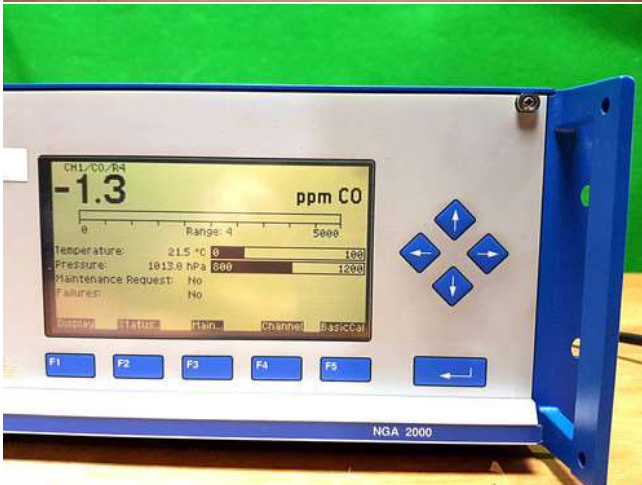


GAS ANALYZER EQUIPMENT

1. Emerson Rosemount NGA 2000 Series

Description: use for real-time measurement of gases such as methane (CH_4), carbon dioxide (CO_2), and hydrogen sulfide



2. ABB Advance Optima Series

Description: Use for precise measurement of gases such as oxygen (O_2), carbon dioxide (CO_2), and hydrocarbons



3.

4. **Thermo Fisher Scientific Model 48i (CO Analyzers)**

Description: use for continuous monitoring of CO emissions in combustion processes, flue gases, and ambient air.



5. Siemens ULTRAMAT 23 (Gas Analyzer)

Description: Use for measuring gases like carbon dioxide (CO_2), oxygen (O_2), and methane (CH_4).



6. Teledyne Analytical Instruments 7500ZA

Description: Use to measure oxygen (O₂) and combustibles in a wide range of applications, including flare gas monitoring, emissions analysis, and safety monitoring.



7. Horiba PG-250 (Portable Gas Analyzer)

Description: Use to provide accurate, real-time measurements of gases such as oxygen (O_2), carbon monoxide (CO), carbon dioxide (CO_2), and hydrocarbons.



8. Honeywell GasLab Q2

Description: it is use to ensure worker safety and regulatory compliance. It can simultaneously detect gases like oxygen (O_2), carbon monoxide (CO), hydrogen sulfide (H_2S), and carbon dioxide (CO_2), making it essential for monitoring hazardous environments.



9. Servomex 2500 Series

Description: Us for process control, safety monitoring, and emission management.



10. Gas Chromatographs:

Description : Use For separating and analyzing complex gas mixtures.



11. **Infrared Gas Analyzers:**

Description: Use For real-time monitoring of specific gases like methane or CO2.



IR202-A



IR202-B

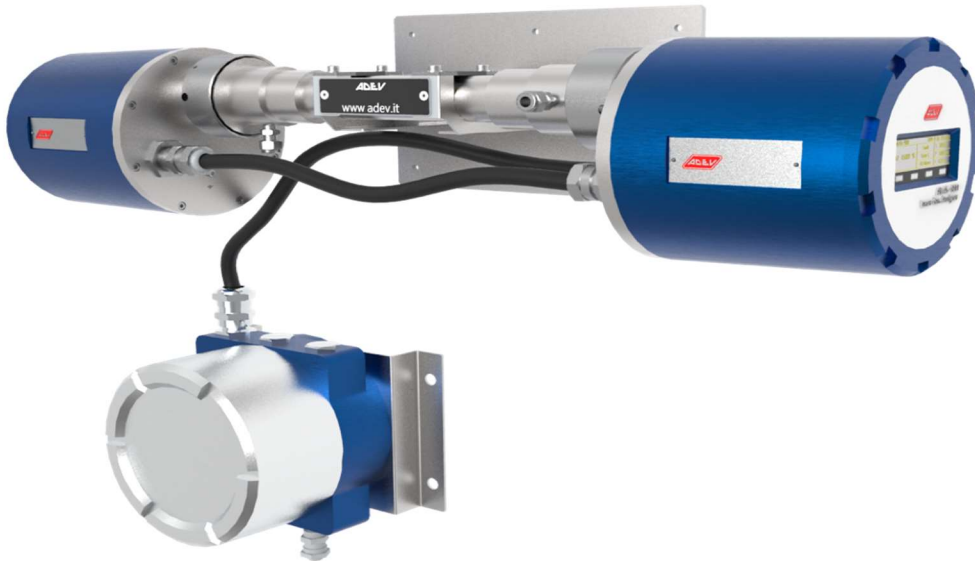
12. Mass Spectrometers:

Description : Use in High-precision gas composition analysis.



