Protecting the Oil & Gas Industry

Littelfuse products are vital components to ensure safety and keep areas electrically safe. Our industrial safety product portfolio includes industrial hard-wiring bases, comprehensive line of protection relays, circuit engineered power centers, and much more. Our portfolio of products helps to ensure electrical safety.

Our team of professional engineers has extensive experience with petrochemicals and are here to help you customize your safety and productivity for a wide variety of facilities.

Oil & Gas Applications

Our Product Offering Includes:
- Flash Relays
- Electrical Hard-Wiring Bases
- VFDs
- Ground-Fault Relays
- Industrial GFCIs
- Voltage/Phase Monitors
- Circuit Engeneered Power Centers
- Custom Power Centers
- Shock Hazard
- Inventory Consolidation
- Compliance Citations
- Unreliable Protection
- Footprint Reduction
- Fault Damage
- Replacement Time
- Nuisance Tripping
- DOWNTIME

Our Products Improve Safety While Reducing Costs & Records in the Workplace

Oil Batteries

An energy company that was building an oil battery was concerned about arc-flash hazards, not only in terms of electrical safety but also on the impact on their facility’s insurance. They chose Littelfuse’s EL731 arc-flash relays specifically designed for use in the oil battery industry. Littelfuse worked with the client to develop a protection solution that included the EL731 arc-flash relay, a breaker, and proper disconnecting means. The EL731 arc-flash relay reduced the incident energy levels of many of the compartments by the equivalent of two PPE categories, reducing the risk to employees and lowering the PPE rating.

Transportation

An oil and gas transportation company had experienced arc-flash issues in some of their facilities. To help address this issue, they selected Littelfuse’s EL731 arc-flash relays designed for this application. The EL731 arc-flash relays were designed with the goal of reducing incident energy levels to ensure personnel safety. By implementing this solution, the transportation company was able to reduce the risk to their employees, improve productivity, and reduce insurance costs.

Natural Gas Processing

A natural gas processing facility had experienced arc-flash events due to failed resistors on the power source. To help mitigate this issue, they selected Littelfuse’s SE-701 ground-fault relays. These relays were installed to protect the facility from the potential hazards associated with failed resistors. By implementing this solution, the natural gas processing facility was able to reduce the risk to their employees and improve productivity.

Pump Jacks

A large gas processing plant in the U.S. continued to upgrade their older 480 V motor protection relays with reliable, high-quality motor protection relays from Littelfuse. By upgrading to Littelfuse’s SE-330 motor protection relays, the plant was able to improve the reliability of their motor protection system and reduce downtime associated with motor failures. By implementing this solution, the gas processing plant was able to increase production efficiency and reduce costs.

Oil Sands

An energy company that was building an oil battery was concerned about arc-flash hazards, not only in terms of electrical safety but also on the impact on their facility’s insurance. They chose Littelfuse’s EL731 arc-flash relays specifically designed for use in the oil battery industry. Littelfuse worked with the client to develop a protection solution that included the EL731 arc-flash relay, a breaker, and proper disconnecting means. The EL731 arc-flash relay reduced the incident energy levels of many of the compartments by the equivalent of two PPE categories, reducing the risk to employees and lowering the PPE rating.

Oil & Gas Applications

Powering and Protecting the Oil & Gas Industry

Littelfuse.com/OilAndGas

For a comprehensive library of resources including datasheets, product catalogs, and more, visit www.Littelfuse.com/TechnicalResources.

* Bluetooth is a trademark of its respective owner.

Safety is our ultimate goal, and Littelfuse products are designed to improve safety and reduce costs and hazards in the workplace. Our product offering includes a wide range of solutions for the oil & gas industry, including ground-fault relays, neutral-grounding resistors, arc-flash relays, and more. By implementing these solutions, you can improve safety, reduce downtime, and enhance productivity.

Our Products Include:
- Ground-Fault Relays
- Neutral-Grounding Resistors
- Arc-Flash Relays
- Industrial GFCIs
- Voltage/Phase Monitors
- Circuit Engeneered Power Centers
- Custom Power Centers
- Compliance Citations
- Unreliable Protection
- Footprint Reduction
- Fault Damage
- Replacement Time
- Nuisance Tripping
- DOWNTIME

For more information, visit Littelfuse.com/OilAndGas.
Oil & Gas Applications

One of the longest oil pipelines in North America was experiencing grounding power-resistor failures. These failures were at a high frequency and were resulting in production losses. The power-resistor failures were due to the high internal resistance, which caused significant voltage drops, leading to a reduction in the pipeline’s overall efficiency.

