



Process Analyzers, Integration & Services





anyProcess
anyAnalyzer
anyWhere

Experience

The delivery of your analytical system is only one step in our commitment to you for advanced analytical solutions. Yokogawa supplies engineering FEED studies, a strong sales delivery infrastructure, process applications, engineering design and integration, safe and professional field installations, startup and commissioning services, as well as training on the proper operation and maintenance of your analyzers. We have the experience and resources to work with you during all phases of your project. In addition, service and parts can extend past commissioning with the establishment of a service contract. It doesn't matter who manufactured the analyzer, if we engineered it for your project, we will support it with service and training. As part of the Yokogawa global service team, we can work with you regardless of where the plant site is located.

Our technicians have strong and diverse backgrounds in all analytical processes. From a simple paramagnetic or electrochemical oxygen analyzer or NDIR analyzers mounted on a rack, to a complete analytical shelter filled with process gas chromatographs (FID, TCD, PID, FPD, ECD, etc) to mass spectrometers (90 degree, quadrupole - faraday or ion multiplier, time of flight, etc.), total sulfur or BTU analyzer, we have the skill set to be the single source for all of your analytical needs. Whatever the instrument and scope, we have the manpower and flexibility to tailor an analytical solution to meet your specific needs and budget.

Field Audits

Site evaluations typically include:

- Meeting to review existing installation details and define future goals
- Inspecting wiring, tubing, utility gases, instrument air, and connections per project drawings
- Confirming correct locations for installation
- Reviewing purge flows for each application where required
- Confirming operation and communication of existing units
- Understanding desired IO requirements for the control system
- Evaluating current sampling systems
- Reviewing analyzer and sample histories, including chromatograms and validations
- Confirming normal operating status of the existing systems
- Confirm compliance of local or regional electrical, structural, and pressure vessel codes

The delivery of your analytical system is only one step in our commitment to you





Applications

Our GC and TDLS lab applications are second to none in the analytical instrument industry and are designed to give trouble free service for years to come. Whether you need BTU, mole weight, density, or other calculations, we can design a solution for you.