13. Tunable Diode laser absorption spectroscopy:

Description: Use to measure specific gas concentrations



14. Electrochemical Gas Analyzer:

Description : Use to Detects gas concentrations via chemical reactions at an electrode



15. Flame Ionization Detector Gas Analyzer:

Description : Use in measuring hydrocarbons by ionizing them in a hydrogen flame



16 Photoionization Detectors (PID):

Description: Ionize gases using ultraviolet (UV) light to measure volatile organic compounds (VOCs).



17. Thermal Conductivity Analyzers:

Description: Measure the thermal conductivity of a gas compared to a reference gas



Flow Meters

1. Emerson Micro Motion Coriolis Flow Meters

Description: Use for accurate measurement of mass flow, density, and temperature.



2. Siemens SITRANS FS230 (Ultrasonic Flow Meter)

Description: it provides precise readings of liquid and gas flow without disrupting the pipeline.



3. ABB VortexMaster FSV430

Description : It provides accurate volumetric and mass flow measurements with built-in temperature and pressure compensation.



4. KROHNE OPTIMASS Series (Coriolis Flow Meters)

Description: It use in measuring mass flow, density, and temperature with exceptional accuracy, making them ideal for custody transfer, blending, and multiphase flow measurement.



5. Endress+Hauser Proline Promasselctro magnetic Flowmeter 300

Description: It offers highly accurate flow measurement and integrated diagnostics for improved operational efficiency.



6. Yokogawa ROTAMASS Series

Description: It offering precise mass flow, density, and temperature measurement.



7. Fox Thermal FT Series

Description: monitoring natural gas, flare gas, and other hydrocarbon gases, precise readings of mass flow without requiring temperature or pressure compensation.



8 Panametrics PT900 (Portable Ultrasonic Flow Meter)

Description: For easy installation and minimizes downtime, for temporary flow monitoring, troubleshooting, and spot-checking pipelines.



9 Fuji electric ports flow- c

Description: easy: It help in easy installation, making it ideal for temporary monitoring, pipeline inspections, and flow validation in processes



10 sage prime thermal flow

Description: It offers precise measurement of gas flow, including natural gas and flare gas, without the need for pressure or temperature compensation.



11 yokogawa Dy vortex flow meter

Description: measuring steam, gas, and liquid flow in challenging oil and gas environment



12 siemen MAG 8000

Description: It used for measuring conductive liquids like water or slurries used in water injection and produced water processes

SIEMENS



13 Emerson Rosemount 3051s
Description: Use in measuring flow rates of gases, liquids, and steam.



14 ABB DP flow meter

Description: It measure flow in oil and gas pipelines, including gas, liquids, and steam.



15 Cameron NUFLO Series

Description: accuracy in measuring hydrocarbons, fuel, and gas flow.



Liquid Analyzers

1. Hach DR3900 Spectrophotometer

Description: Used for water and wastewater analysis in oil and gas facilities.



2. Emerson Rosemount 5081 (pH/Conductivity Analyzer)

Description: Monitors pH and conductivity in process streams, cooling water, and produced water.



3. **Yokogawa FLXA21** (Modular Liquid Analyzer)

Description: Measures pH, ORP, conductivity, and dissolved oxygen in liquid streams



4. **ABB Aztec 600 Series** (Turbidity and Colorimeter)

Description: Measures turbidity and color in produced water, cooling systems, and effluents.



5. **Endress+Hauser Liquiline CM44x**

Description: Multi-parameter analyzer for pH, conductivity, dissolved oxygen, and more



6. Thermo Fisher Orion 2111LL (Silica Analyzer)

Description: Measures silica levels in boiler feedwater and steam condensate



7. Swan AMI LineTOC (Total Organic Carbon Analyzer)

Description: Monitors total organic carbon in water streams



8. Anton Paar SVM Series (Viscometers)

Description: Measures viscosity of crude oil, lubricants, and process fluids



Particle Size Analyzers

1. Malvern Mastersizer 3000

Description: it is used to analyze drilling fluids, proppants, and catalysts to optimize their performance and ensure regulatory compliance.