The solution to this problem was to install ground-check monitors to ensure that the grounding system was functioning correctly. Ground-check monitors are devices that continuously monitor the integrity of the grounding system and alert if there is a failure. By incorporating ground-check monitors into the pipeline’s electrical system, the oil company was able to reduce the frequency of power-resistor failures and improve the overall efficiency of the pipeline.

Another example of Littelfuse’s electrical safety products in the oil & gas industry is the voltage monitor. Customers prefer all the advanced protection in one unit, and the MP8000 delivers. The unique voltage monitor is used in the pump panel to provide enhanced protection in place of a standard overload relay and the SE-330, which continuously monitors the integrity of the neutral-grounding resistance. The SE-330 is a device that is specifically designed to protect offshore installations from ground-faults. It continuously monitors the integrity of the neutral-grounding resistor and alerts if there is a failure.

Overload Relays are used in the pump panel to provide enhanced protection in place of a standard overload relay and the SE-330, which continuously monitors the integrity of the neutral-grounding resistor and alerts if there is a failure.

In addition to voltage monitors and overload relays, Littelfuse also offers Ground-Fault Ground-Check Monitors, which are designed to protect oil-sands mining shovels powered by 10 km long cables. These ground-check monitors are highly reliable and can detect ground-faults in real-time, ensuring the safety of the personnel and equipment.

Littelfuse protection relays are found throughout the expansive oil fields in North America. The MP8000 Bluetooth* capability also increases personnel safety by keeping people out of the panel. Technicians can easily make trip settings without opening the panel door. Bluetooth® capability also increases personnel safety by keeping people out of the panel. Technicians can easily make trip settings without opening the panel door.

Our Products Improve Safety While Reducing Costs & Hazards in the Workplace

Our Oil & Gas Industry portfolio includes:

- Flash Relays
- Electrical Flowing Sensors
- GFR Monitors
- Enhanced Flash Relays
- Industrial GFRs
- Grounding Protection
- Overload Relays
- Ground Circulators
- Motor Overloads
- Ground Fault Phase Relays

Our Products Improve Safety While Reducing Costs & Hazards in the Workplace

Our Oil & Gas Industry portfolio includes:

- Flash Relays
- Electrical Flowing Sensors
- GFR Monitors
- Enhanced Flash Relays
- Industrial GFRs
- Grounding Protection
- Overload Relays
- Ground Circulators
- Motor Overloads
- Ground Fault Phase Relays

Littelfuse products are vital components in virtually every market that uses electrical energy. Our electrical safety product portfolio includes industry-leading power fuses, a comprehensive line of protection relays, custom engineered power products, and an expanded product line in semiconductor products. The portfolio of products helps to ensure electrical safety.

Our team of professional engineers has extensive experience with petrochemical applications and is here to help our customers improve safety and productivity in their petrochemical facilities.

Powering and Protecting the Oil & Gas Industry

Littelfuse products are integral components to many areas that make up an area of heavy machinery, such as air energy units. Our electrical safety product portfolio includes industry-leading power fuses, a comprehensive line of protection relays, custom engineered power products, and an expanded product line in semiconductor products. The portfolio of products helps to ensure electrical safety.

Our team of professional engineers has extensive experience with petrochemical applications and is here to help our customers improve safety and productivity in their petrochemical facilities.
Typically, oil and gas drilling rigs use an ungrounded electrical system to allow for continuous operation during the drilling process. When the rig is down, the oil and gas industry needs to replace the motor or switch to another source and wait for the rig to be ready to go. This wait can be a costly downtime. In one case, a large gas processing plant in the US continued to upgrade their older 480 V motor protection relays with reliable, cost-effective, and easy-to-install Littelfuse MPU-32 Motor Protection Units. The MPU-32s have a powerful voltage monitor, which is advantageous because customers prefer all the advanced protection in one unit, and the MPU-32 delivers. The unique design of the MPU-32 allows customers to choose from a dual voltage configuration, which provides protection to both 480 V and 240 V motors. The MPU-32 was selected because it provides uncompromised protection, and a ground-fault ground-check monitor for long cables. We were able to provide them with a highly reliable solution, the SE-135 Ground-Fault Ground-Check Monitor, to protect oil-sands mining shovels powered by 10 km long cables. This allowed them to optimize their mine plan and save millions of dollars by minimizing substation moves, which require expensive down time.

