiency: Engineered for resilience, CTM Flexsine® filters excel in handling heightened distortion demands without requiring a derate. When tackling distortion challenges in high-frequency PM motor applications, the traditional method involves derating either the Variable Frequency Drive (VFD) or the PM motor, significantly escalating system capital expenditures.

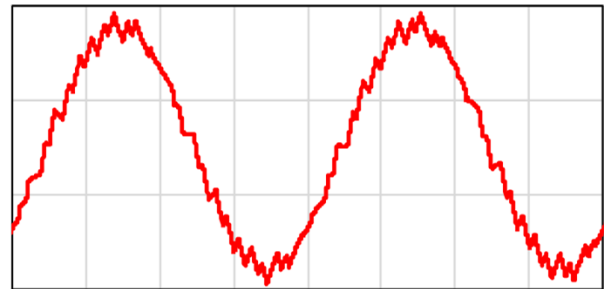
CTM Flexsine® filters outshine conventional sine wave filters, offering a more cost-effective solution than derating the PM motor. With superior filtering capabilities, these filters not only reduce both capital and operational expenditures but also minimize the overall system's size and weight, all achieved without introducing additional common mode noise.

REMOVING HARM FROM HARMONICS

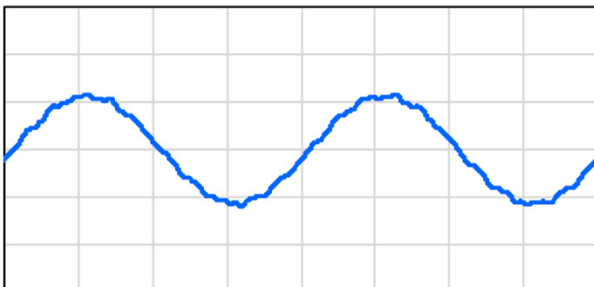
Motor Voltage Without Filter



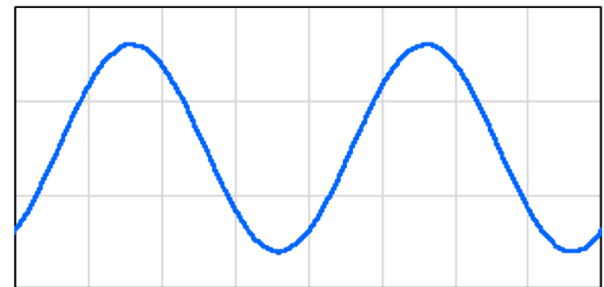
Motor Current Without Filter



Motor Voltage With Flexsine®



Motor Current With Flexsine®



Motor Protection: Our advanced filtering system safeguards motors by removing harmful square waves, voltage spikes, and harmonic distortion from the inverter output. This proactive approach reduces motor heating, wear, and winding stress, ensuring crucial motor protection.

Flexsine® Surpassing Competition with Unrivaled Excellence



Flexsine®

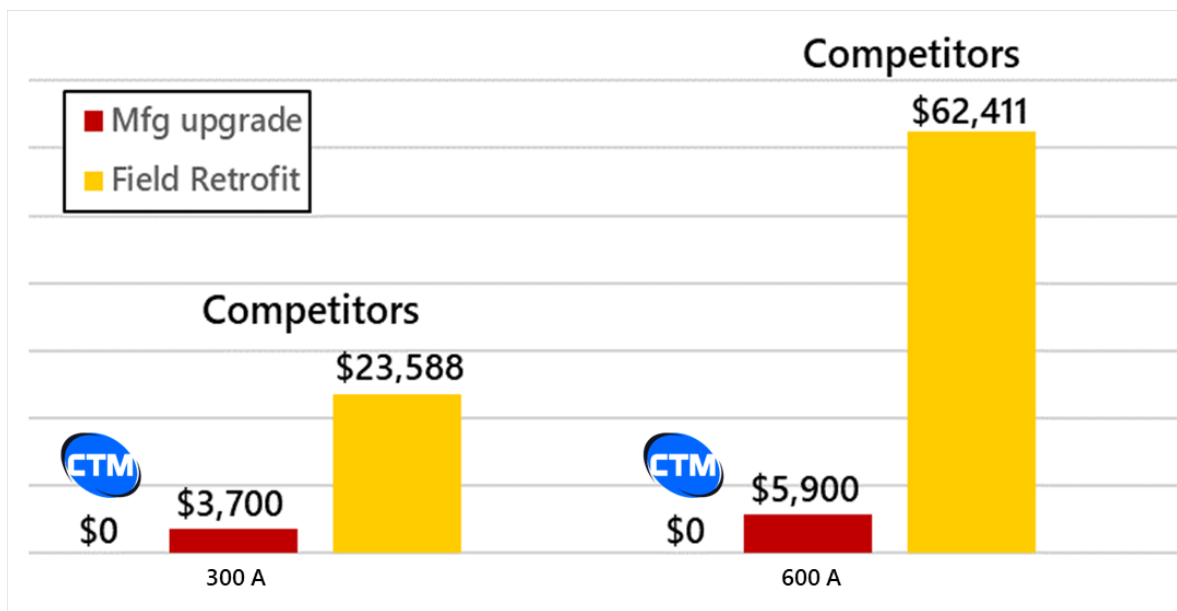
- Operates 0 - 120 Hz with no derate
- No common mode noise
- Highly efficient inductors & reliable film capacitors
- Integrated cooling system
- Fully liquid cooled option
- Military grade shock & vibrations

The Competition

- High frequency derate required
- Produces harmful common mode noise
- Inefficient silicon steel inductors & unreliable electrolytic capacitors
- Cooling system not included
- Air cooled or assisted cooling only
- Low shock & vibration capabilities

Upgrading to 120 Hz as per competitor suggestions comes with substantial expenses, including a minimum 25% filter derate and a 20% drive derate. In contrast, opting for a CTM Flexsine® filter not only meets these requirements but also enables a seamless transition to a 120 Hz PM motor without incurring additional costs, whether immediately or in the future.

