

**ELECTRICAL  
INSTRUMENTATION  
PROCESS CONTROL  
TELECOM**  
**Engineering and Supply**



**Safe by Quality  
Value by Human  
Innovation by Solution**

**Oil and Gas - Petrochemical - Chemical - Marine - Energy**



## ABOUT MOTEC

Establish in 2012, Motec is Vietnamese company specialized in providing equipment, engineering service and solution for electrical, automation control and mechanical to customer in Oil and Gas Offshore, Oil Refinery, Petrochemical, Chemical, Gas Processing, Marine, Power Energy and other industry

In an effort to create the maximum value to the customer on our product, engineering service and solution are offered, we are greatly trusted for years by major customers in Viet Nam market.

## OUR MARKET



**Oil and Gas Offshore**



**Oil Refinery**



**Petrochemical - Chemical**



**Gas Processing**



**Marine**



**Power Plant**

## OUR CUSTOMER



**IDEMITSU**



**HOANG LONG**  
JOINT OPERATING COMPANY



**PERENCO**



**Technip**  
take it further.

**thanglong**  
JOINT OPERATING COMPANY

**POSCO**  
ENGINEERING



**ROSNEFT**



**KNOC**  
Korea  
National Oil Corporation



**PremierOil**

**SAMSUNG**

**SAMSUNG C&T**



## OUR BRANDS

Manufacturer and Brand	Product and Service
       	<ul style="list-style-type: none"> <li>❖ EX. LV Electric Switchgear, MCC, DB, PMS</li> <li>❖ Lighting Fixture, Junction Box, LCS, Socket and Plug, Switch, Ex. Electrical Conduits</li> <li>❖ Closed Circuit Television Stations (CCTV)</li> <li>❖ Public Address and General Alarm (PAGA)</li> <li>❖ Ex. Telephone</li> <li>❖ Alarm and Signaling Devices</li> <li>❖ Control and Notification Equipment</li> <li>❖ Industrial Network and Instrumentation</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Process Electric Heater</li> <li>❖ Process Electric Heat Tracing System</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Process Ultrasonics Flow Meter</li> <li>❖ Flare Gas Ultrasonics Flow Meter</li> <li>❖ Gas Metering Skid</li> <li>❖ Gas Analyzer System, CEM System</li> </ul>
 	<ul style="list-style-type: none"> <li>❖ Navigation AIDS</li> <li>❖ Helideck Lighting System</li> <li>❖ Obstruction Lighting System</li> <li>❖ Explosion Proof UPS System and Battery</li> <li>❖ Wind and Solar Power System</li> </ul>
	<ul style="list-style-type: none"> <li>❖ DBB Orifice Flowmeter</li> <li>❖ Dual and Single Chamber Orifice Flowmeter</li> <li>❖ Meter Runs and Flow Conditioner</li> <li>❖ Manifold Valves</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Field Instrumentations</li> <li>❖ Analyzer System</li> <li>❖ Control System: DCS, SCADA, SIS FnG, ESD, ICSS</li> </ul>
	<ul style="list-style-type: none"> <li>❖ AC/DC UPS System and Battery</li> </ul>
 	<ul style="list-style-type: none"> <li>❖ Flame and Gas Detector</li> <li>❖ Sand, Water, Pig Detector</li> <li>❖ FnG Control System</li> <li>❖ Fire Alarm System</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Complete Solution for Industrial Valves: Gate, Globe, Check, Ball, Butterfly, Cryogenic, Subsea and Special Valves.</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Cable Gland</li> <li>❖ Cable Cleat</li> </ul>
	<ul style="list-style-type: none"> <li>❖ Cable Tray and Cable Ladder</li> <li>❖ Cathodic Protection System: Anode and ICCP</li> <li>❖ Bolt and Nut</li> </ul>



## PRODUCT AND SERVICE

### ❖ ELECTRICAL

- Ex. LV Electric Switchgear, MCC, Power Management System (PMS)
- AC/DC UPS System and Battery
- Ex. AC/DC UPS System and Battery
- Process Electric Heat Tracing System
- Navigation AIDS
- Helideck Lighting System
- Obstruction Lighting System
- Lighting Fixture, Junction Box, LCS, Switch, Socket and Plug, Etc.
- Electrical and Control Cable, Cable Tray and Ladder
- Cable Gland, Cable Cleats, MCT, Ex. Electrical Conduit, Bulk Material, Etc.

### ❖ FIELD INSTRUMENTATION AND CONTROL

- Field Instrumentation: Pressure, Temperature, Flow, Level, Etc.
- Process Ultrasonics Flowmeter, Ultrasonics Flare Meter
- Liquid and Gas Analyzer System, CEM System
- Process Control System: PLC, DCS, SCADA, SIS, FnG, ESD, ICSS
- Actuated Valves, Control Valves, Pressure Safety Valves, Pressure Regulating Valves, HPU.
- Metering System

### ❖ FIRE AND GAS PROTECTION

- Flame and Gas Detection System
- Fire Alarm System

### ❖ TELECOM

- Closed Circuit Television Stations (CCTV)
- Public Address and General Alarm (PAGA)
- Telephone System
- Alarm, Signaling, Notification and Control Devices
- Telecom System Integrated

### ❖ SOLUTION AND SYSTEM INTEGRATION

- Process Package Engineering and Integration

### ❖ TECHNICAL SERVICES

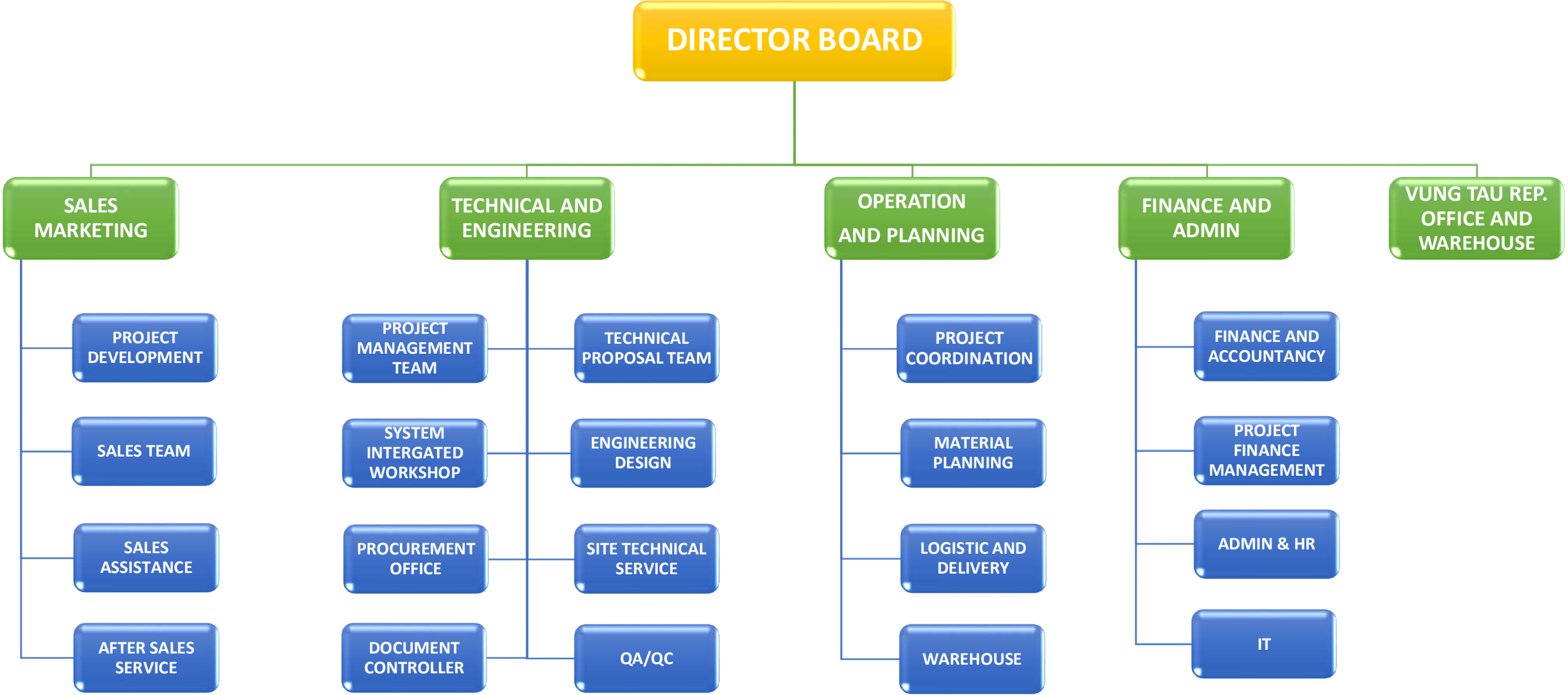
- Our engineers are highly trained and qualified to ensure all aspects of technical within your project from initial stage of concept thought to its lifetime operation.



- Design and Engineering Services
- Project Management
- Supervision and Training
- Installation, Commissioning and Start-up
- Inspection and Survey
- Maintenance and Repair



# MOTEC ORGANIZATION FUNCTION CHART





## VISION

We constantly strive to be a valued partner and more connected with customer.

Development is based on the lasting fundamental values and conducted by business ethics.

Become a leading company in providing to customer the valuable consulting and customized solution, accompanied with quality products, engineering design and professional project management.



## MISSION

A companion partner and providing to customer “the comprehensive value” by synced and optimized the values of “Technical – Commercial - Service”.

**Technical value:** Providing the quality product accompanied with the comprehensive of valuable solution, engineering design, project quality management system to guarantee product reliability in operating with maximize efficient and meet design’s life.

**Commercial value:** Providing the economization technical solutions aim the optimization cost of investment, operation and maintenance during project preliminary design and FEED stage, and implement project by powerful project management system and teamwork to eliminate all the risk factors on product quality and project delivery schedule.

**Service value:** Demonstrated by customer’s satisfaction and the staff’s honor while be served customer. To achieve the goals, we are constantly built up, innovating and improving the company lasting foundation values. The commitment of excellence in technical, professional in sales and project management and implement all target in the order and discipline.