2. Beckman Coulter LS 13 320 XR

Description: for characterizing particulate contaminants, catalysts, and fine particles in fluids and slurries.



3. Horiba LA-960V2

Description: it is applied to study drilling muds, emulsions, and other formulations.



4. Microtrac SYNC (Particle Size and Shape Analyzer)

Description: for analyzing proppants, ensuring uniformity, and optimizing fluid dynamics.



5. Cilas 1190 Particle Size Analyzer

Description: To study particle size distributions in catalysts, drilling muds, and other critical materials.



6. Anton Paar PSA Series

Description: they analyze solid and liquid suspensions such as drilling fluids and dispersions.



7. Sympatec HELOS (Laser Diffraction Particle Size Analyzer)

Description: characterize proppants, powders, and emulsions, ensuring efficient performance and quality control.



8. Fritsch ANALYSE

Description: optimize formulations, monitor sedimentation, and enhance process efficiencies.



Spectrometers

1. Thermo Fisher Scientific iCAP PRO Series (ICP-OES Spectrometer)

Description: for trace metal analysis in crude oil, lubricants, and drilling fluids.



2. PerkinElmer Avio 500 (ICP Spectrometer)

Description: monitor trace metals, contaminants, and additives in petroleum products.



3. Agilent 5800 Series ICP-OES

Description: analyzing trace elements in fuels, lubricants, and refinery products.



4. **Bruker S8 TIGER** (XRF Spectrometer)

Description: analyze sulfur content in fuels, metals in catalysts, and trace elements in drilling muds and other materials.



5. **Horiba XGT-9000 Series** (Micro-XRF Spectrometer)

Description: analyze metallic components, contaminants, and coatings in pipelines, catalysts, and other critical components.



6. **Rigaku Supermini200** (Benchtop WDXRF Spectrometer)

Description: used to measure sulfur, chlorine, and other elements in fuels, lubricants, and production chemicals.



7. **Malvern Panalytical Zetium** (XRF Spectrometer)

Description: analyzing sulfur, heavy metals, and other trace elements in fuels, oils, and additives.



8. **Shimadzu AA-7000 Series** (Atomic Absorption Spectrometer)

Description: measuring metals like nickel, vanadium, and iron in crude oil, refinery products, and wastewater.



Vibration and Acoustic Sensors

1. GE Bently Nevada 3300 Series (Vibration Monitoring Systems)

Description: real-time monitoring and protection for rotating equipment



2. SKF Microlog CMXA 80

Description: applications requiring detailed vibration analysis and predictive maintenance



3. Siemens SIPLUS CMS1200 (Vibration Monitoring Module)

Description: Siemens automation systems, suitable for monitoring equipment



4. Honeywell One Wireless XYR6000 (Wireless Vibration Sensor)

Description: A wireless vibration sensor designed for remote and hazardous areas, providing efficient monitoring



5. Fluke 3563 FC (Vibration Sensor)

Description: A cloud-enabled vibration sensor combining vibration and temperature monitoring, perfect for predictive maintenance



6. PCB Piezotronics ICP® Sensors

Description: for machinery health monitoring and diagnostics



7. Bruel & Kjaer Vibro VIBROPORT 80

description: for critical rotating equipment



8. **Emerson AMS 2140** (Vibration Analyzer).

Description: -performance vibration analyzer for advanced diagnostics and reliability programs



Chromatographs

1. **Agilent 8890 GC** (Gas Chromatograph)

Description: precise analysis of hydrocarbons and other gases in refining and petrochemical applications



2. **Shimadzu GC-2030** (Nexis Series Gas Chromatograph)

Description: features for detailed analysis of natural gas, crude oil, and petrochemical samples



3. **Thermo Scientific TRACE 1310** (Gas Chromatograph)

Description: for hydrocarbon analysis, ensuring efficiency in oil and gas processes



4. **PerkinElmer Clarus 590**

Description: its reliability in analyzing complex hydrocarbons and petrochemical mixtures



5. Siemens MAXUM Edition II (Process Gas Chromatograph)

Description: for continuous, real-time monitoring in oil and gas plants, ensuring safety and compliance



