

Emerson arc flash solution



Vilter™


EMERSON™
Climate Technologies

Arc flash hazards

Electrocutions are the fourth leading cause of traumatic occupation fatalities in the United States. On average, one person dies from electrocution in the workplace every day, and there are more than 3,600 disabling electrical contact injuries annually, according to the American Society of Safety Engineers.

Electrical accidents and their costs

Everyday 5 to 10 arc flash events occur that result in a hospitalization. The average medical expense is \$1.5 million, and the average litigation expense is roughly \$10 million. Roughly 2,000 people are admitted to burn centers yearly with severe arc flash burns. There are 1,000 fatalities each year due to electrocution and 30,000 nonfatal electrical shock accidents each year. OSHA fines for unsafe electrical practices can reach up to \$250,000 for individuals and \$500,000 for companies. An arc flash incident can cost an employee their life, destroying their family's life and costing the employer roughly \$12 million.

Too often employees who are not wearing adequate personal protective equipment (PPE) are seriously injured or killed if an arc flash occurs when they are working on electrical equipment. IEEE reports that 2,000 workers are admitted to burn centers for extended injury treatment caused by arc flash each year. Even someone standing more than 10 feet from the arc flash event can be fatally burned or injured from the blast wave.



Challenges

Controllers and motor starters that drive our processes are very dynamic devices. Unlike panelboards that simply distribute power and provide overcurrent protection, controllers and motor starters need set-up on initial start-up, adjustments after start-up and at times troubleshooting on faults or alarms. These activities could expose an operator to electrical hazards and put them at risk of an electrical injury if they are required to enter the equipment while energized.

Solution – Electrical safety by design

Vilter engineered motor starters are the definition of electrical safety in the workplace. Intelligent, flexible and robust our motor starters are built with the end user in mind. We understand the importance of everyday employee safety and the many expenses associated with electrical injuries and damaged equipment.

Using intelligent components and unique design features reduces and/or eliminates exposure to electrical hazards while giving the operator meaningful tools away from those hazards.



Arcing from an electrical fault produces temperatures that can easily exceed 30,000°F — hotter than the surface of the sun. Air expands dramatically when heated to these temperatures, and arcing also causes metal conductors to vaporize. Copper, for example, expands 67,000 times when it is converted from solid to vapor. The rapid expansion of air and metal vapor produces an incredibly hot blast with forces similar to an explosion — enough to throw a person across the room.

Therefore, we can help reduce and eliminate the costs of employee injury, equipment downtime or replacement and loss of product. Intelligent components are also used for preventive maintenance to prolong the life of equipment and prevent unwanted shutdowns.

Our motor starter design is flexible to accommodate unique applications and can be customized to fit into specific locations. Retro-fitting an older style motor starter line-up is not uncommon and allows the use of existing electrical pipe and wire infrastructure.

Our turnkey motor starter solutions begin at the site survey then takes us through the design phase and ends with the installation, start-up and training.

Our robust design lies within the electrical safety standards of UL 508A and NFPA 70 NEC. We also recognize the significant NFPA 70E obligations that end users operate under and try to ease that burden through our design. Electrical safety by design is truly accomplished by incorporating all three standards into one motor starter solution that is safer and smarter for our end users.