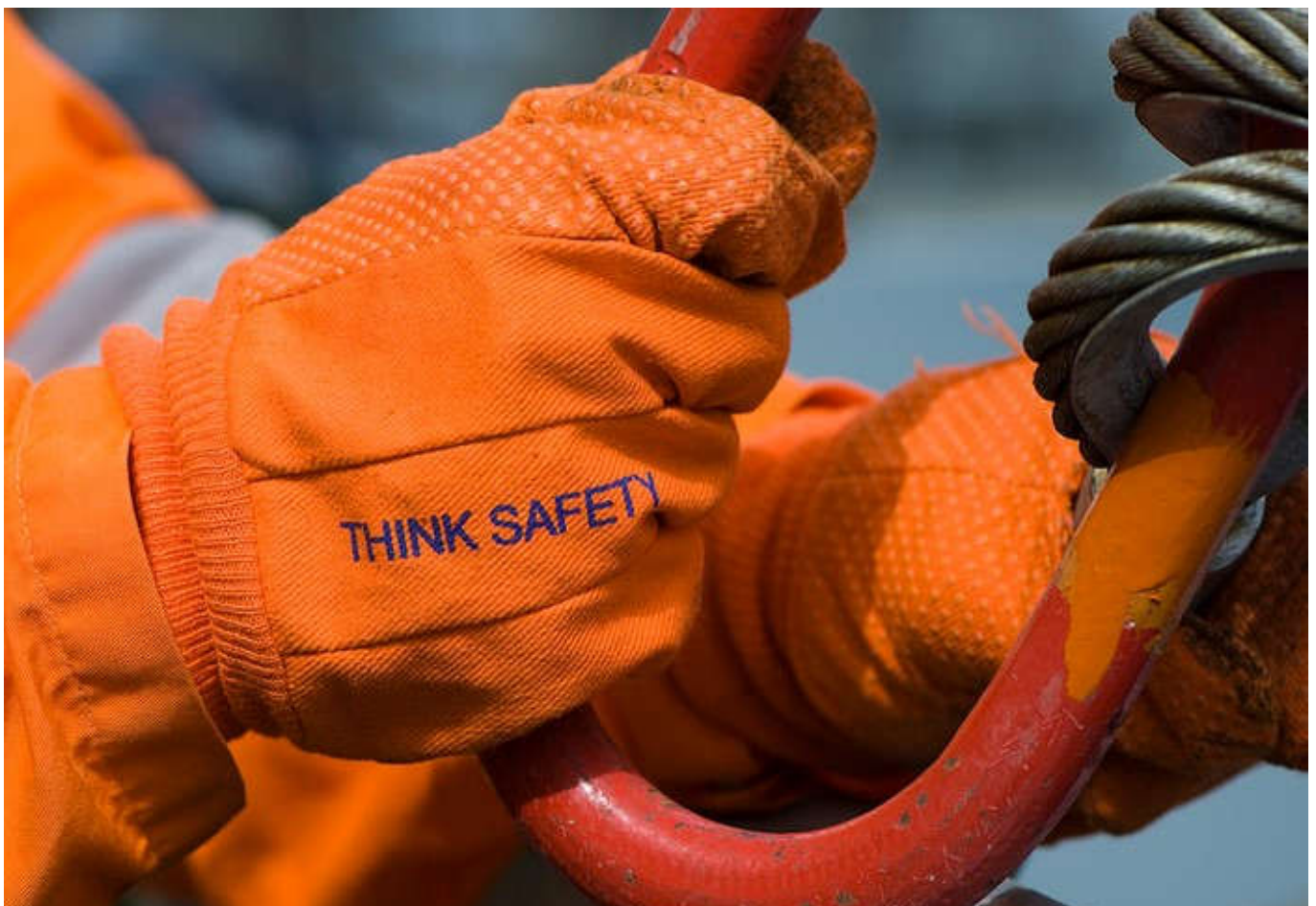
## CORE VALUE

We understand the establishment and maintain the core values are most important to achieve the success and offer more values to customer.

**Safe by Quality:** Bring to customer the peace in mind by safe solution, high quality and reliability of product.

**Innovation by Solution:** We always place the science technology application and solution as the foundation in development of branding value and human, listening the customer's difficulties and view as a priority to implement by highest spirit and responsibility to create the new solutions.

**Value by Human:** Employees as key partners in our lasting development. The ethic values and value creation are developed by new challenges, cooperation, justice at professional working environment with key performance indicators platform. All employees are driven and committed to the career development opportunities along with benefits worthy values contribution and to be a partner of company in the long term to build and develop the lasting values.





Eaton's Crouse-Hinds Division is the world's leading provider of electrical and instrumentation products for harsh and hazardous environments. Our products perform to the highest standard of safety and reliability, keeping people safe and plants running. The more demanding the environment, the likelier you are to find our products at the very center of operations. Below are the major product lines within Eaton's Crouse-Hinds Division.

## Explosionproof/Industrial Products



### Control & Apparatus

- Explosionproof VFDs
- Motor starters
- Control stations/switches
- Panelboards



### Enclosures

- Junction boxes and empty enclosures
- Enclosures with components
- Instrument housings



### Industrial Fittings and Glands

- Conduit bodies and boxes
- Conduit seals/breathers/drains
- Conduit system unions, couplings, hubs, reducers and adapters
- Cable glands and accessories



### Lighting

- LED luminaires - *the broadest portfolio for industrial and hazardous applications*
- Fluorescent luminaires
- HID luminaires
- Emergency lighting



### Plugs and Receptacles

- Pin and sleeve devices
- IEC 309 devices
- NEMA configured devices
- Interlocked receptacles
- Single-pole and multi-pin devices

## Commercial Products



### Delivering quality, reliability, labor savings and lower installed cost

- Fittings for EMT, Rigid/IMC and AC/MC/FMC
- Liquidtight fittings
- Conduit hubs
- Outlet boxes and covers
- PRE-formance™ pre-fabricated assemblies
- Enclosures
- Solar solutions



## Hazardous Area Communications



### Innovative and integrated signaling, communication and surveillance systems for explosive atmospheres and harsh industrial and marine environments.

- Visual and audible signaling devices
- Alarm call points
- VoIP and analog telephones
- CCTV camera systems
- Integrated multimedia communications systems

## Process Instrumentation and Protection Products



### Protection, monitoring and control of instrumentation signals within a facility's critical processes

- Intrinsic safety
- Surge protection
- Process alarm equipment
- HMI and visualization
- Fieldbus
- Industrial wireless
- Industrial ethernet
- Industrial security

## Airport Lighting Products



### Application-specific solutions for integrated Airfield Lighting and Control & Monitoring Systems worldwide

- Control and monitoring systems
- Approach and navigational aids
- Guidance signs
- Power and control equipment
- Runway and taxiway lights
- Solar lighting
- Utility lights
- Light bases

# HAZARDOUS AREA COMMUNICATION



Eaton's Crouse-Hinds series hazardous area communications solutions are a comprehensive product suite for potentially explosive atmospheres, bringing together specialized products and systems solutions with trusted names such as MEDC, FHF, HERNIS, OXALIS and GITIESSE. These products for harsh and hazardous environments bring together a range of world class specialist products and solutions for both safety and security in the fire & gas, telecommunications, PAGA and CCTV markets.



## SONIX Public Alarm & General Systems (PAGA)

Designed to enhance modern communication philosophies, the SONIX PA/GA system includes a highly sophisticated yet simplified architecture that removes the need for lengthy engineering cycles, bespoke and costly software, custom field engineering or expensive onsite support. We are able to offer fully compliant communications solutions to meet the most demanding applications for onshore, offshore and industrial installations.



## MEDC Loudspeakers

The MEDC and FHF's range of hazardous, heavy duty, industrial and commercial speakers are designed to meet the requirements for public address, voice alarm (evacuation) and background music.



## Closed Circuit Television Stations (CCTV)

HERNIS and OXALIS lead the way in developing advanced camera-based surveillance systems for marine and oil and gas installations worldwide. Our solutions contribute to increased efficiency and provide safety for people and equipment in hazardous areas and under extreme conditions.



## MEDC Status lights, audible and visual combination units

For use in situations where both audible and visual awareness is required together to alert operators of a potential hazard. Customized solutions from MEDC and FHF can be designed and manufactured using our sounders and beacons to suit the specific needs of the customer.





### MEDC Call points

MEDC Manual alarm call points are designed for the purpose of raising an alarm manually once verification of a fire or emergency condition exists, by operating the push button or break glass the alarm signal can be raised.



### MEDC Audible alarms

MEDC and FHF's range of audible alarms are suitable for a wide array of applications, feature a variety of tone settings, and are designed to raise the alarm in dangerous situations. Traditional bells are also available.



### MEDC Ex. Heat Detector

The MEDC heat detector has been designed for use in hazardous environments. These units are suitable for fire alarm and/or suppression systems in offshore and onshore applications including paint spray booths, flammable material stores, turbine rooms, extract ductwork and other hazardous areas throughout the oil & gas, petrochemical and process industries.



### MEDC Visual alarms

The MEDC and FHF range offers beacons and combination units including flashing, steady-state indicators and rotating units. These may be used to warn of potential hazards or indicate the status of plant conditions, fire and gas alarms, evacuation alerts and many more.



### FHF Telephones

Gitisse and FHF's full range of automatic and sound powered telephones suitable for any kind of application: IP and analogue, weatherproof proof and explosion protected. Supplementary audio and optical devices are also available as an option.



### Engineering and Technical services

Our engineer are highly trained by manufacturer and qualified to ensure all aspects about technology consultation, acoustic survey, engineering design, project management, system commissioning, training and other services technical providing within your project from initial stage of concept thought to its lifetime maintenance.

**Product Categories:**

- LED Marine Lanterns
- Foghorn
- Visibility Meter/Fog Detector
- Radar Response Beacon

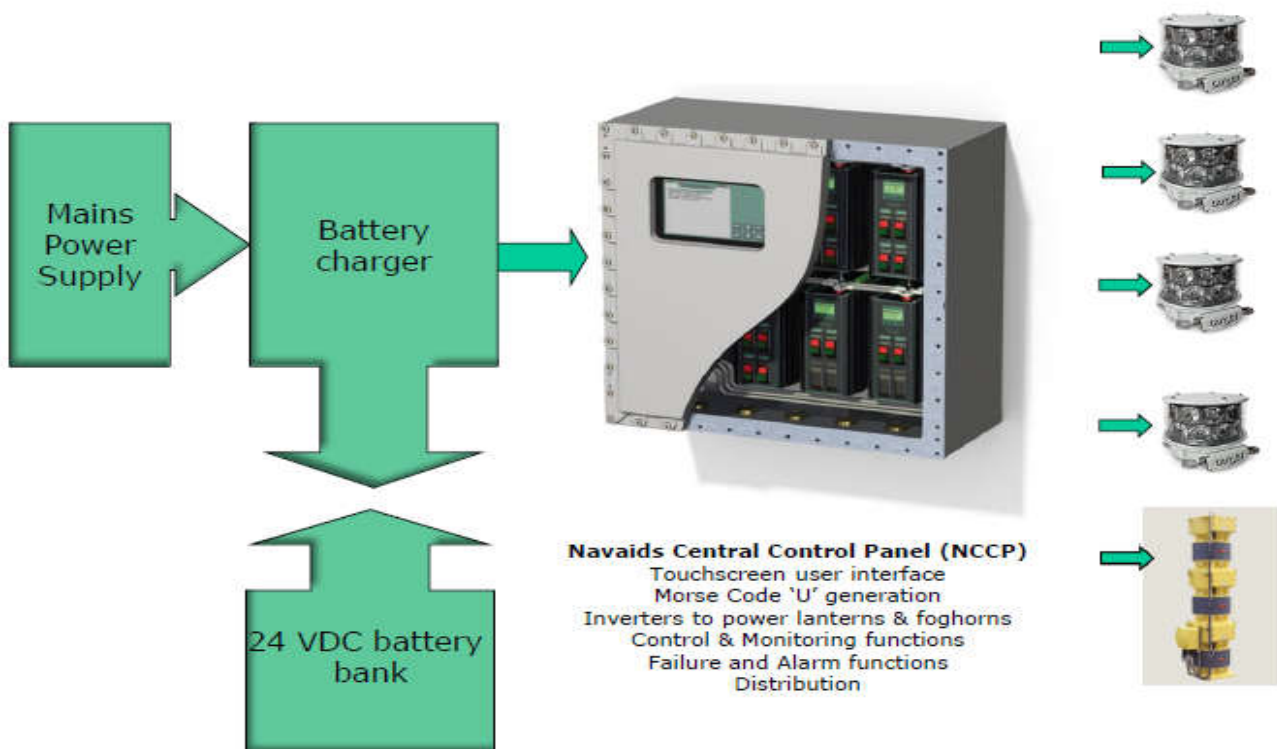
**A compact microprocessor NavAids Central Control Panel (NCCP)**