6. Emerson Rosemount 700XA (Gas Chromatograph)

Description: for natural gas quality and hydrocarbon analysis



7. **LECO Pegasus BT (GC-MS System)**

Description: for detailed molecular analysis,



8. **SRI Instruments Model 8610C (Compact Gas Chromatograph)**

Description: perfect for analyzing natural gas and petrochemical product



Real-Time Process Analyzers

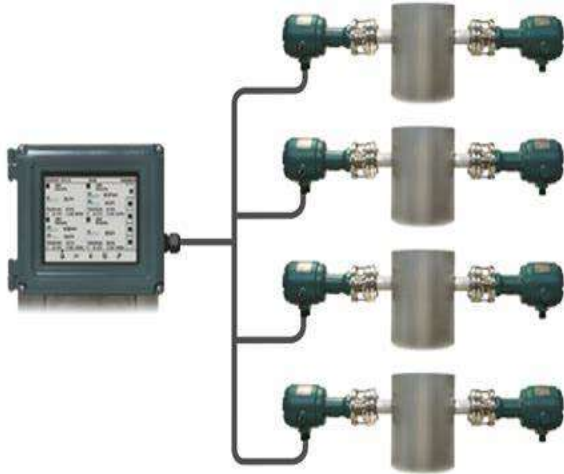
1. ABB MB3000 (FTIR Analyzer)

Description: for hydrocarbon and gas composition analysis



2. Yokogawa TDL8000 (Laser Gas Analyzer)

Description: offering real-time gas measurement, ensuring safety and efficiency



3. Emerson Rosemount Analytical Gas Analyzer 1500XA

Description: for accurate natural gas and hydrocarbon stream analysis in upstream and midstream operations



4. Endress+Hauser OUSAF22 (NIR Absorption Analyzer)

Description: for inline measurement of hydrocarbons and other compounds



5. **PerkinElmer Spectrum Two** (NIR Process Analyzer)

Description: for rapid and precise hydrocarbon analysis



6. **Thermo Scientific Sentinel PRO** (Real-Time Oil Analysis)

Description: real-time monitoring of oil properties to optimize production and equipment maintenance



INDUSTRIAL CHEMICALS AND BASIC USES

Here is a list of common industrial chemicals, categorized based on their primary uses:

Basic Chemicals

1. **Sulfuric Acid** – Used in fertilizers, batteries, and chemical synthesis.
2. **Hydrochloric Acid** – Used in steel pickling, cleaning, and chemical production.
3. **Nitric Acid** – Used in fertilizer and explosives manufacturing.
4. **Ammonia** – Used in fertilizers, refrigeration, and as a building block for other chemicals.
5. **Chlorine** – Used in water purification, plastics, and disinfectants.

Solvents

6. **Acetone** – Used as a solvent in paints, coatings, and cleaning agents.
7. **Methanol** – Used as a solvent, antifreeze, and in biodiesel production.

8. **Ethanol** – Used in alcoholic beverages, disinfectants, and as a solvent.
9. **Toluene** – Used in paints, adhesives, and as an industrial feedstock.
10. **Xylene** – Used in paints, varnishes, and as a solvent.

Petrochemicals and Derivatives

11. **Ethylene** – Used in plastics, antifreeze, and synthetic fibers.
12. **Propylene** – Used in polypropylene production and as a chemical intermediate.
13. **Benzene** – Used in plastics, resins, and synthetic fibers.
14. **Styrene** – Used in the production of polystyrene plastics and resins.

Polymers and Resins

15. **Polyethylene** – Used in packaging, containers, and plastic films.
16. **Polypropylene** – Used in textiles, packaging, and automotive parts.
17. **Epoxy Resin** – Used in adhesives, coatings, and composites.

Inorganic Compounds

18. **Sodium Hydroxide (Caustic Soda)** – Used in soap, paper, and chemical manufacturing.
19. **Calcium Carbonate** – Used in cement, plastics, and as a filler in various products.
20. **Titanium Dioxide** – Used in paints, coatings, and as a whitening agent.

Specialty Chemicals

21. **Phosphoric Acid** – Used in fertilizers and food additives.
22. **Formaldehyde** – Used in resins, plastics, and disinfectants.
23. **Hydrogen Peroxide** – Used in bleaching, disinfecting, and chemical synthesis.
24. **Sodium Hypochlorite** – Used as a bleaching and disinfecting agent.

Gases

25. **Oxygen** – Used in steelmaking, medical applications, and welding.
26. **Nitrogen** – Used in food preservation and as an inert gas.
27. **Carbon Dioxide** – Used in carbonation, refrigeration, and as a feedstock.

