Littelfuse®

Expertise Applied | Answers Delivered

POWERING AND PROTECTING THE OIL & GAS INDUSTRY

Littelfuse—Protecting the Oil & Gas Industry

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 and controls, surge protective devices as well as industrial GFCIs for personnel protection. Our portfolio of products help to minimize electrical safety hazards, limit damage to equipment and improve productivity.

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

Our Product Offering Includes:

- Alternating Relays
- Arc-Flash Relays
- Enhanced Overload Relays
- Fuses and Fuse Holders
- Ground-Fault Relays
- Industrial GFCIs
- Load Sensors
- Neutral-Grounding Resistors
- NGR Monitors
- Pump Controllers
- Surge Protective Devices
- Time-Delay Relays
- Voltage/Phase Monitors
- Voltage Protection

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

IMPROVE SAFETY

Shock Hazard
Injury to Personnel
Arc-Flash Hazards
Open-CT Hazards
Failed Resistors
High SCCR Devices
Touch Safe

REDUCE COSTS

Fault Damage
Equipment Replacement
Calibration Costs
Compliance Citations
Motor Rewinds
Inventory Consolidation
Footprint Reduction

MINIMIZE DOWNTIME

Replacement Time
Nuisance Tripping
Intermittent Faults
Unreliable Protection
Calibration Time
Fuse Indication
Fuse Cycling

Oil & Gas Applications

Oil Sands

One of the world's largest producers of synthetic crude oil from oil sands requested assistance in developing a 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.

Refinery

A 140,000 barrel-per-day refinery uses Variable Frequency Drives (VFDs) to operate cooling tower fans. The VFDs are high-resistance grounded in order to limit the ground-fault current to a safe level. They realized that the built-in ground-fault protection on the VFDs, which are often designed to trip at high levels of ground-fault current, was not sensitive enough to protect the VFD on a High Resistance Grounding (HRG) system. EL731 ground-fault relays specifically designed for this application were installed to provide supplemental protection.

Oil Battery

An energy company that was building an oil battery was concerned about arc-flash hazards, not only in terms of personnel safety but also to reduce the potential costs associated with damaged equipment and downtime. They installed PGR-8800 Arc-Flash Relays in the low-voltage motor control centers (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 category levels, reducing the risk to employees and lowering the PPE rating.

Transportation

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 Littelfuse pioneered over 20 years ago, they standardized on the SE-330 on resistor monitoring for all of their 5 kV pumping stations. A high-pressure natural gas pipeline company selected our MPU-32 Motor Protection Units to protect the motors in their compressor stations.

Natural Gas Processing

A large gas processing plant in the U.S. continues to upgrade their older 480 V motor protection relays with reliable, small form factor motor protection relays. After considering options including installation time, they continue to rely on our 777-P2 Motor Protection Relay to protect numerous motors throughout their facility.

Oil Field Pump Jacks

Littelfuse protection relays are found throughout the expansive oil fields in North America. The MP8000 Bluetooth* Overload Relay is used in the pump panel to provide enhanced protection in place of a standard overload relay and voltage monitor. Customers prefer all the advanced protection in one unit, and the MP8000 delivers. The unique Bluetooth capability also increases personnel safety by keeping people out of the panel. Technicians can easily make trip settings without opening the panel door—or even getting out of the truck.

Oil & Gas Drilling Rigs

Typically, oil and gas drilling rigs use an ungrounded electrical system to allow for continuous operation during the first ground fault. However, this type of system has many disadvantages such as potential overvoltages and difficulty in locating 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 grounding circuit. To help determine ground-fault location, SE-701 Ground-Fault Relays were installed on each feeder. After installation and during operation, they experienced a ground-fault, but located it in 1/10th of the time compared to the previous ungrounded system.

* Bluetooth is a trademark of its respective owner.

Upstream

Offshore Drilling | Steam-Assisted Gravity Drainage | Oil & Gas | Oil Sands | Fracking

SE-330 Neutral-Grounding-Resistor Monitor

1 Used on HRG systems to monitor the resistor

SB5000 Industral Shock Block® GFCI

5 Used on welding receptacles to provide personnel protection

777-P2 MotorSaver & 777-KW/HP-P2 PumpSaver

9 Provides 3-phase voltage/phase protection, plus motor/pump protection from current overloads and underloads, current unbalance and ground-fault protection

MP8000 Bluetooth* Overload Relay

13 Works on all motors 90–690 V ac single or 3-phase. Monitor and control multiple MP8000 relays through the Littelfuse app on your smart-phone. No need to open the control panel.