All products meet the IALA, and/or local Requirements

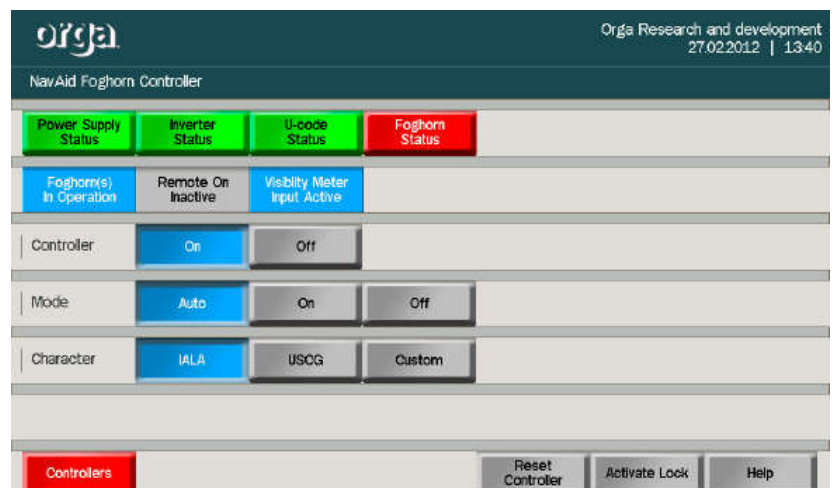
All products are certified to meet ATEX and IECex hazardous area certification requirements



**Offshore Product Overview**  
*Orga centralised Aids to Navigation system design*



NavAids Central Control Panel (NCCP)



Digital NCCP Touchscreen - NavAid Foghorn Controller Screen





#### Four Product Categories:

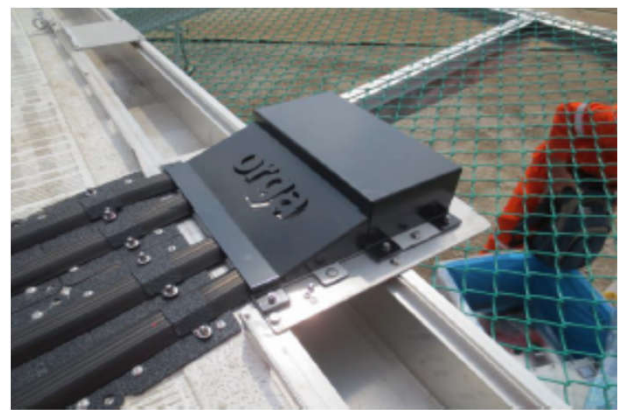
- Circle-H lights
- Perimeter lights
- Status light
- Illuminated windsock
- Floodlights (CAP437 6th Edition)

#### A compact microprocessor Helideck Central Control Panel (HCCP)

#### All products meet following requirements

- CAA CAP437 7th Edition
- IMO
- ICAO

#### All products are certified to meet ATEX and IECex hazardous area certification requirements



#### Circle-H - Hazardous Area & Environment Testing:

- ATEX certified – Cenelec EN 60079-0, EN 60079-7, EN 60079-11 and EN 60079-18KEMA 11ATEX0186; ATEX II 2 G Ex e mb ib IIC T6, according to ATEX Directive 94/9/EC
- IEXex certified - Cenelec IEC 60079-0, IEC 60079-7, IEC 60079-11 and IEC 60079-18IECEx DEK 11.0072; Ex e mb ib IIC T6
- Independent third party validation to specification; as required by CAP437
- HCA (Helicopter certification agency) system certification against the requirements of CAP437.
- ABS Type Test Approval for the CAP437 TD/PM Circle-H System in accordance with ABS Rules, International and National standards.
- CAAi (Civil Aviation Authority International) certification
- Certified to ingress protection: IP66 & IP67





## Customized Power Solutions

Orga's photovoltaic and battery backup systems can be found on offshore platforms and onshore remote sites all around the world when a highly reliable power supply is required but it is not available from subsea cable or main generators. These Orga systems are usually the only source of power at the installation site and are typically used to power and protect safety critical, production monitoring and communications equipment.

## Orga as a System Integrator

In order to ensure a reliable autonomous power supply to the electrical load equipment the design and system sizing is as essential as the choice of system hardware.

We work closely with customers during the design and evaluation phases of a project, from the front end engineering and design, through system performance modeling predictions to the commissioning and maintenance of the installed system.

The choice of optimum component technology deployed in a system depends on factors such as geographic location, power requirements, and available space. The generation system can be either a photovoltaic or a photovoltaic hybrid system according to the optimum for each project.

Orga delivers the complete solution you need to protect your safety systems and production processes as we ensure optimal uptime and deliver maximum return on your investment.

A typical remote power system consists of: PV array, battery system, battery charge and discharge management system, emergency battery charger, power conditioning and electrical distribution panel. Whenever possible we design modular systems to be cost effective, easy to handle as multiple system modules can operate in parallel to meet the project's requirements.

Orga's system incorporate field proven components of which we have a successful experience in such a harsh highly corrosive environment of an offshore location.

The systems can be certified for operating in hazardous environments (Certification: KEMA in accordance with the ATEX 94/9/CE directive for Zone 1 or Zone 2).

**Reliable renewable energy systems are essential for effective viability of remote locations. Orga has a track record of design, engineering and supply to this application field and can support clients to reach the optimum solutions to meet their requirements.**

## Sharing our experience

With more than 35 years' experience in the design and manufacture of remote power systems for offshore installations we are able to supply complete solutions for our customers.

We work closely with our clients to understand the requirements of all the parties involved and help to develop the most suitable solution to provide effective and reliable systems. Our proven long-term experience in renewable energy systems in addition to Orga's products within the offshore Oil & Gas and wind power industries give us an unmatched understanding of our clients' technical and environmental requirements.

## Solving problems

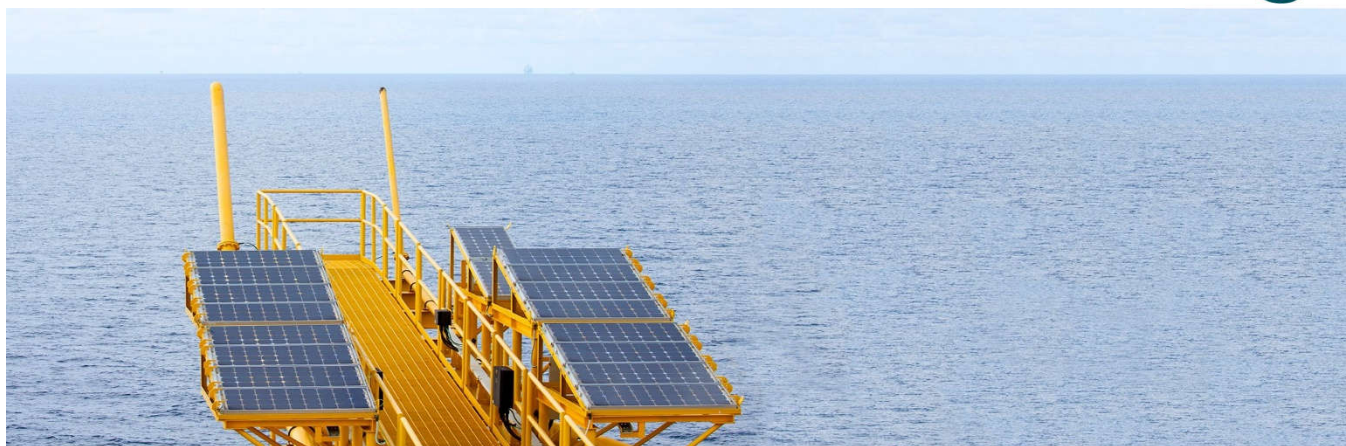
Our remote power systems are not just about photovoltaic modules and batteries – we provide a complete solution, and work with our customers to develop systems, including selection of energy efficient equipment, adapted to their requirements. We understand the objectives of the project stakeholders and balance these with the need to meet regulatory requirements and ensure safe operation.

## Benefit from our experience

We offer innovative products and apply the latest technology: smart and simple, photovoltaic modules, batteries, solar regulators and control panels.

Our systems, with integrated condition monitoring facilities, are recognized as state of the art, reliable, energy saving and operationally cost-effective.





## Photovoltaic Modules



- **Zone 1, 2 certified offshore design explosion proof PV module**
- **High efficiency solar cells to minimize space requirements.**

Orga's PV modules have been specifically designed to survive in the harsh and demanding offshore environment. The design of the modules protects the solar cells from the detrimental effects of the aggressive environments.



## Battery Unit



- **Zone 1, 2 explosion proof battery unit**
- **Storage of energy generated by PV module into battery,**
- **Suitable for indoor (ventilated) and outdoor installation.**

Orga's battery unit is a certified combination of batteries in an enclosure designed for ventilated indoor as well as outdoor installation. The enclosure can incorporate different types of batteries such as Nickel-Cadmium and Lead Acid specially designed for solar applications. It has proven itself as a high reliable combination for an offshore environment.

## Solar Regulator



- **Zone 1, 2 explosion proof solar regulator panel**
- **Suitable for indoor and outdoor installation**
- **Offshore design with field-proven components**

The real time Maximum Power Point Tracking (MPPT) optimizes the power output of the regulator. The system is available for a power output of 12, 24 or 48 VDC, and multiple regulators can be operated in parallel to meet the projects technical requirements. The ability to step-down from a high voltage solar array to low voltage batteries maximizes the power generated by the system and is a cost effective design advantage.

Orga's smart multistage recharging process ensures that the batteries are recharged efficiently to prolong the batteries life and achieve the highest possible performance.

## FIELD INSTRUMENTATIONS AND ANALYZER SYSTEM

We provide variety of field instruments and measuring solution from safety area to hazardous area.

