

Rayvoss® / Strikesorb®

Protecting
Mission-Critical
Variable Frequency
Drive (VFD)
Systems from
Power Surges at
Industrial Sites



Raycap

It's our business to help yours thrive.®

Variable Frequency Drives (VFDs) are a critical part of keeping operations moving

Many industrial systems, including pumping systems used for water management, energy production and heating and cooling systems are controlled by Variable Speed Drives (VFDs) that are essential to keeping mission-critical infrastructure systems up and running. These systems work together to contribute to and enable smarter controls at large buildings such as factories, plants, warehouses and offices. For example, the use of a controlled speed on pumps allows users to eliminate control valves and vanes, reducing moving parts and enabling higher system reliability with less energy consumption and lower failure rates.

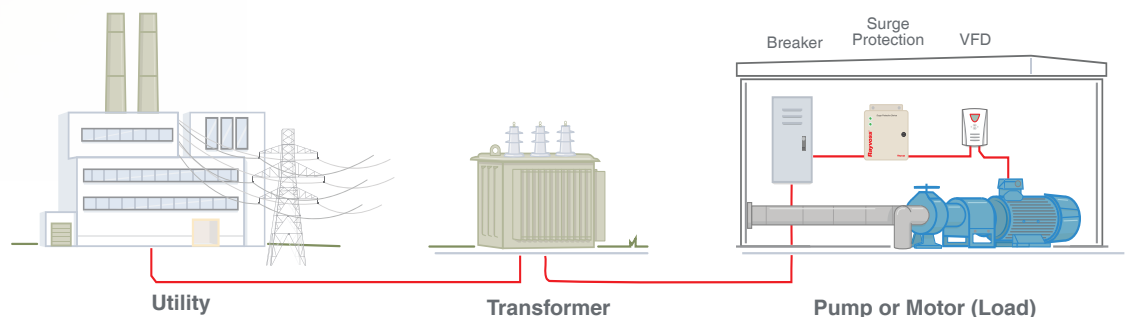
Grid-side utility power surges are a major threat to the sensitive equipment inside these locations, causing either outright failures or degradation over time. Electrical surges can damage the VFDs that control pumping functions. When such high value equipment is damaged it frequently cannot be quickly or easily replaced, thus resulting in downtime, failure of production, and ultimately loss of revenue.



Don't Let Poor Power Management Take Your VFDs Offline

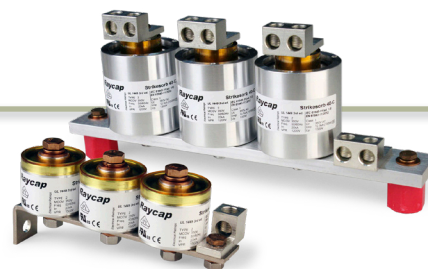
Strikesorb SPDs are a patented surge suppression technology that incorporates a single, heavy duty distribution grade metal oxide varistor (MOV) disk, assembled under pressure in an environmentally sealed aluminum casing.

Overvoltage occurs in different operating conditions and is either caused from grid-side surges or transients caused by equipment within the facility switching on and off. Overvoltage is an unpredictable event that will occur very suddenly and can severely and insidiously impact equipment. To avoid damage from overvoltage, industrial grade surge protective devices must be installed. Surge protection devices installed inside the drive cabinet and at the power entrance, will automatically shunt to ground the extra amount of current flowing in the circuit. Without these devices, the estimated costs of losses can be in the tens of thousands of dollars.



By integrating Raycap equipment into a VFD cabinet or near the service entrance of an industrial facility equipment buyers and operators can ensure that their investment will be continually protected against utility-side power surges or lightning caused surge events. Strikesorb is a unique and patented design that is capable of taking multiple direct surges, ensuring maintenance-free protection to the equipment it is protecting. No other surge protection technology can make this claim. Most will fail and go offline, leaving the equipment vulnerable to the next surge. Strikesorb are manufactured to the highest safety and quality standards (UL 1449 and IEC 61643-11) and each Strikesorb module is tested and given a trackable serial number before leaving the Raycap plant.

With Strikesorb protection installed equipment operators can get back to the business at hand and equipment protection concerns can be a thing of the past.



Strikesorb Benefits

- Maintenance free
- Safe operation:
No smoke, fire or explosion
- Unique capability to withstand multiple high-energy transients
- Ultra-high short circuit current rating
- Low let-through voltage, providing excellent protection compared with competitive SPD products
- Class I/ Class II compliant SPD per IEC 61643-11
- Strikesorb modules are fully UL-recognized as either Type 1 or Type 4 devices, according to the UL1449 5th Edition safety standard
- 10 year global product warranty
- Every Strikesorb module is tested before shipment and contains a single, trackable serial number
- Extended lifecycle
- Eliminates the need for fuses
- Ease of installation

The Financial Consequences of Overvoltages

Considering equipment replacement costs, damage by even a single overvoltage event cannot be tolerated. The cost of repair involves not only component replacement costs, but also the labor cost of the maintenance teams sent to the site. Although labor costs vary widely from location to location, the cost of specialized technicians plus travel expenses can range from \$500 to \$1,500 (estimated) USD per failure event. The chart below provides an estimate of the potential costs of equipment at risk from overvoltage surges.

Equipment at Risk	Estimated Cost (in USD)
HVAC chiller VFD controller	\$40,000
HVAC liquid pumping VFD	\$ 6,000
HVAC blower fan VFD controller	\$15,000
Cooling tower fan VFD controller	\$ 7,000
Exhaust fan VFD controller	\$ 7,000
Generator controller	\$ 4,000
Domestic water pressurization (booster pump)	\$ 7,000
Irrigation pressure water pumps	\$18,000
UPS (uninterrupted power supply)	\$20,000

Rayvoss Stand-Alone Surge Protection Devices

Rayvoss SPD systems deploy Strikesorb suppression modules in a variety of configurations and operating voltages. Rayvoss SPD products provide continuous protection from lightning, temporary overvoltages and other transient voltage surge activity on a stand-alone basis at the building entrance and distribution panels where critical equipment is connected. Rayvoss are available in:

- Single Phase / Split Phase: 120V to 240V
- Three Phase Delta: 240 V, 480 V, 600 V
- Three Phase Wye : 120 / 208V, 220 / 380 V, to 240 / 415 V, 277 / 380 V, 347 / 600 V



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About Raycap

Raycap has decades of experience creating products that protect the world's most valuable infrastructures. The company strives to keep its customers' sophisticated, mission-critical equipment running through any surge in voltage.

Rayvoss is a market leader in protection of mission-critical systems because it collaborates with its customers and transforms their needs into unique, innovative solutions.

Manufacturing Capabilities

Raycap has created a global manufacturing organization that allows it to meet the delivery schedules of even the most demanding customers. The company's advanced global quality system and disaster recovery strategies mean that the company can provide uninterrupted supply. While Raycap can handle large customer volumes and roll-outs, it also specializes in custom manufacturing. For more information about our conformance to ISO standards visit <https://www.raycap.com/company/#manufacturing>

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Strikesorb &
Rayvoss will
increase uptime
for equipment
reliant on Variable
Frequency Drives



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