



VarStec Power Solutions, Inc.

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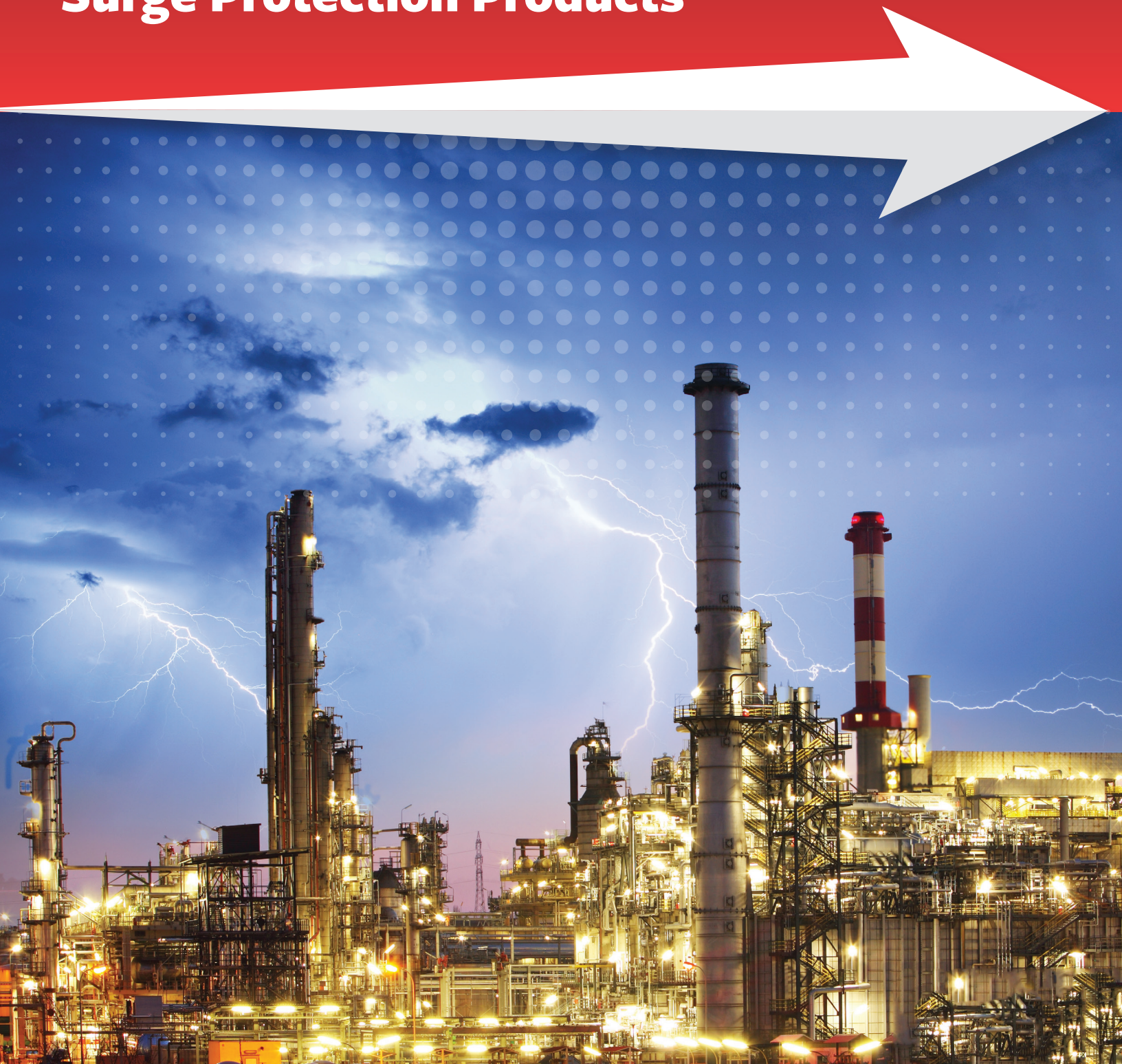
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Medium-Voltage Surge Protection Products



OVERVIEW / KEY FUNCTION

System-fit, medium-voltage surge protection solutions designed to defend critical motors, generators, transformers, and industrial power systems from damaging transient over-voltages caused by lightning, faults, and switching events.

Modern electrical grids and heavy industrial facilities face constant threats from high-frequency voltage transients that can degrade insulation, destroy expensive equipment, and cause costly operational downtime. VarStec's streamlined portfolio of surge protection products encompasses **Motor Surge Protection (MSP)**, **Medium Voltage Transient Surge Suppressors (MV-TVSS)**, and **RC Snubbers**. Our custom-engineered, fully integrated solutions decrease the slope and crest of impending voltage surges to safe levels, dampening resonant transients and ensuring the reliable operation of your most vital infrastructure.

IMAGE/S HERE TBD

INDUSTRY APPLICATIONS & SPECIALIZED SOLUTIONS

Our surge protection solutions are engineered for demanding power systems where minimizing execution risk and maximizing equipment lifespan are critical. Because standard configurations frequently fail to account for unique site constraints, we build solutions specifically tailored for a wide spectrum of demanding applications.

- **Mission-Critical Infrastructure & Data Centers**

Our **RC Snubbers** are highly sought after in data centers and sites where medium voltage transformers are frequently disconnected from their source power. They are especially critical for transformers having a short distance between the circuit breaker and the transformer (60 meters or less) and for dry-type transformers, significantly reducing the magnitude, frequency, and ringing of terminal voltage transients.

