

Case Study

Saber Industries

Connects with Safety and Efficiency

Saber Industries makes the frequent moves of its drill rigs safer and easier by connecting and disconnecting motors and other equipment with MELTRIC Switch-Rated plugs and receptacles. The MELTRIC motor plugs allow workers to safely make and break electrical connections, even under full load, and they provide the NEC-required 'line of sight' disconnect.

Saber Industries, LP, is headquartered in Seminole, Oklahoma and provides drilling services to oil and gas companies. The company uses large drilling and well service rigs ranging from 7,700 ft. to 12,000 ft.

The rigs are moved frequently from one site to another. Each time a rig is moved, the motors, lights, heaters, washers, and other equipment must be disconnected and reconnected at the new site. Connections sometimes must be broken during operation as well, for equipment maintenance or repairs.

Previously, the company used metal pin and sleeve connectors for 480-volt circuits and 110-220 volt singlephase circuits. Because of frequent washdowns, the pin and sleeve connectors posed safety problems. Assistant Drilling Supervisor Joe Morgan explains, "When the plugs were washed down, water got into one of them, and it blew apart. If someone had touched it while standing on wet ground, he could have been killed." Morgan adds that the contacts on the connectors often welded together, making it necessary to replace them. He notes, "They are expensive to replace, and because you can't replace parts, you end up buying a whole new device."

MELTRIC Connectors Keep the Rigs Running

The company began replacing the connectors with MELTRIC Switch-Rated connectors and now has them installed on their three largest rigs. Electrician Ryan Liebschwager reports that there have been no problems with contacts welding together, and motors can now be disconnected under load if necessary.

The Switch-Rated devices incorporate spring-loaded, silver-nickel butt-style contacts that provide consistently superior electrical performance over thousands of operations. They are resistant to wear, corrosion, oxidation, and other factors that contributed to premature failure of the pin and sleeve-type devices.



Electrical motors that operate on 440 VAC are among the equipment connected with the Switch-Rated plugs, which can be seen above.



Adverse conditions include water, mud, and temperature extremes, yet the Switch-Rated plugs continue to operate reliably since installation.

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In some cases, MELTRIC are connectors used as a 'line of sight' disconnect switch, particularly for low-voltage applications such as fuel pumps. Liebschwager explains, "If I need to work on a fuel pump, I can disconnect it so it is turned off and then keep the connector in sight so someone doesn't turn it back on while I am working on it." With Switch-Rated devices, provisions for locking out the plug are standard, so only a lock and tag are needed to comply with lockout/tagout requirements.

Disconnecting a motor is a simple operation that is initiated by pressing a pawl, which breaks the circuit and ejects the plug to its rest position. Then, a simple quarter-turn of the plug allows it to be totally withdrawn from the receptacle in complete safety, since the circuit is already dead. When the plug and receptacle are separated, a safety shutter prevents access to live parts.

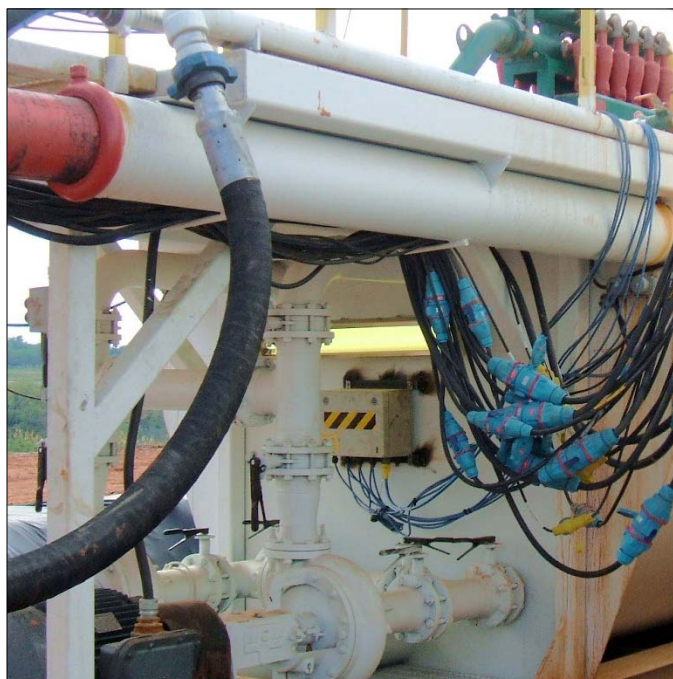
Saber Industries uses Switch-Rated connectors on motors ranging from 7-1/2 to 60 hp, as well as on all other electrical equipment. Morgan says, "We use 18 circuits for low voltage and 30 for high-voltage, and they break in multiple places, so there are a lot of Switch-Rated devices on a rig." Operating conditions can be severe. Morgan points out, "They get covered with mud and water, and even ice in winter. They are inaccessible when the rig is running, so we depend on them to stay in working condition." The rigs operate around the clock, so shutdowns can cause serious losses.

Durability of the non-metallic Switch-Rated housing has been proven on the jobsite. Morgan recalls one incident where one unit fell between a truck and some equipment that was being moved. "The plug was caught between them," he says, "when the truck pulled away, the housing flexed back to its original shape, and we were able to continue using it until we got a replacement."

According to Liebschwager, the color-coded terminals on the connectors simplify his job. He explains, "With some pin and sleeve devices, the terminals are numbered, but you never know how the electrician set them up. Then you have to take them apart to find out. With the color-coding, you always know which one goes where."

The MELTRIC plugs and receptacles cost less than the previous connectors, and their modular construction is an advantage as well. Liebschwager says he likes the way their water-tight rubber gaskets are packaged to fit different cable sizes. "The way they are put together, you can't lose them," he states.

Another Switch-Rated feature that has been useful in some applications is the ability for the factory to configure the contact arrangement so that it will only connect with a designated receptacle. This is useful where a misconnection could have unintended consequences. Morgan says the company is pleased with the performance of the MELTRIC devices on the three rigs where they are installed, and is looking into converting the other rigs as time permits.



Pumps and other equipment benefit from Switch-Rated connections.