One of the longest oil pipelines in North America was experiencing grounding power-resistor failures. These resistors are used on the power source to limit destructive ground-fault currents. Compounding the issue, the pipeline crew wasn’t even aware of the resistor failures since they were not being monitored. Once the pipeline company became aware that they could continuously monitor the resistors using field-proven technology that was available, they installed seven PGR-8800 Arc-Flash Relays in the low-voltage MCCs and medium-voltage switchgear. Incorporating the arc-flash relay reduced the incident energy levels of many of the compartments by the equivalent of two PPE categories. Customers can use the SE-330 to protect oil and gas drilling rigs, gas processing plants, pumping stations. A high-pressure natural gas pipeline company selected our MPU-32 Motor Protection Units to upgrade their older, ungrounded relays with Littelfuse’s MPU-32 Motor Protection Units. The MPU-32 allows the user to choose from a dual voltage configuration, which provides protection to both 480 V and 240 V motors. The MPU-32 delivers the unique design of the MPU-2 allows customers to choose from a dual voltage configuration, which provides protection to both 480 V and 240 V motors.

Littelfuse has a longstanding relationship with Fort Collins, Colorado—where Littelfuse was founded more than 100 years ago. In addition to our new branch office, our products are manufactured right here in America. Our catalog features a wealth of information, including technical drawings and specifications, which can be accessed at Littelfuse.com. Our technical support team is always ready to answer your questions and provide you with the most accurate information possible. Our commitment to quality and customer satisfaction is evident in all of our products, from power fuses to relays and switches. We are proud to offer a wide range of solutions that meet the needs of the oil and gas industry and beyond.
Monitors long cables powering oil-sands mining

Overload Relay

Used in gas pipeline compressor stations to protect motors

Ground-Fault & Phase-Voltage Indicator

Used on VFDs to provide additional protection in case of rapid cycling

Protection on VFDs and HRG systems

Provide adequate ground-fault protection

No need to open the control panel.

Rapidly detect an impending arc flash and send a signal into existing switchgear with little or no configuration. Installed in new electrical gear, or easily retrofitted to existing switchgear.

Used between pole and site for incoming power. Provides on-site circuit protection for service main, MCCs, transformers, pump panels and VFDs located at the site.

Transmit transient overvoltages

No need to open the control panel. Relays through the Littelfuse App on your smartphone.

Used on VFDs to provide additional protection in case of rapid cycling.

Provides 3-phase voltage/phase protection, undervoltage, phase loss, reverse phase, unbalanced voltage, plus motor/pump protection from current overloads & underloads, current unbalance.

Provides voltage/phase protection and monitors voltage on the load-side of the motor contactor.

For Flack Risks

Protects 3-phase motors from over/undervoltage, phase loss, reverse phase, unbalanced voltage.

Provides voltage/phase protection and monitors voltage on the load-side of the motor contactor.

Used in gas pipeline compressor stations to protect motors

In the event of a 3-phase fault, it will enable the generator to remain in service.

Ground-Fault & Phase-Voltage Indicator

Used on welding receptacles to prevent damaged machinery and blown fuses, broken wires or worn contacts. These monitors help to prevent damaged machinery and injury of personnel.

Ground-Fault & Phase-Voltage Indicator

Used on HRG systems to monitor the resistor for submersible pumps.

Overload Relay

Used to lower risk of arc-flash and transient overvoltages.

Pulsing High-Resistance-Grounding System

Used in main power panel to identify ground-faults, overloads & underloads, current unbalance and rapid cycling.

Ground-Fault Ground-Check Monitor

Ground-Fault & Phase-Voltage Indicator

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor

Ground-Fault Ground-Check Monitor
Oil & Gas Applications

Typically, oil and gas drilling rigs use an ungrounded electrical system to allow for continuous operation during the drilling process. However, this can make it difficult to locate ground faults. A large rig manufacturer experienced these issues and was looking for a way to eliminate these problems. After consultation, they chose a high-resistance grounding package that included a zig-zag transformer, neutral-grounding resistor and the SE-330, which continuously monitors the integrity of the resistor to eliminate these problems. The unique voltage monitor. Customers prefer all the advanced protection in one unit, and the MP8000 delivers. The unique Overload Relay is used in the pump panel to provide enhanced protection in place of a standard overload relay and allows them to make trip settings without opening the panel door.