Comparing Costs: CTM vs Competitors in the 120Hz Upgrade

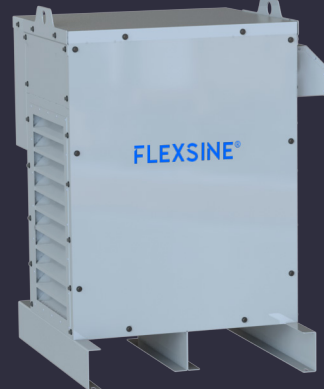


■ Manufacturing upgrade is based on 25% filter and 20% VFD de-rate to achieve 120 Hz.
 ■ Field retrofit estimate requires a new filter and new VFD to meet full power based on de-rate above.

PACKAGING OPTIONS



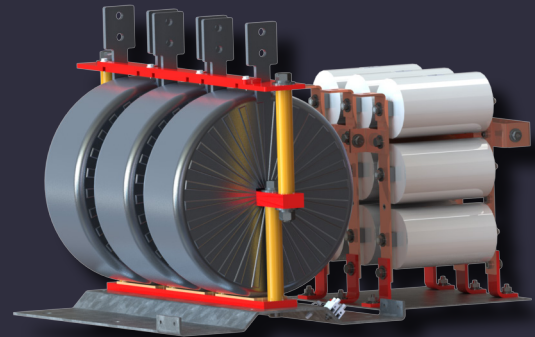
MAGPALLET



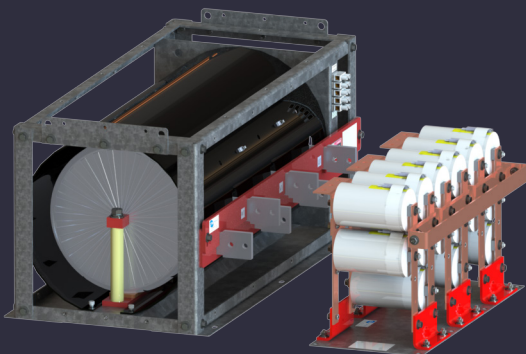
MAGSTAND



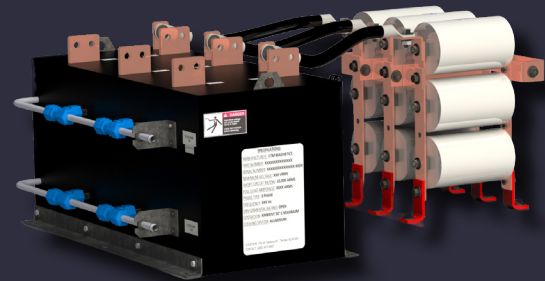
MODULAR + FAN



MODULAR NO FAN



MODULAR + FAN + TUBE



FULLY LIQUID COOLED

Flexsine® Product Options & The Donut Difference



PRODUCT OPTIONS



AIR-COOLED

- **Integrated Air Cooling:** Equipped with an integrated air cooling system, eliminating the requirement for additional cooling infrastructure on the customer's side.
- **Optimal Operating Temperature:** Designed to keep optimal operating temperature, ensuring consistent and reliable performance.
- **User Convenience:** Built-in air cooling system reflects a commitment to user convenience, streamlining the operational requirements for power system applications.



LIQUID-COOLED

- **Efficient Heat Removal:** The liquid-cooling system ensures superior thermal isolation, efficiently removing up to 97% of the generated heat through the coolant.
- **Rugged Design:** Engineered with military-grade sealed inductors, providing enhanced reliability in harsh environments & meeting stringent MIL-STD shock and vibration standards.
- **Highest Power Density:** CTM liquid-cooling technology achieves the highest power density on the market, enabling the use of smaller magnetics for a more compact design.

THE CTM ADVANTAGE



The Donut Difference

At CTM Magnetics, we revolutionize power quality with the innovative “Donut Difference.” Our round inductors, resembling a donut shape, offer numerous advantages over traditional silicon steel “E” core inductors. The “donut” design boasts a host of advantages, including enhanced thermal performance, high power density, noise reduction, and unrivaled high-frequency capabilities, among other notable benefits.



Flexsine® Product Specs

Voltage Range

480 V \pm 10%

Fundamental Frequency

0 - 120 Hz

(Contact for operating unit above 120 Hz)

Switching Frequency

3.0 kHz Minimum

2.0 kHz Minimum

Current Range

50 A - 1,500 A (Air Cooled) | 50 A - 2,000 A
(Liquid Cooled)

Enclosure Options

Open Chassis | NEMA 3R Cabinet

Motor Cable Length

Up to 15,000 feet

Agency Recognitions

cRUus 1446 Standard | UL 508A

Overload Capability

150% rated current for 1 minute (Air Cooled)

200% rated current for 1 minute (Liquid Cooled)

Ambient Temperature Range

Maximum:

50 °C (122 °F) (Air Cooled)

65 °C (149 °F) (Liquid Cooled)

Minimum:

-40 °C (-40 °F) (Air & Liquid Cooled)

Preventative measures should be taken to ensure the coolant does not freeze in the system.

Flexsine® Part Numbering Structure



Part Numbering Structure

