



ENVIRONMENTAL MONITORING & PROCESS ANALYSIS

Advanced integrated solutions
for the marine industry & port authorities



Meet your objectives implementing environment safety requirements on vessels, with high-tech solutions from the professionals

The legislation set out by the International Maritime Organization (IMO) came into force in January 2015 for SOx control and in 2016 for NOx. In order to analyze equipment efficiency, ship yards, ship owners and marine scrubber manufacturers must equip vessels with an SO₂/NO_x/CO₂ continuous exhaust gas monitoring system and a PAH/turbidity/temperature monitoring system in the wash water discharge system.

Our MODCON SYSTEMS-Thomas Safety partnership merges extensive professional experience, providing process analysis solutions and turnkey services for the marine industry. Consulting, planning, and delivery of customized service and equipment packages are designed to meet each customer's health, safety, security, and environment (HSSE) control and compliance needs.

Together we are key players and recognized leaders in:

- IMO-regulated emissions monitoring for vessels
- Marine fixed/portable gas detectors, controlling systems and calibration services
- Intrinsic safety and hazardous area control solutions
- Online analyzers and process control instrumentation
- Fuel oil viscosity monitoring

MODCON's complete solution for environmental monitoring and process analysis for the marine industry and port authorities is provided exclusively and globally by Thomas Safety Ltd. and fully meets DNV-GL requirements in strict accordance with Annex VI of MARPOL73/78.

Our solution includes the following equipment, easily integrated with scrubber and other systems:

- MOD-1006 continuous exhaust gas monitoring system, comprising infra-red analyzers and advanced sample conditioning assembly to produce accurate and reliable measurement of CO₂, NO_x and SO₂
- MOD-C4000 PAH/turbidity/pH/temperature monitoring system in wash water discharge system
- Fixed and portable gas detectors for onboard safety operations
- Additional environmental and safety solutions designed for easy installation, operation and maintenance



Marine Emissions Monitoring System MOD-1006

Engine air pollutions control

The MOD-1006 Marine Emissions Monitoring System is a complete measuring system with analyzers, sample conditioning and data acquisition with PC incorporated within the single cabinet. The system comprises infra-red analyzers and advanced sample conditioning assembly to produce accurate and reliable measurement for CO₂, NO_x and SO₂.

- High-performance continuous emissions monitoring up to six parameters, including regulated Annex VI MARPOL 73/78: CO₂, NO_x, SO₂, O₂
- Special range of technical applications for power generators for all types of vessels
- Compact size minimizes installation space
- Integrated gas sample conditioning device removes particulates and water
- No loss of water-soluble components
- Rugged design for trouble-free field installation
- Minimal routine maintenance
- Auto-calibration options
- Low cost of ownership

The system consists of the following modules:

- Sample probe with filter heated to 180°C and automatic blow-back
- Sample line made of Teflon and heated to 180°C
- Sample gas cooler with automatic condensate drainage
- Pure dryer for low dew point sample drying (-30°C)
- Electrical pump with heated head
- Flow controlling and calibration facilities
- Gas analyzer for measurement of O₂, SO₂, CO₂ and NO_x
- NO_x converter
- IP-rated cabinet
- Air-conditioning unit for cabinet

External automatic calibration, allowing adjustment or checking of zero and span, is available as part of the complete system. Isolated analogue outputs, alarm contacts and RS232 are included as standard. Easy-to-use HMI software with PC workstation also included, providing data acquisition, logging, alarms and report generation.

The cabinet-protected measuring system enables outdoor installation in rough ambient conditions. The monitoring equipment is in complete compliance with Annex VI of MARPOL73/78.



Marine Waters Monitoring System MOD-C4000 Scrubber wash water control

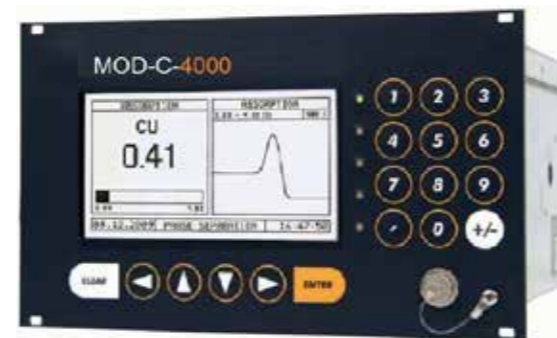
The MOD-C4000 scrubber wash water solution includes monitoring systems at both discharge outlets after scrubber.

Two special sensor modules can be verified and/or calibrated on-site using certified standards.

The complete two-sensor system has achieved marine type approval for monitoring of all parameters – PAH, turbidity, pH, temperature.

Two Digital Converters MOD-C4000

- Graphic display
- Fully configurable
- Up to 4 detector inputs, up to 2 lamp outputs
- Up to 4 mA
- Output alarm
- Remote relays
- Product selection and zero shunts for EX sensors
- Profibus PA



Technical Specifications

- Temperatures up to 240°C
- Pressure up to 325 bar (4713 psi)
- Line size ¼” to 6”
- FM and ATEX approved for hazardous locations
- Optical path length (OPL) from 1 to 1000 mm (sensor dependent)
- Highly resistant materials to withstand the harshest process environments
- Reference filter for in-process “calibration” checks (NIST-traceable)
- Universal C4000 converter for all MOD 4000 sensors (up to two sensors with one converter)
- Configurable software allows easy correlation to almost any unit of measure (ppm, %, mg/L, APHA/HAZEN/Pt-Co, Say bolt, Gardner®, ASTM, etc.)
- PROFIBUS® PA available
- Certification ISO 9001:2008, ATEX, FM, PED, CE, HPO



MODCON ANACON

Analyzer Management & Control System For marine emissions monitoring

A wide range of process analyzers are being used in the modern marine industry, but different communication standards and the operation philosophy of these analyzers make operation complicated. Successful process analyzers include remote monitoring, validation and system maintenance with a single tool.



