CITEL

SURGE PROTECTORS

FOR

Oil & Gas Installations



citel.us

CITEL,



the global solutions provider.

Since 1937, Citel has been an innovator in the field of Surge Protection. Today, Citel is a global leader in the development of reliable and adapted Surge Mitigation Solutions for critical applications.

Citel is unique as a manufacturer of Surge Protective Components (SPCs), Surge Protective Devices (SPDs), and coordinated protection systems.

- **Over 1 billion lines protected**
- **Local support in over 200 countries**
- **High current R&D laboratories at your disposal**

THREAT

$26B in Losses due to Power Surges

Today's increased reliance on very sensitive electronics and processes make surge protection an important discussion topic in order to avoid catastrophic business losses. The Insurance Institute for Business & Home Safety study found that $26 billion dollars was lost due to non-lightning power surges. In addition, there are about 25 million lightning strikes in the US each year that cause between $650M to $1B in losses according to the Insurance Information Institute, State Farm©.

1. Direct Strike



2. Earth Potential Rise



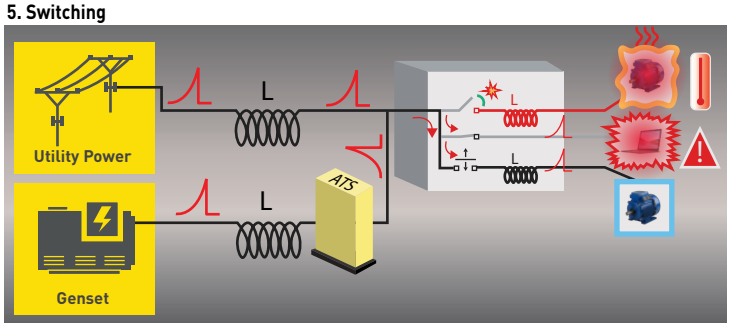
3. Strike on Overhead Lines



4. Coupling



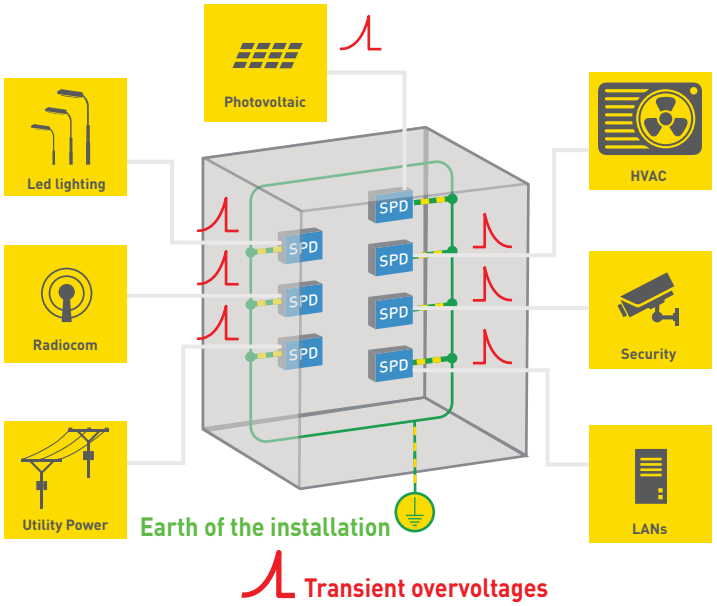
5. Switching



SOLUTION

Global Surge Mitigation Concept

Our philosophy is simple – determine your risk and evaluate every line (power or signal) for vulnerabilities. We call this "The Box Concept." It works equally well for a single piece of equipment or an entire facility. Once you have determined your "boxes", it is simple to develop a coordinated protection scheme to eliminate all threats from lightning and switching surges.



CITEL provides a wide range of surge protectors adapted to every network: **AC Power, DC Power, Telecom, Data and Coaxial.**

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COMMON OIL & NATURAL GAS APPLICATIONS

As the technology for Oil & Natural Gas production systems becomes more sophisticated, the risk of damage caused by lightning strikes and power grid disturbances becomes more prominent. Vital Oil & Natural Gas production systems must deploy a coordinated system of Surge Protective Devices (SPDs) to ensure continuous operation.

Onshore Drilling

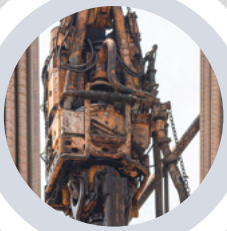


Subterranean Oil Pump



- Main Incoming Power Source
- Variable Frequency Drives (VFD)
- Control Circuit PLC Sensor
- Safety Interlock Switch
- Emergency Stop

Offshore Drilling



Drill Hoist Top Drive



- Main Incoming Power Source
- Lathe Drives
- External Communication Connections
- Safety Interlock Switch
- Emergency Stop