Other Common Chemicals

28. **Glycerol (Glycerin)** – Used in cosmetics, food, and pharmaceuticals.
29. **Silicones** – Used in lubricants, sealants, and medical applications.
30. **Isopropyl Alcohol** – Used as a disinfectant and solvent

OIL SPILLAGE CONTAMINATION EQUIPMENT

- **Dispersant**

1 Corexit 9500A

2 Sea brat4

3 Dasic slickgone NS

- **Coagulats**

1 oxycoag

2 stop oil

- **Emulsifier**

1 solvag emulsifier

2 Biosolve

- **BIO-REMEDIATION**

Agents for biodegradation enhance oil spill Eater II

Eco fix

Bioclean

- **SOLIDIFIERS**

Oil drill

Gelling agent

Hydrocarbons gel solidifies

Oil spill solidifies

- **OIL SPILL NEUTRALIZERS**

OSN

- **SURFACTANT**

Triton X-100

Span 80

- **FLOCKTANTS**

Megan flocktant

Al ogun

- **OIL WATER SEPARATOR**

Chemical agents

INDUSTRIAL VALVES

1 GLOBES VALVE

2 PISTONS VALVES

3 GATES VALVES

4 BUTTERFLY VALVES

5 BALL VALVES

6 PIRCH VALVES

INDUSTRIAL PIPE

PLASTIC PIPE

METAL PIPE

INDUSTRIAL LIGHTING SYSTEM

INDUSTRIAL VENTILATION SYSTEM

INDUSTRIAL SAFETY PROTECTIVE EQUIPMENT

1. COVERALL



2. HERD HATS



3. BUMPCAPS



4. SAFETY GOGGLES



5. FACE SHIELDS



6. EARPLUGS



7. EARMUFFS



8. **GLOVES** (chemical-resistant, cut-resistant, thermal-resistant,



9. **STEEL TOE BOOTS**



10. SLIP- RESISTANT SHOES



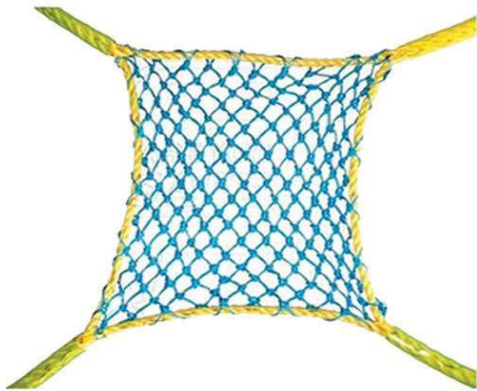
10. HARNESS



12. LANYARDS



13. SAFETY NETS



14. FLAME- RESISTANT CLOTHING



15. HIGH - VISIBILITY CLOTHING



CORROSION CONTROL EQUIPMENT

1. Impressed Current Cathodic Protection (ICCP) Systems

Description: To protect critical infrastructure such as pipelines, offshore platforms, and storage tanks.



2. Spray Systems

Description: for precise application of liquids, such as corrosion inhibitors, coatings, or cleaning agents.



3. Corrosion Probes and Coupons:

Description: Probes provide real-time data, while coupons are retrieved and analyzed for material loss over time, helping assess corrosion mitigation strategies



4. Ultrasonic Thickness Gauges:

Description: used to inspect pipelines, tanks, and other components, they help detect corrosion or wear without dismantling equipment.



5. Electrical Resistance (ER) Probes:

Description: provide accurate data for corrosion monitoring in harsh environments, including pipelines and process vessels.



6. Chemical Injection Systems:

Description: They ensure the safe and efficient flow of oil and gas while protecting equipment from damage.



7. Water Treatment Systems:

Description: Used to purify water for processes like steam generation or injection in enhanced oil recovery.



8. Dehumidifiers

Description: to prevent equipment corrosion, maintain structural integrity, and ensure worker safety.



9. Climate Control Systems:

Description: to protect equipment, ensure operational stability, and enhance worker comfort in extreme conditions.



10. Galvanized Coatings:

Description: in pipelines, storage tanks, and offshore platforms to extend equipment lifespan in corrosive environments.



11. Anodized Layers:

Description: used for equipment exposed to harsh environmental conditions

12. Sandblasters:

Description: uses high-pressure abrasive particles to clean surfaces of rust, paint, or debris, preparing them for maintenance or coating application

13. Grit Blasters:

Description: ensuring better adherence of coatings or treatments.

14. Alloy Manufacturing Tools:

Description: to fabricate and process metal alloys with enhanced strength and corrosion resistance.