SE-134C Ground-Fault Ground-Check Monitor

2 Monitors long cables powering oil-sands mining

EL3100 Ground-Fault & Phase-Voltage Indicator

6 Used in main power panel to identify ground faults, protecting equipment and personnel

UL Class & Semiconductor Fuses, Fuse Blocks

10 Provides on-site circuit protection for service main, control cabinet, freshwater injection panels, transformers, pumps, and pump panels located at each pump jack

Voltage/Phase Monitors

14 Prevent motors from running at temperatures above approved ratings, and provide protection due to blown fuses, broken wires or worn contacts. These monitors help to prevent damaged machinery and injury of personnel.

SE-701/SE-704 Earth-Leakage Monitor

3 Used on VFDs to provide additional protection for submersible pumps

Arc-Flash Relays

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

Fuse Replacement and Custom Kit

11 The FRCK series helps reduce downtime by providing mobile storage in harsh fracking environments and can be filled with multiple fuse series specific to your application

460 / 201 A-AU Voltage/Phase Monitors

15 Protects 3-phase motors from over/undervoltage, phase loss, reverse phase, unbalanced voltage and rapid cycling

SE-105 Ground-Fault Ground-Check Monitor

4 Monitors for ground faults and proper bonding of trailing-cable fed equipment

MPU-32 Motor Protection Unit

8 Used in gas pipeline compressor stations to protect motors

Medium Voltage Fuses for Power Generation

12 Used between pole and site for incoming power from utility; typically E-rated and R-rated fuses up to 4160 V, but can be larger

777-MV-P2 Voltage/Phase Monitors

16 Protect any 3-phase medium voltage motor drawing 10–800 full load amps

Surge Protective Devices

17 Provides service entrance and branch circuit surge protection

Midstream

Fuel Trading Terminal | Pipeline Transportation

SE-330 Neutral-Grounding-Resistor Monitor

1 Used on HRG systems to monitor the resistor

Pulsing High-Resistance-Grounding System

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

MPU-32 Motor Protection Unit

9 Used in gas pipeline compressor stations to protect motors

MP8000 Bluetooth* Overload Relay

2 Works on all motors 90–690 V ac single or 3-phase. Monitor and control multiple MP8000 relays through the Littelfuse app on your smartphone. No need to open the control panel.

UL Class & Semiconductor Fuses, Fuse Blocks

6 Provides on-site circuit protection for service main, MCCs, transformers, pump panels and VFDs located throughout the pipelines and terminal systems

455 Voltage/Phase Monitor

10 Provides voltage/phase protection and monitors voltage on the load-side of the motor contactor to detect contact failure

Class T and Semiconductor Protection Fuses

3 Used to protect motors, pumps and transformers involved in the refinery and along the pipeline systems

460 / 201 A-AU Voltage/Phase Monitors

7 Protects 3-phase motors from over/undervoltage, phase loss, reverse phase, unbalanced voltage and rapid cycling

Surge Protective Devices

11 Provides service entrance and branch circuit surge protection

SE-134C Ground-Fault Ground-Check Monitor

4 Monitors long cables powering oil-sands mining

777-P2 MotorSaver & 777-KW/HP-P2 PumpSaver

8 Provides 3-phase voltage/phase protection, plus motor/pump protection from current overloads & underloads, current unbalance and ground-fault protection

Downstream

Refinery | Gas Processing

EL731 AC/DC Sensitive Earth-Leakage Relay

1 Used to provide adequate ground-fault protection on HRG systems

SE-701 Ground-Fault Monitor

5 Used to provide adequate ground-fault protection on VFDs and HRG sytems

SB5000 Industrial Shock Block® GFCI

9 Used on welding receptacles to provide personnel protection

Pulsing High-Resistance-Grounding System

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

777-P2 MotorSaver & 777-KW/HP-P2 PumpSaver

6 Provides 3-phase voltage/phase protection, plus motor/pump protection from current overloads & underloads, current unbalance and ground-fault protection