- **Heavy Industrial, Mining & Manufacturing**

Our **Motor Surge Protection** products are heavily utilized by industrial facilities to protect the insulation of medium voltage motors and generators from power system transients, ultimately reducing downtime and material waste from motor failures.

- **Commercial & Industrial Power Systems**

Our **Medium Voltage Transient Surge Suppressor** serves as the first line of defense from lightning and utility switching transients for service entrances and loads operating between 2.4kV to 15kV, protecting downstream low-voltage TVSS systems from handling excessive surge energy.

TECHNICAL DETAILS & PRODUCT SCOPE

VarStec applies uncompromising engineering rigor to deliver system-fit surge protection solutions aligned with the specific objectives, constraints, and operating requirements of each project.

RC Snubbers for Transformer Protection

Designed to protect medium-voltage transformer primary windings from high-frequency voltage transients. RC Snubbers reduce transient over-voltages during switching and improve breaker performance by reducing the rate of rise of recovery voltage (RRRV) and transient recovery voltage (TRV). They feature surge capacitance ratings from 0.1 μF to 2 μF , and resistor ratings from 20 ohms to 200 ohms. Like our capacitor and harmonic filter products, RC Snubbers are System Fit designed for the project, coming with all switching, protection, and control requirements.

Medium Voltage Transient Voltage Surge Suppressors (MV-TVSS)

The MV-TVSS provides transient voltage protection by shunting surges to ground or across phases before they can enter the low voltage system. It features phase-to-phase and phase-to-ground metal oxide varistors (MOVs), with optional heavy-duty distribution class or station class lightning arresters.

Motor Surge Protection (MSP)

This product fundamentally operates by decreasing the crest voltage and the rate of rise of impending surges, preventing damage to motor end turns and winding-to-core insulation. These units can be custom-designed for direct mounting to generators, motors, and compressor housings (pecker-head mounting) and can be equipped with differential current transformers to afford the highest level of protection for both the motor and motor surge protector.



STRATEGIC BENEFITS & VALUE ENGINEERING

Reduced Equipment Failure & Extended Lifespan

By limiting the magnitude and rate-of-rise of voltage transients and damping resonant and ringing transients, VarStec surge protection products extend the life of transformers, motors, and generators by protecting against inter-turn insulation failure.

System-Fit Performance with Custom Integration

Rather than forcing standard catalog equipment into complex environments, VarStec units are tailored to your specific application. Our products arrive fully assembled, tested, and ready for interconnection, with options for integral air-disconnect/ground switches, current-limiting fuses, blown fuse detection, and a host of other protection, control, and switching options.

RATINGS, CONFIGURATION & OPTIONS SYSTEM-FIT TO SPECIFICATIONS

Electrical Ratings & Configuration

- **Operating Voltage**
 - (RC Snubber): 2.4 kV to 34.5 kV (38 kV Max)
 - (MSP): 2.4 kV to 24.94 kV
 - (MV-TVSS): 2.4 kV to 15 kV
- **System Grounding Compatibility:** Four-wire wye (multi-grounded neutral), Three-wire wye (solidly grounded neutral), Delta, Resistive Grounded, and Ungrounded Wye
- **Impulse Withstand Voltage (BIL):** 60 kV to 200 kV

Power Components & Accessories

- **Surge Capacitors:** Hermetically sealed low-loss, low-inductance surge capacitors (0.125 μ F to 2.0 μ F based on product and voltage)
- **Snubber Resistors:** 20 ohms to 200 ohms (~1kW/Phase)
- **Lightning/Surge Arresters:** Phase-to-phase and phase-to-ground heavy-duty silicone rubber housed MOVs (Distribution Class standard; Station Class optional)
- **Fusing:** Optional current limiting fuses to remove failed components from the system

Protection & Sensing

- **Blown Fuse Detection:** Dry contacts to alert plant personnel of a blown fuse condition
- **Current Transformers (MSP):** Optional phase over-current CTs and differential CTs for connection to motor protection relays
- **Open Circuit Detection (RC Snubbers):** Loss-of-current relays available for RC Snubbers

Connections & Construction

- **Enclosure Type:** NEMA 1, 3R, 4X (Stainless Steel), 12 | IEC IP10, IP14, IP52, IP56
- **Hazardous Locations:** NEC Class 1 & 2, Div. II designs available
- **Terminal / Connection Style:** Copper NEMA 2-hole pad, roof bushings, top/bottom cable entry, or direct pecker-head/motor terminal box mounting
- **Disconnecting Means:** Optional integral air-disconnect/ground switch for RC Snubbers

Environmental & Site Conditions

- **Operating Temperature Range:** -40°C to +46°C (-40°F to +115°F)
- **Service Location:** Indoor or Outdoor
- **Enclosure Material:** 11-gauge galvanized steel all-welded construction standard; painted stainless steel optional

Standards, Testing & Documentation

- **Compliance:** Lightning arresters comply with ANSI/IEEE C62.11
- **Reference Standards (RC Snubbers):** IEEE Std. C57.142-2010 and IEEE Std. C37.015-2017
- **Factory Delivery:** Comes fully assembled, tested, and ready for interconnection
- **Warranty:** 1-year replacement parts per standard warranty

(Disclaimer: Every surge protection unit is engineered and configured to the specific electrical system, site conditions, and project specification. The ratings, construction features, and accessories listed are provided as system-fit, application-specific selections rather than fixed catalog limitations.)