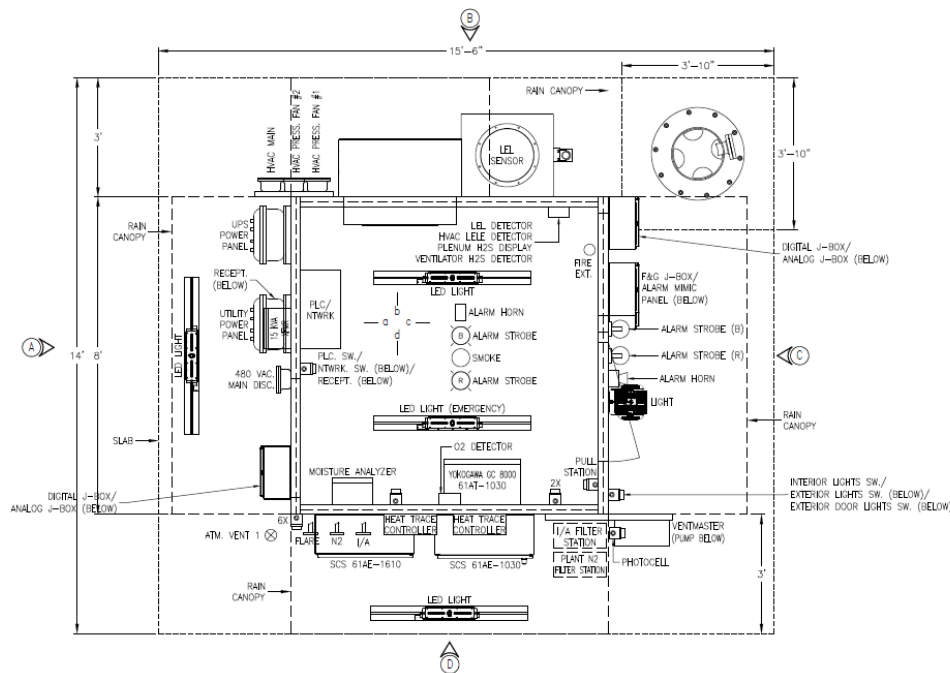
Engineering and Design

At our Coldspring, Sugar Land, and Newnan facilities, we can engineer any analytical solution that you need from small racks to dozens of analytical shelters. Whether it is a small project or a multi-million dollar installation, we can engineer it and then fabricate it for shipment to your facility. Just some of the calculations we do in the engineering of your project are:

- Sample latency
- Flow and pressure drop
- Orifice restrictions – carrier and cal gases
- Utility gas consumption
- Heater sizing
- Power distribution load balancing
- Sample pump eccentricity
- Wind loading

- PSV/PRV calculations
- Ventilation
- Sample dewpoint and bubble point
- Probe wake frequency

Our engineering solutions make sure your analytical installation is both safe and reliable.



Unparalleled Experience

Longest Operating Analytical System Integrator in the World

- 300+ combined man-years of analytical system engineering and project management experience currently on staff
- 450+ combined man-years of analytical system integration craftsmen
 - PMP Certified Project Managers
 - Certified PROFESSIONAL ENGINEER (Electrical) having experience in large and small power distribution design
 - Analyzer / Instrument / Tubing NCCER Craftsmen
 - Electrical Integration NCCER Craftsmen
 - Experienced in NEC, IEC, and CEC installation requirements
 - 4 State Licensed Electricians
 - 1 Master Electrician

PMP® Certified



We have the skill set to be your single source for all your analytical needs





Scalable Solutions

Expert execution of both large program projects as well as small end-user upgrades

Largest Project to Date: SADARA >\$100M

- 68 Shelters
- 100 Field Cabinets
- 150 Field Racks
- >300 Process Analyzers
- Single program project though 12 EPCs

Other Key Projects:

- BASF – Freeport, Texas
- Freeport LNG - Texas
- Shintech – Louisiana
- Formosa Plastics – Texas
- North West Redwater Refinery, Canada

Field Installation and Supervision

Another step for any successful process analyzer or field instrument installation is making sure the systems are properly installed in the plant. For customers needing assistance with this critical phase of the project, Yokogawa can provide experienced field supervision of the installation phase of the project.

Field installation and supervision typically includes:

- Reviewing analyzer or field instrument system objectives with the site coordinator
- Analyzing work orders, job scopes, drawings, and materials to be used to optimize the installation sequence

- Recommending measures to improve construction methods, equipment performance, and quality of the system
- Establishing or adjusting work procedures to meet construction schedules
- Supervising work crews and coordinating the required system installation
- Assisting in setting up test equipment for leaks, wire continuity, and correct operation of hardware
- Inspecting work in-progress and finished work products
- Assisting work crews in resolving any installation problems that develop
- Providing daily service reports on work progress and daily actions to site coordinator

Estimated time frames

- TDLS8000 Pipe/Stack Installation: 6 days
- TDLS8000 Furnance Installation: 11 days
- GC8000: 3 - 8 days, application and site dependent
- Field Instruments: By scope, application and site dependent
- 3rd Party: By scope, application and site dependent

Analyzer Startup and Commissioning Service

Analyzer commissioning and startup typically includes the following and more depending on the analyzer type:

- Meeting with site coordinator to discuss results of the installation
- Discussing application data, FAT results, and performance goals
- Inspecting utility gas, wiring, tubing, and utilities, ensuring all connections are done according to their respective drawings

- Initiating analyzer purge flows, setting and checking appropriate rates for the application
- Checking DC inputs to the analyzer(s), starting up analyzer(s) and remote interface unit(s), ensuring operation of all components
- Adjusting analyzer key variables for optimum operation
- Setting up and calibrating temperature and pressure compensation inputs (application dependent)
- Configuring and testing digital outputs
- Inputting application-specific parameter to the analyzer(s) and verifying the measurement
- Evaluating gas absorption spectra on-process (on certain applications)
- Configuring, calibrating, and field-loop checking analog outputs; ensuring positive communications with a control room or input device
- Programming automatic validation routine if available
- Performing validation and ensuring analyzer functionality
- Observing on-process analyzer performance
- As time allows, informal (over-the-shoulder) training may be performed during the startup process
- Designing, fabricating, and testing analyzer networks and other communications (TCP/IP - Modbus, Token Ring, etc.)