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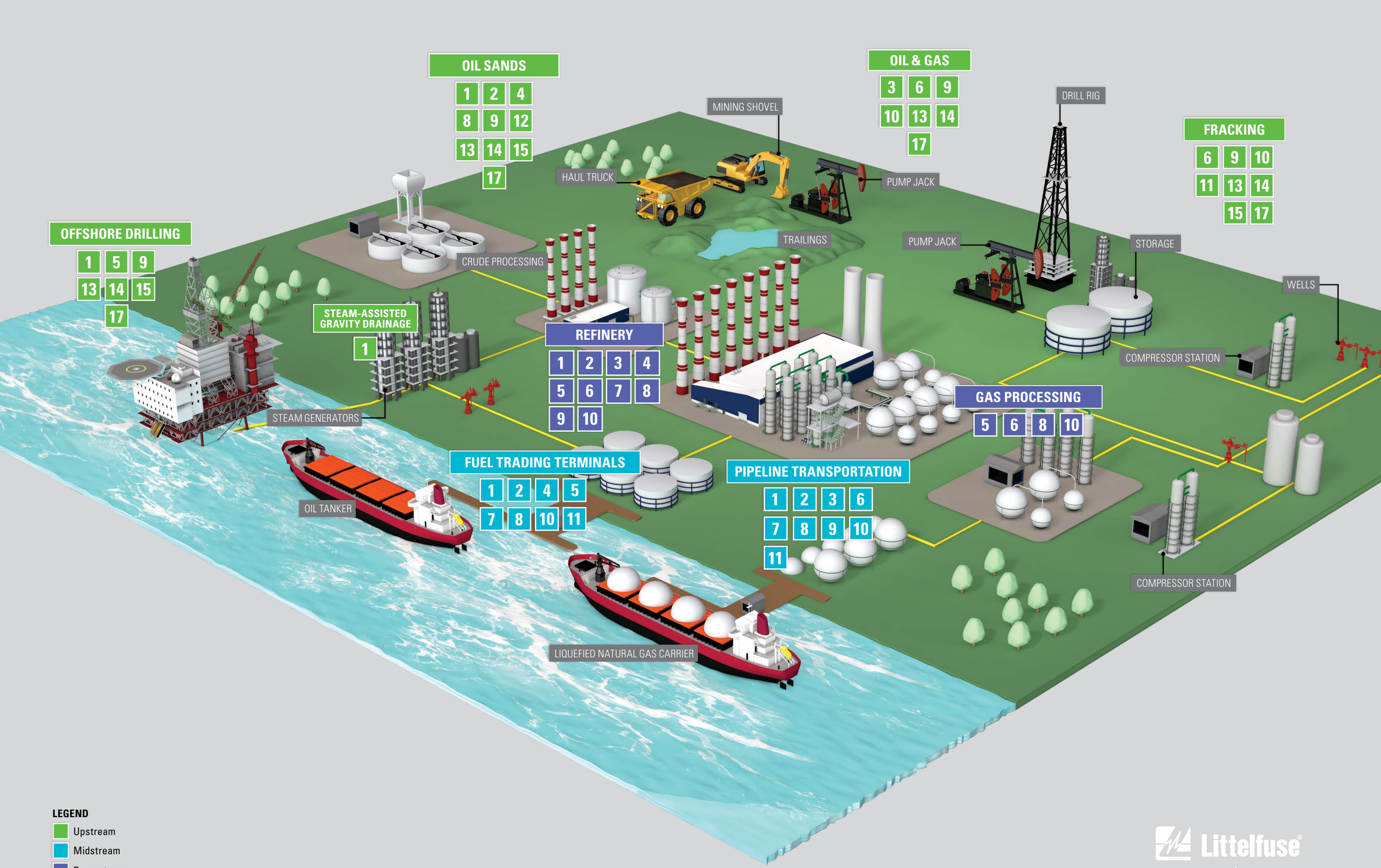