### Flow Measurement

- Electromagnetic
- Vortex
- Coriolis mass flowmeter
- Ultrasonic flowmeter
- Thermal mass flowmeter
- Different pressure flowmeter
- Turbine meter
- Water cut flowmeter
- Multiphase flowmeter
- Venturi flowmeter
- Annubar flowmeter

### Level Measurement

- Radar
- Ultrasonic
- Capacitance
- Displace level
- Nucleonic
- Hydrostatic pressure
- Different pressure
- Magnetostrictive level
- Magnetic gauge

### Pressure measurement

- Absolute and gauge
- Different pressure
- Hydrostatic

### Temperature measurement

- Temperaturer transmitter

### Density and Gravity Meter

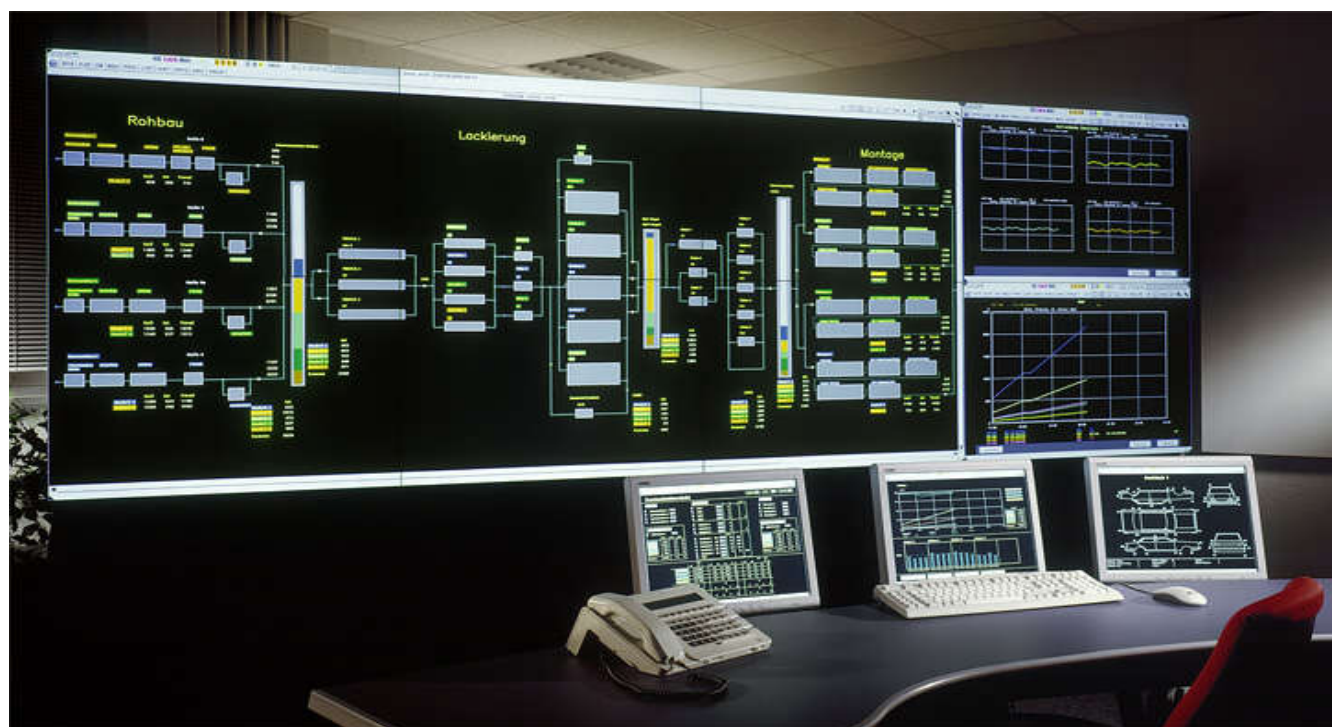
### Liquid Viscosity Meter

### Instrument Analyzer

### Acoustic Detection

## PROCESS CONTROL SYSTEM

Our Engineer are qualified for providing a comprehensive solution of automation control system PLC, DCS, SIS, ESD, FnG, ICSS to your project.



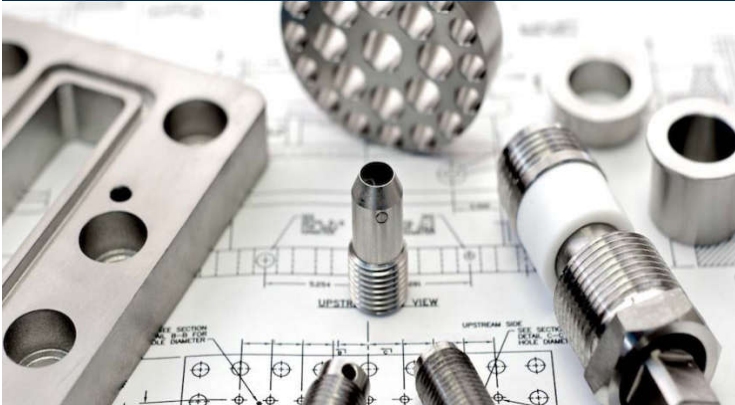
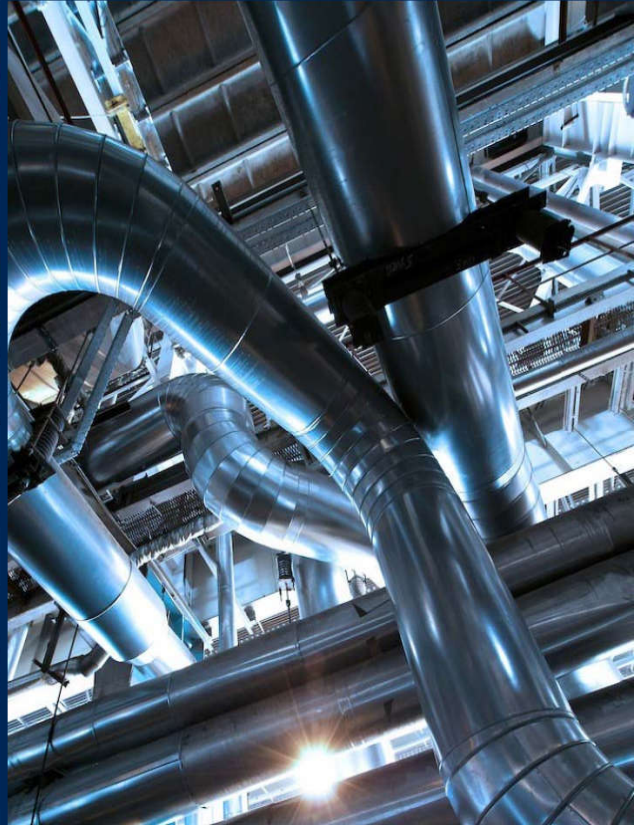
- Consulting of design
- Engineering design
- Control panel assembling
- Filed devices providing
- Control hardware and software
- Programing and configuration
- As-built design documentation
- Factory acceptance test (FATs)
- Supervision and installation
- Site acceptance test (SATs)



## FLOW MEASUREMENT



**Canalta Flow Measurement**  
DIFFERENTIAL PRESSURE PRODUCTS & SERVICES



[www.canaltaflow.com](http://www.canaltaflow.com)

**ACCURACY, RELIABILITY, PERFORMANCE.**



# Global Presence

LEVERAGING INTERNATIONAL ASSETS FOR EFFICIENCY, QUALITY AND VALUE

## CANALTA DENTON – TEXAS, USA

- Canalta Denton, TX facility was established in 2011 to support the NA Natural Gas market.
- 15,000 - sq. ft. Warehouse & QC Repair Area & 1,700 sq. ft. Sales Office.
- Primary focus is stocking Single & Dual chamber orifice fittings sizes 2" thru 12" in 600# ANSI configurations with parts and service for local market.



**CANALTA CONTROLS LTD.** – RED DEER, CANADA  
Manufacturing, Sales, Service, Inventory, Administration

**CANALTA SOUTH AMERICA** – BUENOS AIRES, ARGENTINA  
Sales, Technical Support (Latin America)

**CANALTA USA** – DALLAS, TX  
Sales, Service, Inventory

**CANALTA INDIA** – COIMBATORE, INDIA  
Component Fabrication, Quality Control, Supply Chain Management

**CANALTA UK** – SUFFOLK, UK  
Sales, Technical Support (Eastern Hemisphere)

**CANALTA KOREA** – INCHEON, SOUTH KOREA  
Component Fabrication, Quality Control, Supply Chain Management



## Canalta Flow Measurement - D.P. Products & Services

### Quality Assurance

PROVIDING SUPERIOR PRODUCT TO EVERY PROJECT

From our engineering team and journeyman instrumentation technicians to our skilled assembly and sales teams, everyone at Canalta is working hard to ensure that our industrial measurement and control equipment is the best available.