A large gas processing plant in the U.S. continues to upgrade their older 480 V motor protection relays with reliable, Littelfuse protection relays are found throughout the expansive oil fields in North America. The MP8000 Bluetooth® technology allows them to communicate with smartphones. For example, they can use the app to update firmware in the field.

One of the longest oil pipelines in North America was experiencing grounding power-resistor failures. These incidents can be very costly. In order to limit the ground-fault current to a safe level, they realized that the built-in ground-fault protection on the relay was not sufficient and decided to install our own. New protective relays were installed throughout the pipeline to protect against these issues.

A large oil sands mining operation requested assistance in developing a system to detect ground faults. They needed a solution that was scalable and easy to implement. The Ground-Fault Ground-Check Monitor, to protect oil-sands mining shovels powered by 10 km long cables. This device monitors the power supply and automatically trips the circuit breaker when a ground fault is detected.

One of the world’s largest producers of synthetic crude oil from oil sands requested assistance in developing a system to detect ground faults. They needed a solution that was scalable and easy to implement. The Ground-Fault Ground-Check Monitor, to protect oil-sands mining shovels powered by 10 km long cables. This device monitors the power supply and automatically trips the circuit breaker when a ground fault is detected.

Littelfuse pioneered over 20 years ago, they standardized on the SE-330 on resistor monitoring for all of their 5 kV Oil Sands equipment. They have found that the SE-330 has reduced the need for supplemental protection.

Another oil sands operation requested assistance in developing a system to detect ground faults. They needed a solution that was scalable and easy to implement. The Ground-Fault Ground-Check Monitor, to protect oil-sands mining shovels powered by 10 km long cables. This device monitors the power supply and automatically trips the circuit breaker when a ground fault is detected.

Over 40 years ago, Littelfuse pioneered resistor monitoring for Oil Battery applications. Customers continue to rely on our SE-330 Resistor Monitor for these applications.

A large refineries in the U.S. continues to upgrade their older 480 V motor protection relays with reliable, Littelfuse protection relays are found throughout the expansive oil fields in North America. The MP8000 Bluetooth® technology allows them to communicate with smartphones. For example, they can use the app to update firmware in the field.

Our Products Improve Safety While Reducing Costs & Hazards in the Workplace

Our Product Offering Includes:

- **High SCCR Devices**
- **Failed Resistors**
- **Interruption Time**
- **Load Sensors**
- **Pump Controllers**
- **Alternating Relays**
- **Calibrated Switches**
- **Oscilloscope Modules**
- **Enhanced Overload Relays**
- **High Relays**
- **Terminal Block Relays**
- **Industrial Motors**
- **Industrial GFCIs**
- **Industrial Power Sources**
- **Variable Frequency Drives**
- **Motor Control Centers**
- **Control Transformers**
- **Built-In Electronics**
- **Remote Power**
- **Protection Relays**
- **Motor Electronics**
- **Special Purpose Relays**
- **Equipment Replacement**
- **Touch Safe**
- **Microwave Safety**
- **Shigley Protection**
- **Touch-Safe**
- **Industrial Safety Switches**
- **Gas Ionization**
- **Gas Detection**
- **Phototransistors**
- **Ultra-lightweight Protection**
- **Inductive Proximity Sensors**
- **Optical Proximity Sensors**
- **Reflection Proximity Sensors**
- **Wristband Proximity Sensors**
- **Relay Protectors**
- **Power Transformers**
- **High-Current Relays**
- **High-Voltage Relays**
- **High-Speed Relays**
- **High-Power Switches**
- **High-Voltage Switches**
- **High-Speed Switches**
- **High-Power Relays**
- **High-Voltage Relays**
- **High-Speed Relays**
- **High-Power Switches**
- **High-Voltage Switches**
- **High-Speed Switches”

Check our library of resources including datasheets, product manuals, white papers, application guides, demos, online design tools, and more at Littelfuse.com/OilAndGas.

For a comprehensive library of resources including datasheets, product manuals, white papers, application guides, demos, online design tools, and more at Littelfuse.com/OilAndGas.

For a comprehensive library of resources including datasheets, product manuals, white papers, application guides, demos, online design tools, and more at Littelfuse.com/OilAndGas.