LEGEND

- Upstream
- Midstream
- Downstream

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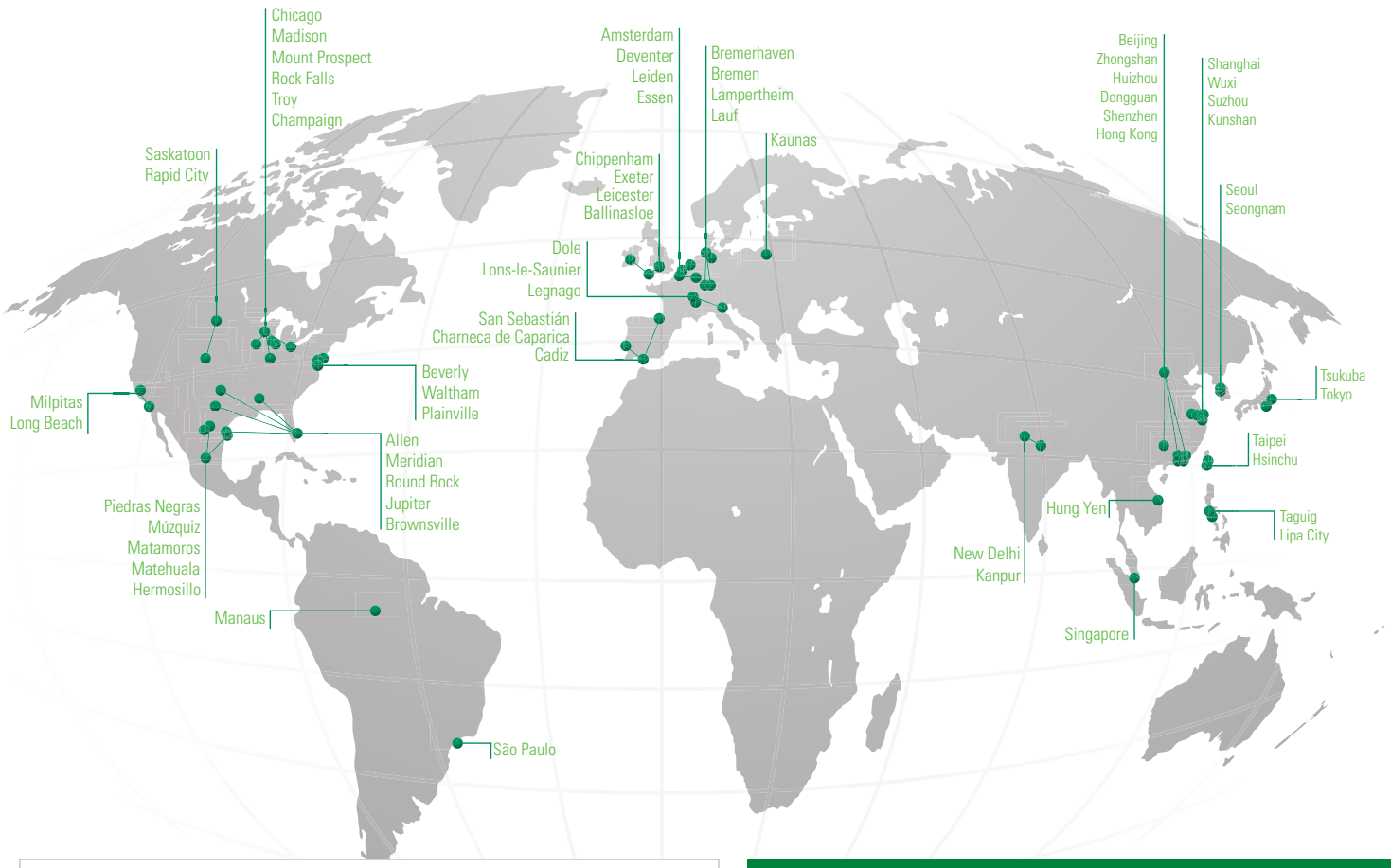
LOCAL RESOURCES FOR A **GLOBAL** MARKET



Littelfuse.com/OilAndGas

For a comprehensive library of resources including datasheets, product manuals, white papers, application guides, demos, online design tools, catalogs, and more, **visit www.Littelfuse.com/TechnicalResources.**

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Littelfuse products are certified to many standards around the world. To check certifications on specific components, please refer to the specific product datasheet on Littelfuse.com.

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