**ISO 9001:2008**

**AGA 3 / API 14.3**

**ISO 5167**

**ASME B31.3 - 2004**

**ASME B16.34 - 2004**

**ASME B16.5 - 2003**

**NACE MR0175**

**ISO 15156:2003**

**ASTM Specifications**

**ABSA Certified**

**FPAL Registered**

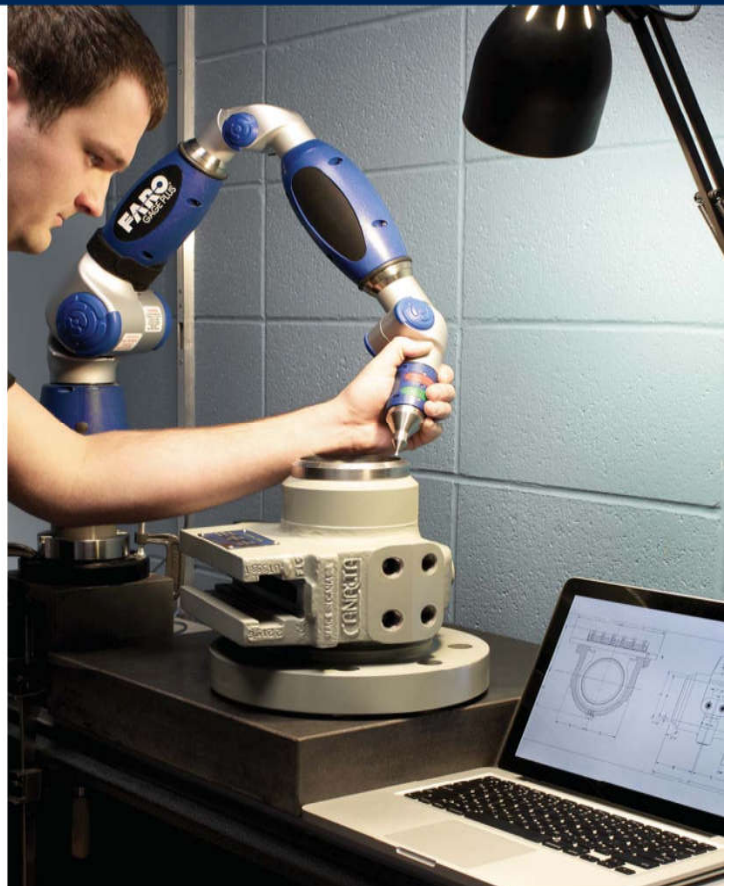
**PED 97/23/EC**



**ISO 9001:2008**



**PED 97/23/EC**





# Product Applications

FROM WELL TO CONSUMER, D.P. PRODUCTS FOR ANY APPLICATION

**Sub-Sea Facilities • Offshore Production Platforms • FPSO**

**LNG Loading and Unloading • Hub Terminal • City Gates**

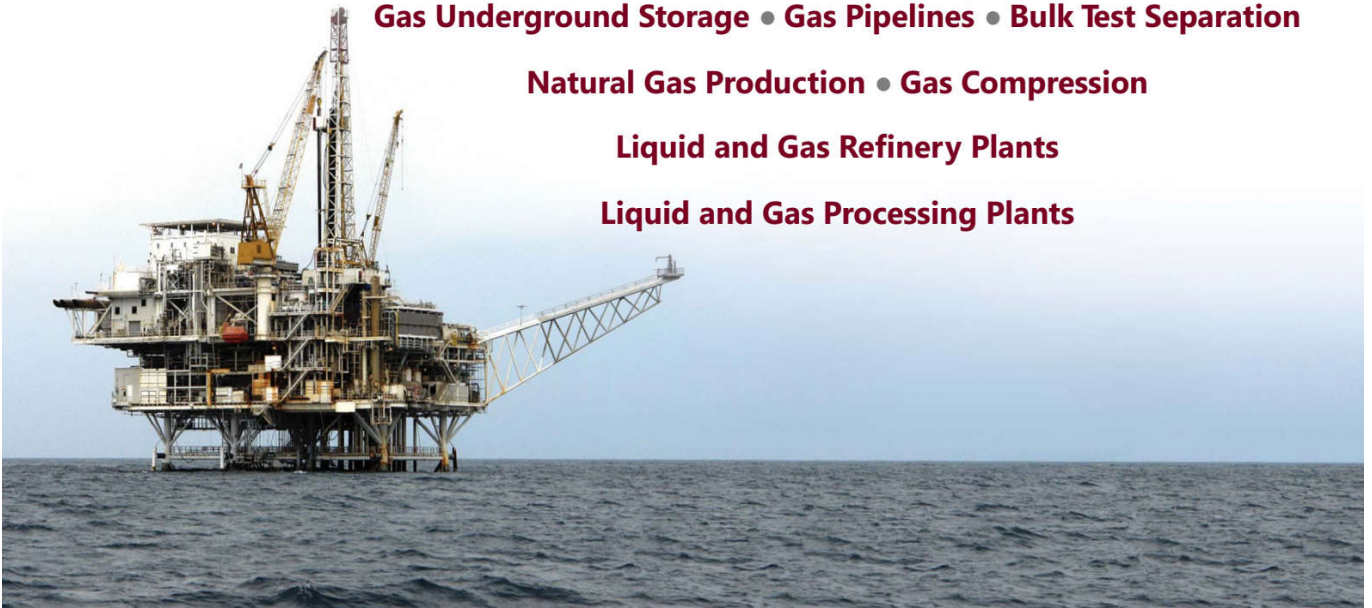
**Crude Oil & Gas Production • Refined Products Pipelines**

**Gas Underground Storage • Gas Pipelines • Bulk Test Separation**

**Natural Gas Production • Gas Compression**

**Liquid and Gas Refinery Plants**

**Liquid and Gas Processing Plants**



## Standard Products overview



**Orifice plates**



**Single Chamber**



**Flow Conditioners**



**Orifice Flange Unions**



**Double Chamber**



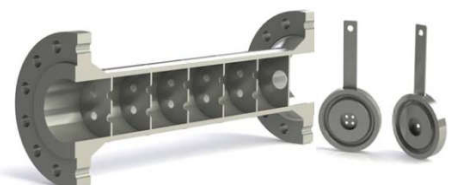
**Orifice Fitting Part Kits**



**Meter Runs**



**Spares & Upgrades**



**Restriction Devices**

# ULTRASONIC GAS FLOW MEASURING DEVICES

**SICK**  
Sensor Intelligence.



GAS FLOW METERS, VOLUME FLOW, MASS FLOW AND FLOW VELOCITY MEASURING DEVICES, EXHAUST GAS AND TUNNEL MEASUREMENT TECHNOLOGY, FLOW COMPUTERS

## GAS FLOW METERS

POWERFUL MEASUREMENT PRINCIPLES FOR NATURAL GAS MEASUREMENT

**SICK**  
Sensor Intelligence.

FLWSIC30



GAS FLOW METERS FOR  
GAS PRODUCTION

FLWSIC600-XT



GAS FLOW METERS FOR  
GAS TRANSPORT AND  
GAS STORAGE

FLWSIC500



GAS FLOW METERS FOR  
GAS DISTRIBUTION IN  
MUNICIPAL UTILITIES  
AND INDUSTRIES



## GAS FLOW METERS FOR GAS PRODUCTION

### RELIABLE UNDER ALL CONDITIONS



- Developed for use in the production of natural gases, e.g. coal gases
- High measurement accuracy thanks to sensor technology from SICK
- High availability of measurements due to optimal meter design and measurement with long-term stability
- Large measuring range of 80:1 covers the entire flow range of gas sources



Output measurement at the wellhead of coal gas sources



FlowSIC30

## GAS FLOW METERS FOR GAS TRANSPORT AND GAS STORAGE

### CUSTODY TRANSFER AND HIGHLY-PRECISE MEASUREMENTS



- FlowSIC600-XT available in four path layouts: always the right ultrasonic gas meter
- Low measurement uncertainty in every custody transfer application
- Excellent measurement data reliability and availability thanks to PowerIn Technology™
- Quick and easy commissioning and checks thanks to Flowgate™ and i-diagnostics™
- Simple device integration – even in compact systems



Custody transfer measurements at gas measurement points for gas distribution and storage



FlowSIC600-XT



... Forte



... 2plex



... Quatro



## GAS FLOW METERS FOR GAS DISTRIBUTION IN MUNICIPAL UTILITIES COMPACT, MODERN AND LOW-MAINTENANCE

- Modern ultrasonic measurement technology for municipal gas suppliers and industries
- Ultimate measurement certainty and safety of continuous gas supply
- Simple installation, compatible with conventional technologies (turbine and rotary displacement meters)
- Self-sufficient operation thanks to low-power concept
- Easy recalibration due to plug-and-play cartridge replacement



Gas flow measurement in municipal utilities: FLOWSIC500 with integrated flow conversion



Gas flow meter



Meter with internal  
flow conversion  
(p/T internal)



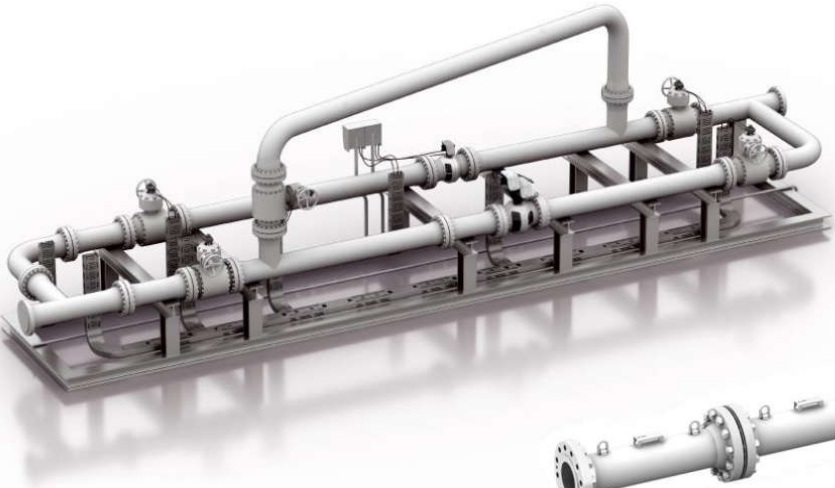
Meter with external  
flow conversion  
(p/T external)



## Metering Systems

Skidded Products

**SICK**  
Sensor Intelligence.



**FLOWSKID – Metering Skid**



**FLOWRUN – Metering Run**

## Products

Computer Systems

**SICK**  
Sensor Intelligence.

### Flow Computers

- › The “brain” of the metering skid, the flow computer also provides the required reports and data to the supervisory system.
- › The ability to interface with and acquire data from a variety of smart and intelligent instruments including flow meters, density, temperature and pressure transmitters, gas chromatographs is essential.
- › SICK has experience with all major suppliers of flow computers.

**Our experts can configure any type of flow computer to meet any international standard**



## Metering Systems

Computer Systems

**SICK**  
Sensor Intelligence.

### Station control units

- › We design, build, test and install complete station control units.
- › Usually as an integral part of a turnkey metering system or a separate system to complete existing installations.
- › From simple stand-alone computers to sophisticated panels incorporating dual redundancy and the latest in supervisory & HMI systems.
- › For station control, monitoring, automation, verification and communication with the main plant control system.
- › SICK can interface to any third party supervisory or scada system and integrate PLC's or other devices as required to exactly meet your project's needs.



## Metering Systems

### Analyzer Packages

#### From three sided shelters to Complete Prefabricated Analyser Houses

- › Fully customised
- › Sample conditioning systems
- › Power distribution panel
- › Utility headers
- › Bottle racks/holders
- › HVAC
- › Ventgas recovery system
- › Liquid recovery system
- › Etc.



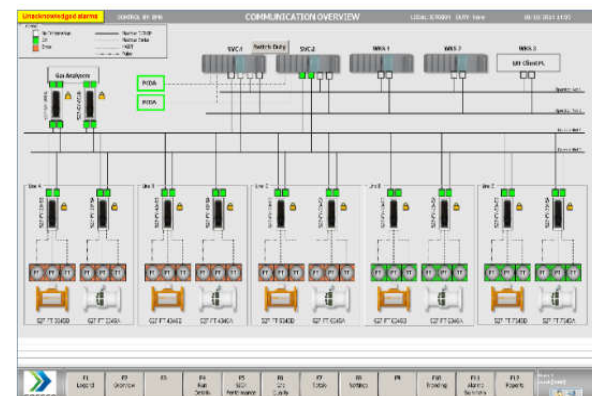
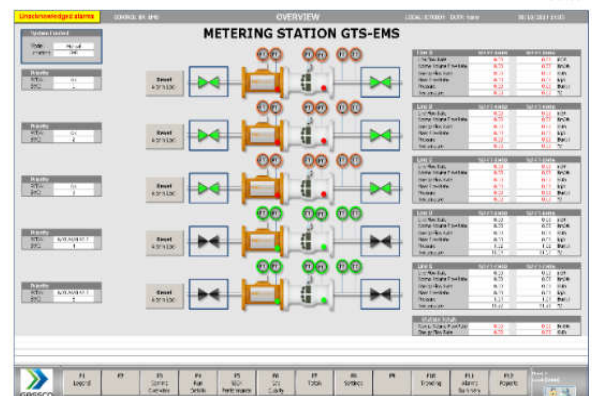
## Metering Systems

### Computer Systems

#### Supervisory Systems

- › SICK has extensive experience in supervisory systems specific dedicated to metering applications.
- › SICK has a reputation for reliability, this is an important feature for supervisory systems,
- › Such systems solutions are designed in-house by SICK
- › Supported by any of the widely available third party software like eXLerate, Citect, Yokogawa etc.
- › All of our solutions can be fully integrated into the operator's own DCS/SCADA/PCDA systems and can include additional features such as secure remote communication.

