

Why EPG Pumps are Suitable for Class I, Division 1 & 2 Applications

Before a pump can be considered suitable to be used in Class I, Division 1 hazardous (classified) locations, it must first meet at least one of the four criteria established in paragraph (a) of the National Electric Code (NEC), Article 501.125 Motors and Generators. Condition (4) states:

“Of a type designed to be submerged in a liquid that is flammable only when vaporized and mixed with air, or in a gas or vapor at a pressure greater than atmospheric and that is flammable only when mixed with air; and the machine is arranged so to prevent energizing it until it has been purged with the liquid or gas to exclude air, and also arranged to automatically de-energize the equipment when the supply of liquid or gas or vapor fails or the pressure is reduced to atmospheric.”

EPG pumps meet the intent of NEC 501.125, condition 4 in the following way:

The motors used in EPG pumps are filled with a mixture of glycol and water. During normal operation, this fluid lubricates the internal sleeve bearings. If motor temperature increases beyond normal operating temperature, the internal fluid boils out and the motor temperature starts to rise. At 225^o F, internal insulation of the motor fails causing a winding-to-winding internal short, (sealed between inner and outer stainless steel shells surrounded by non-hygroscopic insulation). When this phase-to-phase short occurs, the motor will be automatically de-energized. Without an ignition source, there can be no explosion.

Paragraph (b) Class I, Division 2 of the National Electric Code (NEC), Article 501.125 Motors and Generators, states:

“The installation of open or nonexplosionproof enclosed motors, such as squirrel-cage induction motors without brushes, switching mechanisms, or similar arc-producing devices, that are not identified for use in Class I, Division 2 location, shall be permitted.”

EPG pumps also meet this criteria since they contain no arc-producing devices. In fact, the same motor design of EPG pumps is used in almost every underground gasoline storage tank pump application throughout the US.

EPG pumps have been time-tested (over 30 years) and field-proven (over 11,000 installations) to be suitable for service in over 1000 landfills worldwide. EPG pump motors have also been tested under a dozen or more failure modes and found to have a maximum surface temperature at failure of 225^o F. In addition, the power cable used with EPG pumps are made from the same material used in off-shore drilling rig applications. This material was selected when designing the power cables because it is extremely chemical resistant, waterproof, and more cut/abrasive resistant than extra heavy-duty service cable and it does not sustain combustion.

Based on meeting NEC criteria, manufacturing design and service/performance record, EPG pumps have been proven to be suitable for Class I, Division 1 & 2 locations.

EPG PUMPS

- Meet NEC criteria for Class I, Division 1 & 2 locations
- Field proven with over 11,000 installations in more than 1000 landfills
- Time tested with over 30 years of dependable service
- Motors contain no arc-producing device
- All internal parts are dissimilar and not a source of energy release
- Extremely chemical resistant, waterproof and abrasive resistant
- Maximum surface temperature of 225^o F - can not sustain combustion
- Power cable used is more abrasive resistant than extra heavy-duty service cable
- Motor stator windings are hermetically sealed