Features

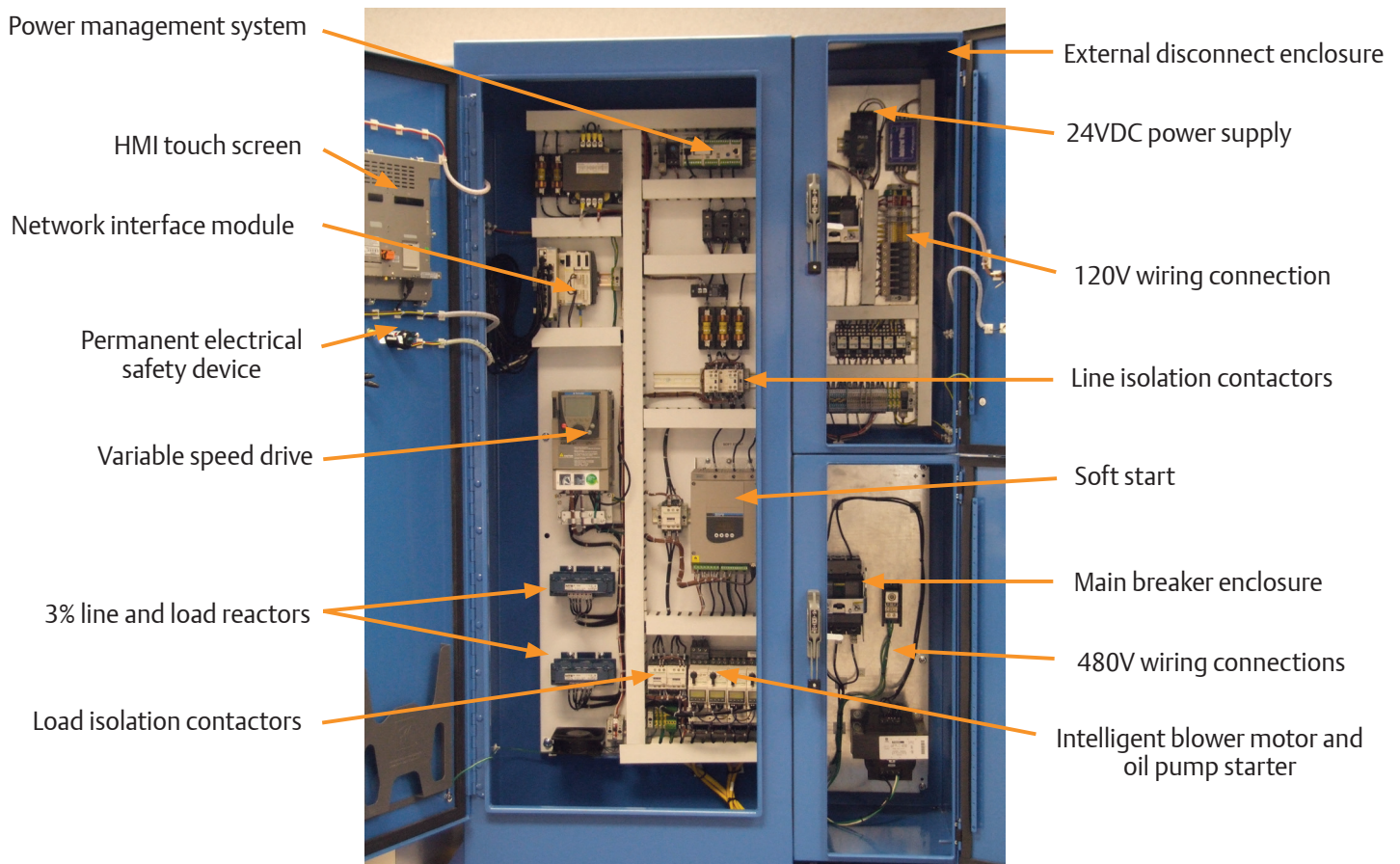
- Human Machine Interface (HMI) touchscreen allows operators to safely interface with internal components without exposure to electrical hazards.
- Modular electrical enclosures isolate power and control voltages that significantly reduce exposure to electrical hazards when accessing the control circuit.
- Permanent Electrical Safety Devices (PESD), visual indicators and a non-contact voltage detector warn operators if voltage is present inside the motor starter.
- Data acquisition by the HMI records motor and electrical information for troubleshooting and future use.
- Data collection and trending screens facilitate predictive/preventive maintenance programs that help eliminate unanticipated shutdowns.
- Electromechanical door interlock is locked when the main breaker is in the 'on' position preventing entry into energized main motor starter enclosure.
- Flexible connectivity via network interface module allows easy integration into existing facility networks.
- Superior safety and reliability – built to UL 508A with a 65,000 amp short circuit current rating up to 500 HP.
- Turnkey motor starter retrofit solutions encompass the site survey, solution design, installation (removing one starter at a time to keep system running), start-up and training – we take care of everything!

Arc flash events occur so quickly, there is no escaping it – we have to prepare well in advance when working on energized equipment, as if an arc flash event will occur.