#### In-House Reliable Stable



**SICK**  
Sensor Intelligence.



# VOLUME FLOW AND MASS FLOW MEASURING DEVICES

## POWERFUL MEASUREMENT PRINCIPLES FOR NATURAL GAS MEASUREMENT

**SICK**  
Sensor Intelligence.

FLWSIC100 Flare



FLARE GAS MEASUREMENT

FLWSIC100



EMISSION MONITORING

FLWSIC100 Process



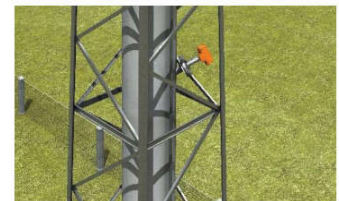
PROCESS GAS  
MEASUREMENT

## FLARE GAS MEASUREMENT

### AVAILABLE WHEN IT'S NEEDED

**SICK**  
Sensor Intelligence.

- Continuous process monitoring through precise measurement of very small gas volumes
- High measurement availability even in the case of emergency shutdowns with gas velocities of up to 120 m/s
- High measurement reliability thanks to continuous function monitoring and advanced diagnostics
- Cost-effective installation of the control unit possible in the safe area



Measurement of flare gases in the oil and gas industry, e.g. associated petroleum gas (APG)



Measurement of flare gases on offshore platforms



FLWSIC100 EX-PR



FLWSIC100 EX-Z2/EX-ZE-RE



FLWSIC100 EX-S



MCU-P (control unit)

## EMISSION MONITORING

### SIMPLE, STURDY AND LOW-MAINTENANCE

**SICK**  
Sensor Intelligence.

- Exact and reliable measurement of the volume flow with high demands on durability
- Measurement with stacks of industrial plants (e.g. energy generation, waste removal, paper industry)
- Applications in stacks with a diameter of up to 13 m
- Performance-tested measurement device compliant with DIN EN 15267, DIN EN 14181 and DIN EN ISO 16911-2
- Suitable for use in plants subject to licensing requirements 13th, 17th and 30th BImSchV (German Federal Emission Protection Directive, TA Luft) as well as the plants of the 27th BImSchV
- Certified according to MCERTS and GOST



Emission monitoring in power stations



Emission monitoring in the process and chemical industry



FLOWSIC100 H



FLOWSIC100 M



FLOWSIC100 PR

## PROCESS GAS MEASUREMENT

### LARGE MEASURING RANGE, RELIABLE AND PRECISE

**SICK**  
Sensor Intelligence.

- Exact and reliable measurement of the volume flow in pipes with high demands on durability
- High application safety even when gas composition changes radically or gas becomes contaminated
- Explosion-protected version for Ex-Zone 2 according to ATEX guideline 2014/34/EU
- Process pressure up to 16 bar (cross-duct version)



Gas measurement in the process and chemical industry



Installation on stack walls



FLOWSIC100 PN16/CL150



FLOWSIC100 EX-Z2-RE



FLOWSIC100 PR-EX-Z2



## EXHAUST GAS AND TUNNEL MEASUREMENT TECHNOLOGY

SPECIALIZED MEASUREMENT DEVICES FOR THE HIGHEST DEMANDS

**SICK**  
Sensor Intelligence.

FLAWSIC150 CARFLOW



EXHAUST GAS FLOW MEASUREMENT FOR  
VEHICLE AND ENGINE TEST BENCHES

FLAWSIC200



TUNNEL FLOW MEASUREMENT

## EXHAUST GAS VOLUME FLOW MEASUREMENT

CUSTOMIZED SOLUTION FOR THE AUTOMOTIVE INDUSTRY

**SICK**  
Sensor Intelligence.

- Exhaust gas flow measurement on vehicle and engine test benches up to 600 °C
- Exhaust gas flow measurement in automotive industry research and development facilities
- Low cost of investment thanks to mobile application with various test benches
- Convenient installation without feedback on engine characteristics and exhaust gas analysis systems



High-precision exhaust gas  
flow measurement on vehicle  
and engine test benches



FLAWSIC150 CARFLOW

## TUNNEL FLOW MEASUREMENT

RELIABLE AND INDISPENSABLE

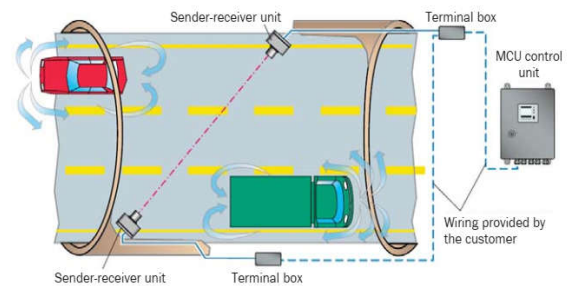
- Measurement of flow velocity and air temperature in tunnel systems
- Non-contact measurement process without mechanically moving parts for low operating costs and long maintenance intervals
- Integral measurement of the entire tunnel width for representative measurement results – highly recommended by tunnel experts, particularly when designing systems for fires



Measurement of flow in tunnels with a width up to 35 m



FLAWSIC200



Schematic diagram





We offer a full complement of gas and flame detection, industrial fire detection with integrated alarm and other control systems. We design, build, test and commissioning.

Our systems capability includes SIL 2 or SIL 3 approved modular multifunctional in rack system. The system is capable of conventional or addressable fire detection, gas detection, security features and fire suppression. The application ranging from oil and gas onshore and offshore, petrochemical, chemical plants, power plant and other industries.

## Product

- ❖ Flame detection
- ❖ Combustible Gas detection
- ❖ Toxic and O<sub>2</sub> Gas Detection
- ❖ Acoustic Detector (Sand, Water, Pig)
- ❖ Heat Detection
- ❖ Smoke Detection
- ❖ Systems and controllers

## Applications

- ❖ Oil & Gas
- ❖ Petrochemical
- ❖ Chemical
- ❖ Energy

## Flame detection

Safety's SIL-3 rated flame detectors offer protection for critical areas where reliability is demanded.



- ❖ Visual
- ❖ Multi-Spectrum Triple IR (IR3)
- ❖ Infrared and Ultraviolet (IR/UV)
- ❖ Ultraviolet (UV) only.

## Combustible Gas detection

Safety's SIL-2 certified flammable gas detectors are reliable and smart detectors for every gas application in which critical protection is needed. We offer three different technologies for combustible gas:



- ❖ Infrared (IR),
- ❖ Catalytic bead,
- ❖ Open path.
- ❖ Toxic and O2 Gas Detection

## Fire Alarm System

Fire Alarm and Integrated Solutions have provided complete system solutions.



- ❖ Smoke and Heat Detection
- ❖ Call Point
- ❖ Fiber Optic Heat Detector
- ❖ Addressable Fire Detection Panel
- ❖ Flame/CCTV Detector

## MEDC Ex. Heat Detector



The MEDC heat detector has been designed for use in hazardous environments. These units are suitable for fire alarm and/or suppression systems in offshore and onshore applications including paint spray booths, flammable material stores, turbine rooms, extract ductwork and other hazardous areas throughout the oil & gas, petrochemical and process industries.



## FUILD CONTROL SOLUTION

- ❖ Control Valve
- ❖ Pressure Safety Valve
- ❖ Pressure Regulator Valve
- ❖ Control ON/OFF valve
- ❖ Manual and Control Choke Valve
- ❖ Hydraulic Power Unit (HPU)

Our valves can handle a wide variety of process control applications. There are with many optional packages available that can help reduce noise, vibration and contain cavitation.

Safety relief valves often serve as the point-of-protection against potentially dangerous circumstances, so it is important that they be dependable. We provide various valve styles, sizes, options and configurations for multiple industries and applications.

We can customize the valve with many option on material and control device to meet customer process control requirement.

- Digital SMART positioner
- Pneumatic actuator
- Electric actuator
- Hydraulic actuator
- Hydraulic control panel
- Hydraulic power unit



Control Valve, Pressure Regulator Valve, Pressure Safety Valve, HPU



Control ON/OFF Valve



Manual and Control Choke Valve

## ELECTRIC HEATER AND HEAT TRACING SYSTEM



Over 100 years in development the advanced thermal technologies in industrial applications. Now, Chromalox is the best of manufacturer in the world providing the Industrial heater and control system.

Chromalox maintains six state-of-the-art manufacturing plants throughout the world with more than 634,000 ft<sup>2</sup> of manufacturing space. The facilities are vertically integrated, and also provide final assembly and functional testing. Chromalox maintains numerous global product and plant certifications, including ISO 9001:2008, ATEX/IECEX, ASME, ATEX, PED, ABS, GOST, National Board, KOSHA, and SELO.

Chromalox also maintains a presence across the globe through our operations offices. These facilities provide design and engineering expertise, project management, sales, and service quickly, locally. Chromalox also stock and warehouse products and components for rapid delivery.



Chromalox in Soissons - France

### Manufacturing Facilities



Chromalox in Utah - United States



Chromalox in Tennessee - United States



Chromalox in Nuevo Laredo - Mexico



Chromalox in Alberta - Canada



## CONTROL SYSTEMS

intelTRACE



- 1, 2, 8, 12 and 24 loops
- Pre-wired and assembled control, monitoring and distribution (saves time on installation)
- Intuitive color touch screen interface (saves time on programming)



- Up to 40 loops
- Pre-wired and assembled control, monitoring and distribution (saves time on installation)
- Includes the Sentinel monitoring system

UAS  
Ambient-Sensing



- 0°-225°F / 0°-107°C Temp Rating
- 120-480 VAC, 22A Switching Capability
- Freeze Protection Applications

Combination Single Point Temperature Controls & Power Connection Boxes

UAS  
Ambient-Sensing



- 0°-225°F / 0°-107°C Temp Rating
- 120-480 VAC, 22A Switching Capability
- Freeze Protection Applications

UBC  
Line-Sensing



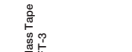
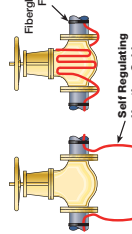
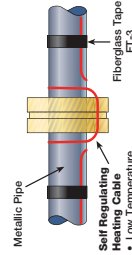
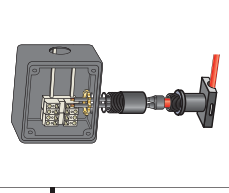
- 0°-400°F / 0°-205°C Set Points
- 120-480 VAC, 22A Switching Capability
- Freeze Protection Applications

DTS, DTS-HAZ  
Digital ThermoStat / Power Connection  
Line- or Ambient-Sensing

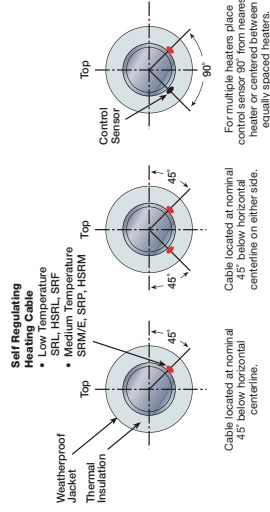


- DTS, Ordinary Area, DTS-HAZ, Div2 Hazardous Area
- -45°-485°F/-43°-252°C Programmable
- 100-277 VAC, 30A Switching Capability
- Freeze Protection & Process Temperature Maintenance Applications

## Power Connection Box (UPC)



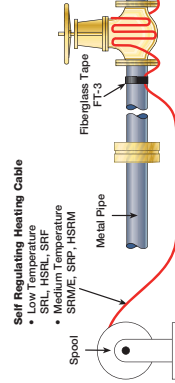
## Heating Cable/Sensor Location



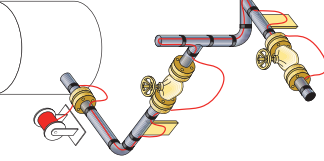
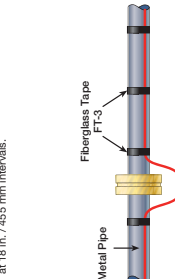
## Installation Tips

- Temporarily position cable on pipe and equipment to ensure proper distribution.
- Leave a loop of cable at heat sinks such as valves, pipe supports and flange sets. Use FT-3 fiberglass tape to secure cable to pipe at 18 in. / 455 mm (nom) intervals using recommended method.
- Always observe minimum bend radius.