Drill Ships



Blow Out Preventer



- Variable Frequency Drive (VFD)
- Safety Interlock Switch
- Emergency Stop

Midstream/Downstream Refinery Systems



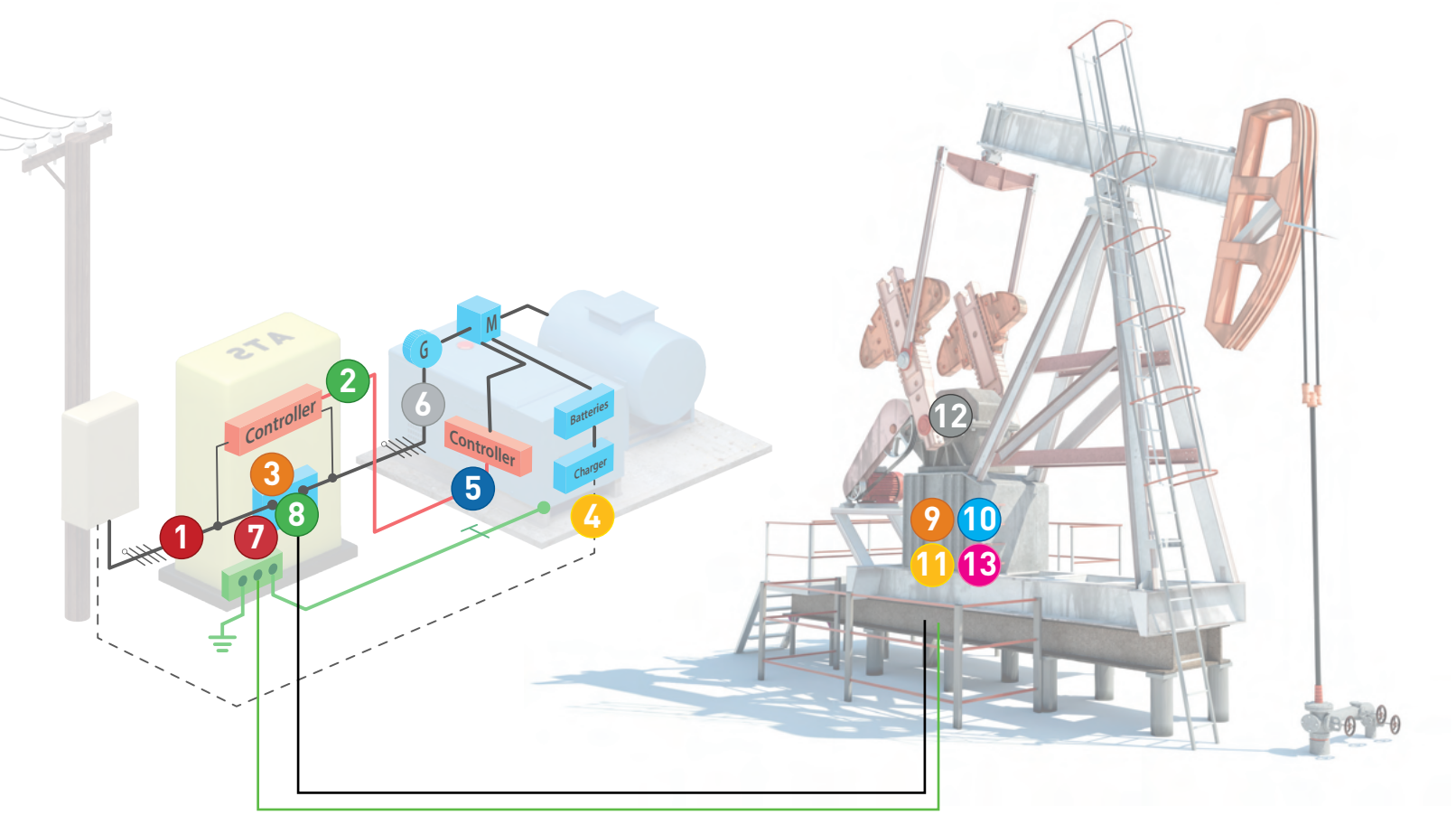
Crude Oil Distillation Tanks



- Main Distribution Panels
- Pump Control Panels & Drives
- Level & Pressure Sensors
- Emergency Stop

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COORDINATED PROTECTION STRATEGY



Description/Location/Model

ATS Line Side	1	MDS Series
ATS Controller Relay Starter	2	DS2X0-xxDC Series
ATS Line Side Genset	3	MS200 Series
Battery Charge Controller	4	DS240S Series
Genset Relay Starter	5	DS2X0-xxDC Series
Genset Line Side	6	M50 Series
ATS Load Side	7	MS100 Series
Main Panel	8	MS100 Series
VFD AC Input	9	DS100US Series
PLC Analog Input	10	DLA Series
PLC AC Power Input	11	DS240 Series
Sensors (4-20mA)	12	DLC Series
Radio/Antenna	13	MJ8 and P8AX/PRC Series

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RECOMMENDED PRODUCTS (TECHNICAL CHARACTERISTICS)

AC Power






Product	MDS750E	MS100	M50	DAC100US
Application	Main Service Entrance	Switchboard		PDU/RPP/Security Systems
Voltage(s)	240, 277, 480		120, 240, 277, 480	
Phase	3D, 3Y			1S, 2T, 3D, 3Y
In (8/20µs)-kA	20			
Imax (8/20µs)-kA	450	132	50	100
UL Standard	Listed Type 1			

DC Power



Product	DS2X0-XXDC
Application	Power Supplies
Voltage(s)-(DC)	12, 24, 48
In (8/20µs)-kA	10
Imax (8/20µs)-kA	20, 40
UL Standard	1449

Dataline (Surface Mounted)




Product	CWMJ8	LAN-10G-POE
Application	Indoor Gigabit Ethernet & PoE	Outdoor 10 Gigabit Ethernet & PoE
Connection	RJ45	
Voltage(s)-(DC)	60	
Imax (8/20µs)-kA	16	
UL Standard	UL 497B	UL 497B (pending)

Dataline (DIN RAIL)





Product	DLA	DLC	MJ8-POE
Application	Equipment Disconnect	System to System Data Relays	Indoor Gigabit Ethernet & PoE
Connection	RJ45		
Voltage(s)-(DC)	60	8	60
Imax (8/20µs)-kA	16	1	16
UL Standard	UL 497B		

Radio Frequencies




Product	P8AX	PRC
Application	Coaxial RF	
Connection	N, F, BNC, SMA, TNC	
Voltage(s)-(DC)	60	8
Imax (8/20µs)-kA	16	25
UL Standard	UL 497E	

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