Arc flash causes:

- Testing energized components
- Working on unsafe equipment and installations
- Unsafe environmental conditions
- Unsafe work practices

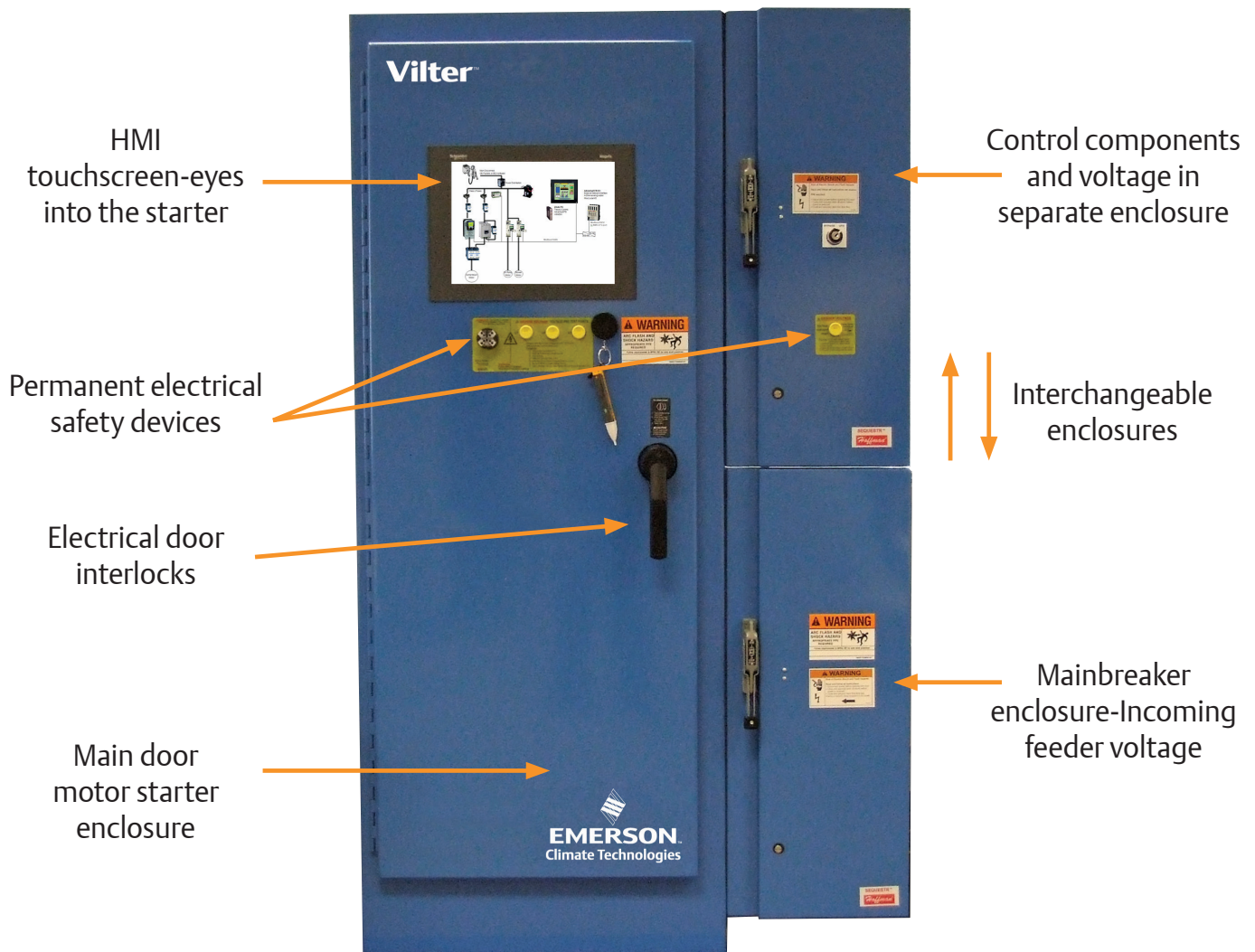
A Vilter smart motor starter system VFD with soft start bypass



Designed with specific consideration of the National Fire Protection Association 70E – Standard for Electrical Safety in the Workplace. NFPA 70E covers electrical safety requirements to provide a safe working environment for employees. The standard is the Occupational Safety and Health Act (OSHA) road map to comply with electrical safety standards –

in particular, electrical shock and arc flash hazards. In this regard, Vilter motor starters are engineered to eliminate and/or significantly reduce the risk of electrical accidents while giving operators the tools they need to troubleshoot, set-up and monitor their equipment while energized and away from electrical hazards.

Keeping employees safer and helping employers comply with OSHA and NFPA 70E



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