**Step 1**  
Start tracing at the end of the pipe and work your way back to spool.



**Step 2**  
Leave a loop of cable at heat sinks such as valves, pipe supports and flange sets. Use FT-3 fiberglass tape to secure cable to pipe at 18 in. / 455 mm intervals.



# Chromalox®

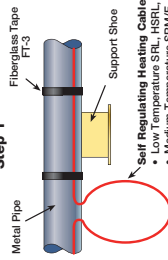
## PRECISION HEAT AND CONTROL

# Electric Heat Trace

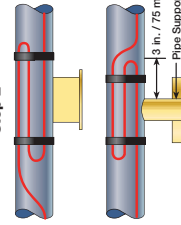
# Quick Install Guide

Quick Install Guide is a specification tool only. Always refer to proper installation instructions when installing heat trace cable.

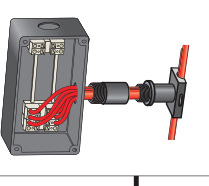
### Step 1



### Step 2



Above Insulation  
Cable End Seal  
(UES)



Multiple Entry  
Connection (UMC)

CAUTION  
Electrical Heat

Insulation

Fiberglass Tape  
FT-3

Pipe Strap

Self Regulating  
Heating Cable  
• Low Temperature  
SRL, HSRL, SRF  
• Medium Temperature  
SRM/E, SRP, HSRM

Weatherproof Jacket  
Thermal Insulation

Fiberglass Tape  
FT-3

Metallic Pipe

Below Insulation  
Cable End Seal  
(RTES)

Ask about Chromalox Class 1 Div. 1  
Cables & Accessories as well as a full  
line of High-Temperature Cables.

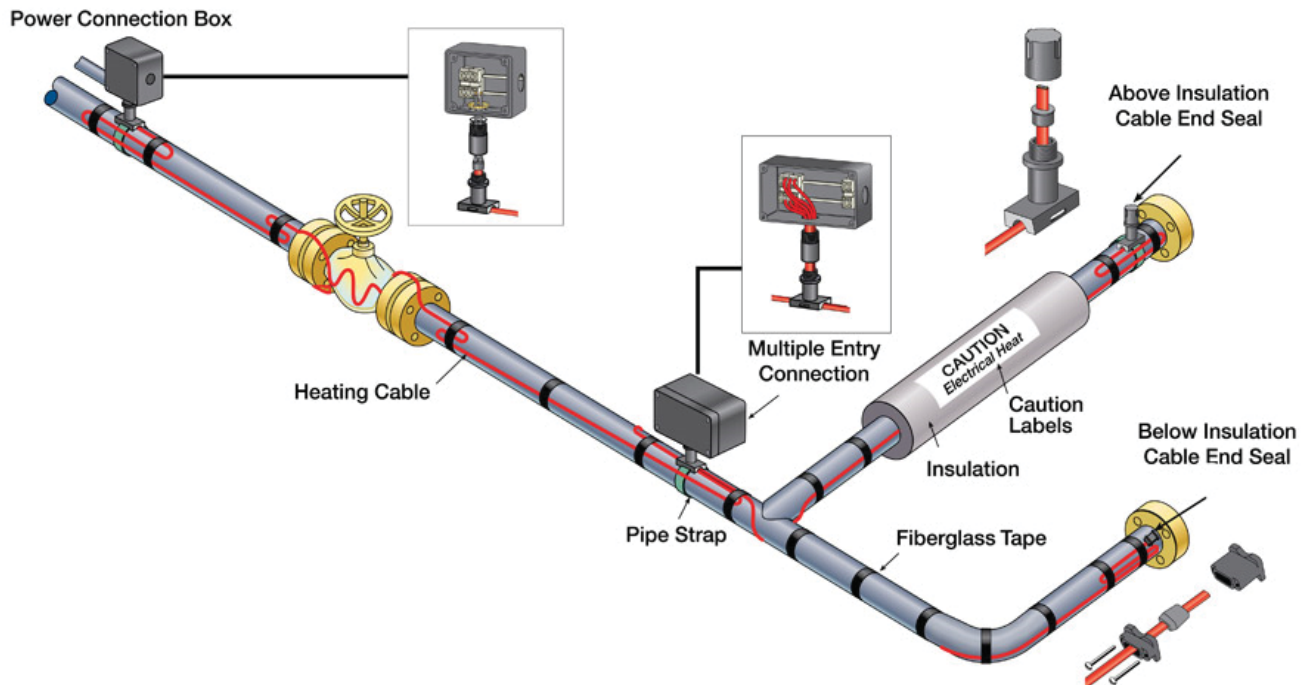
FOR TECHNICAL SUPPORT CALL 888-996-9258.

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## ELECTRIC HEAT TRACE SYSTEM



Chromalox Heat Trace Segment delivers Temperature Management Solutions for piping systems, valves, and tanks. Our Industrial Heat Trace and Systems Segment delivers for the right mix of application engineering, products and site services for their Process Temperature Maintenance, Freeze Protection, and Winterization needs and Process Heating Solutions for revenue-generating industrial processes.



Heat Trace Cable and Field Accessories

### Products

- ❖ Heat Trace Cables
- ❖ Heat Trace Controls
- ❖ Wireless Sensing Solutions
- ❖ Heat Trace Connection Kits
- ❖ Heat Trace Accessories
- ❖ Skin Effect Heating
- ❖ Tube Bundle and Instrument Enclosures
- ❖ XtremeDuty™

### Heat Trace Cable and Field Components



Heat Trace Cable



Power Connection Kit



Multiple Entry Power Connection Kit



End Seal Signal Light Kit and Under Insulation End Seal Kit



Digital Temperature Sensing and Thermostat



Wireless Temperature Sensing Solutions



## Heat Trace Cable

Chromalox heat trace cable includes cables for most process maintenance and pipe and vessel freeze protection, including:

Self-regulating cable for ordinary and hazardous environments to prevent pipe freezing and maintain process temperatures up to 302°F/150°C, with maximum exposure temperature up to 420°F/215°C.

Constant-wattage cable for freeze protection and process temperature maintenance up to 350°F/175°C, with maximum exposure temperature up to 392°F/200°C.

Mineral-insulated cable for the most demanding heat trace applications, with temperature maintenance up to 900°F/480°C and maximum exposure temperature to 1,100°F/593°C.

## Digital Temperature Sensor

The Chromalox DTS-HAZ digital temperature sensor is a microprocessor-based temperature control and monitoring unit for freeze protection or process maintenance of pipes or tanks protected by heat tracing products.

Housed in a NEMA 4X enclosure, it includes terminals for connecting instrument power, heating cable, and RTD (remote temperature detector). It can be used with constant-wattage, mineral-insulated, or self-regulating heating cable in ordinary or Div. 2 hazardous area locations.



## Additional Features

- Integral 100 ohm platinum RTD
- Integral pipe stand
- LED indication for setpoint, process temperature, high temperature alarm, low temperature alarm, RTD failure
- Soft start
- 30-amp solid state relay output
- On/off control, 1- to 10- degree selectable deadband
- Programmable deadband in one-degree increments
- Programmable high and low temperature alarms
- 100 to 240 VAC operation
- Common alarm contact for remote indication of alarm status

## Heat Trace Controls

Chromalox Heat Trace Panels are complete control solutions for the most demanding heat trace applications.

The IntelliTRACE® ITLS (line sensing) and ITAS (ambient sensing) are microprocessor-based control/monitoring provides temperature control, monitoring and power management in one package. Choose from 1 to 72 circuit systems for either ambient or line sensing applications in ordinary or hazardous locations.

The IntelliTRACE line offers advanced features such as sensor mapping, soft start, multiple sensor inputs per circuit and a large touch screen display. Choose the ISC Supervisory Controller to monitor and manage multiple IntelliTRACE systems.

They feature a 10-inch touch-screen computer operator interface that provides real-time display of alarms for high/low temperatures, high/low current, ground fault leakage, and sensor faults.

### Additional Features

- SCR control
- Soft start
- 40 amp/loop at 100 to 480 VAC
- 6 to 36 loops, expandable to 72 loops
- Full communications, wired and wireless
- Enhanced data logging
- NEMA 4 enclosure
- Integral circuit panel with breaker



IntelliTRACE® ITLS and ITAS Control Panel



IntelliTRACE Software



IntelliTRACE 10-inch touch-screen

### Skin-Effect Heat Trace System

Chromalox skin-effect trace heating is ideal for the freeze protection, temperature maintenance, and heat-up of materials transported by long-distance pipelines (up to 15 miles/25 kilometers). Pipes can be above or below ground, submerged, and across all types of terrains. Skin-effect trace heating employs a single circuit, eliminating the need for an extensive power distribution system. This makes it an extremely cost-effective alternative to conventional trace heating, particularly in remote areas where installation and maintenance can be costly.

### Applications

- The movement of materials in tank farms.
- The movement of materials in storage terminals.
- Piping between distant processing facilities in the chemical, petrochemical, oil, and natural/refined gas industries.

### Electrical Certification

Rated for voltages up to 3,000 V.