ANACON is a full-distributed analyzer management and control system that has been developed to provide more efficient tools for maintenance, calibration and validation of analyzer systems. It is designed for connection with remote systems using communication links such as TCP/IP or RS-485. ANACON is compatible with the Microsoft Windows platform.

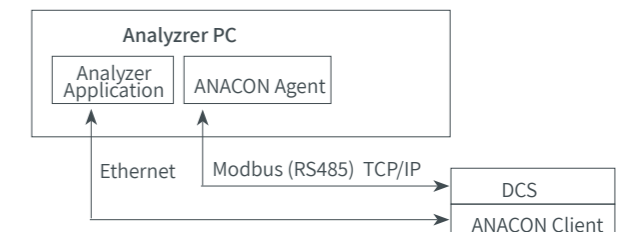
ANACON monitors the operating state of installed equipment and validates a wide range of analyzers and instruments. Once an analyzer or instrument is validated, ANACON evaluates and registers the results using statistical algorithms.

Graphic Display and Maintenance Tools

- Graphic display tool provides online information from multiple analyzers and access to historical data, which is archived automatically upon configuration.
- PC-based maintenance tool enables remote access to the appropriate analyzer’s GUI from any location for remote maintenance and calibration.

ANACON Benefits

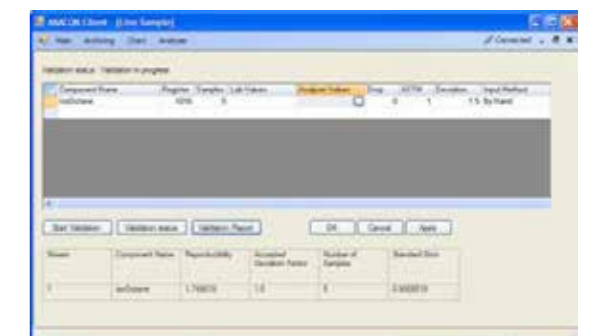
- Monitor and control a wide range of analyzers
- Graphic data display from multiple analyzers
- Historical data on analyzer performance
- Manage validation procedures according to ASTM D3764
- Self-calibration free tune mechanism
- Control active streams
- Alarms management
- Remote maintenance and multilingual support



Analyzer Validation

ANACON software supports two validation methods according to ASTM D3764:

- Reference Sample Method – Mostly used for laboratory analyzer validation, whereby previous laboratory measured sample is introduced into the analyzer.
- Line Sample Method – Historically obtained analyzer results are compared with laboratory analysis using the appropriate ASTM or other test method.



MODCON Gas Detectors

For extreme environments on vessels

Gas alarm MOD-7100 series is a new generation of infrared, catalytic, and electrochemical sensors specially designed for installation in hazardous and extreme environments on vessels. High accuracy and ease of use are enabled with advanced technology, compact design, wide operating voltage range and reliability.

Key Applications

- Air quality in dangerous spaces and zones on vessels
- Petroleum refining
- Chemical industry
- Gas industry
- Underground facilities
- Pharmaceuticals
- Air quality in the laboratory and enclosed spaces



Key Features

- Compact and robust design
- User-friendly operator interface with a hand magnet
- Intelligent sensors are interchangeable, based on different technologies
- Options: display brightness, contact outputs, stainless steel and hand-configurator

Optional Features

- Light signaling
- Audible alarm
- Infrared communication channel
- Low temperature operation
- Communication protocols HART, CAN, RS-485
- Variety of control modules
- 2, 3 or 4-wire connection



Sensor Types Available

- Infrared technologies
- Catalytic technologies
- Electrochemical technologies
- Metal dioxide technologies
- Photo ionization technologies



SUPPORT FEATURE	BASIC	ADVANCED	PREMIUM
24/7 global telephone support Providing access to our global technical support call center 24 hours a day, seven days a week. Incoming calls will be processed and responded to in a timely manner by authorized operators and then forwarded to our engineers and technicians, offering a comprehensive level of technical expertise.	☑	☑	☑
Email support via a global tracking system Email support is the most effective method of assistance for troubleshooting and correcting analyzer system problems, offering rapid issue resolution. Response time during business hours will be within two (2) hours of initiation of an incident report by system user.	☑	☑	☑
Warranty and returns MODCON products are warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, products that are defective will be repaired or replaced in accordance with terms and conditions of the purchase order (only in port harbors).	☑	☑	☑
Remote technical support services Technical support via internet and GPRS is the best method of assistance for troubleshooting and correcting control system problems.	—	☑	☑
Web knowledge base for registered users Access to a web knowledge base that gives registered users online access to a repository of technical data, including a topical database of operation, problem solving and troubleshooting for our systems.	☑	☑	☑
Hardware upgrades Special conditions for hardware upgrades and associated services.	—	☑	☑
Unscheduled calls and emergency on-site services Emergency calls will be responded to within 24 hours and charged at a standard service rate excluding travel and per diem expenses.	—	☑	☑
Software upgrades An active maintenance contract providing upgrades to the latest versions of system software.	—	☑	☑
Scheduled on-site annual visits An expert will visit the customer plant site once a year, for a duration not exceeding three (3) days to perform a comprehensive system check and review system functions with the operations and maintenance staff.			
Preventive on-site maintenance Preventive analyzer system maintenance is provided on-site.			

NOTE: This information is intended for general review. Conditions are discussed and finalized with each individual customer.

Global service from offices in
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