Approvals

- ATEX
- GOST





## APPLICATION AND INDUSTRIES

### Energy

Alternative Fuels Processing  
 Chemical Processing  
 Mining and Metals  
 Oil & Gas  
 Petrochemical  
 Power Generation

### Industrial

Bio-Pharmaceutical  
 Industrial Equipment  
 Lab and Analytical Equipment  
 Medical Equipment  
 Military and Defense  
 Rubber and Plastics  
 Transportation  
 Water & Waste Water

### Commercial

Building & Construction  
 Commercial Food Equipment  
 Commercial Marine  
 Refrigeration and Defrost

## PROCESS ELECTRIC HEATER AND SYSTEM

Process Heaters  
 Packaged Process Skids  
 Fuel Gas Conditioning Systems  
 Power Control Systems  
 Boilers & Steam Generators  
 Steam Super-heaters  
 Heat Transfer Systems  
 Liquid Vaporizers

Load banks and Air Handlers  
 Circulation & Immersion  
 Storage Tank Heaters  
 Explosion Proof & Corrosive Environment  
 Air Heaters  
 Industrial Air & Radiant Heaters  
 DirectConnect™  
 XtremeDuty™

## PROCESS ELECTRIC HEATER AND PACKAGED PROCESS SKIDS



Ex 'de' Process Electric Heater



Ex 'e' Process Electric Heater



Custom Packaged Process Skids



Fuel Gas Condition Skid



SCR Heater Control Panel



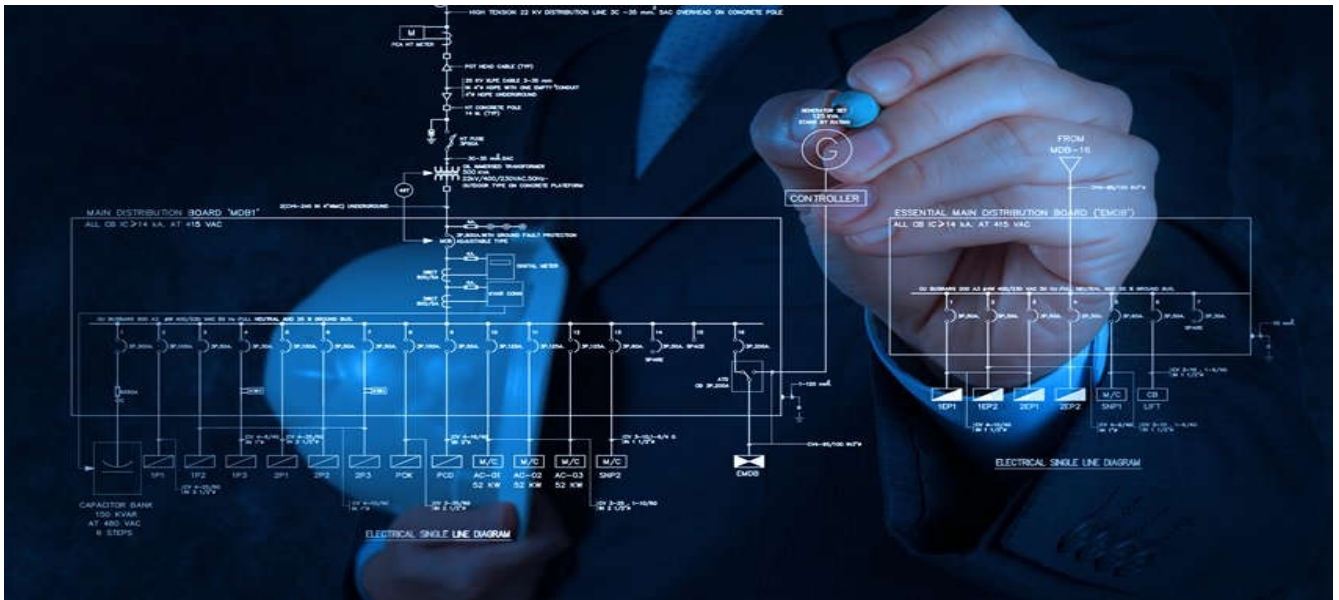
Ex'd' Heater Control Panel

# ELECTRIC HEATER TYPICAL SPECIFICATION SHEET

1	<b>Company:</b> MOTEC		<b>Your Reference:</b>	
2	<b>Project:</b> OFFSHORE		<b>Our Reference:</b>	
3	<b>Location:</b> VIETNAM		<b>Revision:</b>	
4	<b>Service of Unit:</b> CRUDE OIL HEATER		<b>Date:</b>	
5	<b>Item No.:</b> E2101		<b>Job No.:</b>	
6	<b>Size</b> 26"	<b>Type</b> Electric	<b>Hor</b> Connected in	1 Parallel 1 Series
7	<b>Surf Area/unit(eff.)</b> 93.88 m2	<b>Shells/unit</b> 1		
8	<b>PERFORMANCE OF ONE UNIT</b>			
9		<b>Shell Side</b>		<b>Elements</b>
10		<b>IN</b>	<b>OUT</b>	
11	<b>Fluid name</b>	Crude Oil		
12	<b>Fluid quantity, Total</b> kg/h	39,166		
13	<b>Vapor (In/Out)</b> kg/h			
14	<b>Liquid</b> kg/h	39,166	39,166	
15	<b>Noncondensable</b> kg/h			
16				
17	<b>Temperature (In/Out)</b> C	8	42	<b>Operating Temp:</b> 76 °C
18	<b>Dew / Bubble point</b> C			
19	<b>Density (Vap / Liq)</b> kg/m <sup>3</sup>	/ 817.2	/ 763.5	<b>Operating Heat Flux:</b> 1.50 W/cm <sup>2</sup>
20	<b>Viscosity (Vap / Liq)</b> cP	/ 3.22	/ 1.13	
21	<b>Molecular wt, Vap</b>			
22	<b>Molecular wt, NC</b>			
23	<b>Specific heat (Vap / Liq)</b> kcal/kg°C	/ 0.468	/ 0.532	
24	<b>Thermal conductivity (Vap / Liq)</b> kcal/h*m°C	/ 0.1	/ 0.089	
25	<b>Latent heat</b> kJ/kg			
26	<b>Pressure</b> kg/cm <sup>2</sup> g	23.453	23.373	
27	<b>Velocity</b> m/s			
28	<b>Pressure drop, allow./calc.</b> kg/cm <sup>2</sup>	0.51	0.081	
29	<b>Fouling resist. (min)</b> m <sup>2</sup> *K/kW			
30	<b>Heat exchanged</b> 1407.9 kW			
31	<b>Installed Power</b> 1689.5 kW	<b>Transfer rate, Service</b> 439.3 W/(m <sup>2</sup> *K)		
32	<b>CONSTRUCTION OF ONE SHELL</b>			
33		<b>Shell Side</b>		<b>Shell Side</b>
34	<b>Design/Test pressure</b> kg/cm <sup>2</sup> g	44.86 / Code	<b>Connections Size &amp; Rating</b>	<b>Inlet</b>
35	<b>Design temperature</b> C	/ 120		<b>Outlet</b>
36	<b>Number passes per shell</b>	1		<b>Intermediate</b>
37	<b>Corrosion allowance</b> mm	0		<b>Vent</b>
38	<b>Vessel Insulation</b>	By Others		<b>Drain</b>
39	<b>Tubesheet Insulation</b>	N/A		<b>Purge</b>
40	<b>Painting</b>	To Project Specification		<b>PSV</b>
41	<b>Element No. (Active)</b> 225 OD 12.8	<b>Thk avg</b> 0.7 mm	<b>Active Length</b> 5188 mm	<b>Pitch</b> 25 mm
42	<b>Element No. (Spare)</b> 23	<b>Element Type</b> Hairpin	<b>Material</b> Incoloy 800	
43	<b>Element Protection</b> 2 x K Type Thermocouple			
44	<b>Additional Protection</b> Not Required			
45	<b>Baffle Material</b> SS 316	<b>No.</b> 31	<b>Type</b> Segmental	<b>Cut(%d)</b> 45
46	<b>Shell</b> 26 " NB	<b>OD</b> 588 mm	<b>End Cap</b>	ASTM A234 WPB
47	<b>Shell Material &amp; Schedule</b> ASTM A106 Gr. B		<b>Studbolts / Nuts</b>	ASTM A193 B7 / 2H
48	<b>Tubesheet Material &amp; Rating</b> ASTM A105N 300#		<b>Gasket - Shell Side</b>	Spiral Wound
49	<b>Nozz. Flange Material &amp; Rating</b> ASTM A105N 300#		<b>Impingement Protection</b>	None
50	<b>Heater Classification</b> ATEX Eex'e' IIC T3	<b>Element-Tubesheet Joint</b> Bite Couplings		
51	<b>Instrument Box Classification</b> ATEX Eex'e' IIC T6	<b>Radiograph</b> 100% on Butts		
52	<b>Terminal Box Material</b> Stainless Steel	<b>IP Rating</b> 66	<b>Mag. Particle</b>	Attachments
53	<b>PWHT</b> To Code	<b>Ultrasonic Test</b> None		
54	<b>RhoV2-Inlet nozzle</b>	<b>Bundle entrance</b>	<b>Bundle exit</b>	kg/(ms <sup>2</sup> )
55	<b>Nozzle Loads</b> Max. Allowable Loads Advised Post Order	<b>Voltage</b> 400 / 3PH / 50Hz / Delta		
56	<b>Code requirements</b> ASME Code Sec VIII Div 1 + U Stamp	<b>TEMA class</b> R - refinery service		
57	<b>Weight/Shell</b>	<b>Filled with water</b> kg		
58	<b>Remarks</b> Anti- condensation heater installed			
59				
60				
61				
62				
63	Direk Rukrach			



# ELECTRIC POWER DISTRIBUTION AND CONTROL SYSTEM



We provide a comprehensive solution to your project including of consulting power, control solution, system manufacturing, engineering design and technical service including of load calculation, general arrangement drawing, single line diagram, block diagram, wiring schematic, termination drawing, programming configuration, project management, FATs, SATs, certification, as-built document and technical training, etc.. We offer a full range of application uses for safety area and hazardous/explosive area and comply with most international standard requirement IEC, ATEX/IECEx, NEC, NEMA (CSA, UL & FM), etc.

- ❖ HV/MV/LV Electric Switchgear
- ❖ Motor Control Center (MCC)
- ❖ Power Distribution Board
- ❖ Energy Automation Control
- ❖ Power Distribution Transformer
- ❖ AC and DC USP System and Battery
- ❖ Power Management System (PMS)
- ❖ Customized Sub-power Station



Power Transformer



LV Switchgear



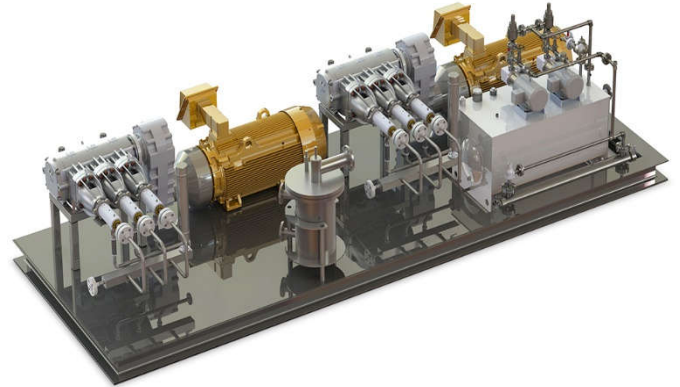
MV Switchgear



EX. LV Switchgear and MCC

## ENGINEERED SKID PACKAGES AND PROCESS EQUIPMENT

We provide the whole engineering with process modeling, simulation and equipment included with control system of flow distribution and handling package, process package, measurement skid, customized unit, etc. accompany the onsite technical service, operation training for oil and gas offshore-onshore project and others industry.



## ELECTRICAL AND INSTRUMENTATION BULK MATERIAL

We are specialized and have many year experiences in providing the electrical and instrumentation bulk materials to Oil and Gas offshore and onshore project. We are closely working with numerous famous manufacturer and can fully offer items and many optional to meet your commercial budget, technical specification and delivery time.

- Cable tray and ladder
- All type of Ex. protection lighting fixture
- Electrical and instrument junction box
- Local control station, power switch, plug and socket
- Electrical, instrument and communication cable
- Cable gland, cable cleats, multi cable transit (MCT)
- Instrument tubing and fitting, instrument valves, tubing clamp
- Lightning protection and grounding material
- E&I miscellaneous: Cable lug, cable maker, wire maker, cable termination, heat-shrinkable, cable tie, etc., ...



# MOGENE TECHNIQUES AND COMMERCE CO., LTD

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