Optional:

- On-site classroom training may be scheduled during startup visit or at your convenience
- Demonstration analyzers are available for training upon scheduled request
- 3rd party and associated field instrument startup and troubleshooting



Safety

With over 1 million man hours worked in plants without a lost time or reportable injury, we work to ensure the highest safe work record in the industry. JSA's and JEP's filled out before we begin any undertaking are just some of our safe work programs.

We also work within your plant procedures such as

- Cold and hot work permits
- Lockout / tagout
- Scaffolding permits
- Fall mitigation
- Management of change
- Aerial lift
- Heat stress programs



Analyzer Operation and Maintenance Training

Yokogawa believes that one of the most important investments a company can make is in its most valuable resource – its people. Our training courses provide the technical instruction needed, as well as the hands-on experience to properly operate and maintain any of our process analyzer systems.

Courses are provided in our dedicated training facilities in Texas, or at your plant location. A variety of courses are offered; each taught by an instructor with years of experience in the subject matter. Available courses include:

- **Process Analyzer Sample Systems** – Defining the sample system requirements from the sample tap to the process
- **GC8000 Process Gas Chromatograph** – Teaching fundamental knowledge of gas chromatography, as well as the operation and maintenance of the GC8000
- **TDLS Analyzers** – Teaching fundamental knowledge of tunable diode laser spectroscopy as well as the operation and maintenance of Yokogawa's TDLS product line
- **NR800 Fourier Transformer Near-Infrared (FTNIR)** – Covering the basics of FTNIR technology, and operation and maintenance of the NR800 analyzer
- **Continuous Emissions Monitoring Systems (CEMS)** – Teaching the maintenance requirements of CEMS with an emphasis on minimizing downtime



Service Contracts

Long-Term Performance

Keeping your process analyzers and field instruments operating at a level of maximum availability and performance is directly related to a solid maintenance program.

Unfortunately, a reality in today's process plant environment is that qualified analytical and field instrument service technicians are difficult to find. Making matters even more complicated is the ever increasing use of devices to further optimize processes which can strain even the best of service organizations.

Yokogawa has the ideal solution for addressing this by offering service contracts tailored to the exact level of additional service support you require. Contracts can be as simple as predefined Preventive Maintenance visits during the year to confirm top operating performance of your system, or can be expanded to include features such as spare parts programs, scheduled calibration visits, and even dedicated personnel that reside in your plant. Furthermore, the decades of experience held by our service team allows us to support nearly every type of process analyzer and field instrument on the market; not just those manufactured by Yokogawa!

Benefits of Service Contracts

Setting up a service contract with Yokogawa brings you tremendous value. Dependent on the type of agreement that is customized to fit your budgets and needs, benefits will routinely include:

- Maximizing your system performance by routinely reviewing analyzer/instrument settings and calibrating
- Resolution of issues before they occur, ensuring peak availability
- Scheduling to fit plant production requirements and outages such as plant turnarounds

- Improving plant service cost management by having preset maintenance programs
- Priority access to Yokogawa technicians on call-out service at reduced service rates
- 24/7 access to a centralized technical support "1-800" number and e-mail address
- Having a single source contact for all service needs in the plant
- Securing worldwide equipment and spare parts management

Customized Maintenance Service Contracts

Every plant's service needs are different. Some already have a team of skilled technicians, and just need assistance during plant outages or turnarounds. Some plants need maximum availability due to regulatory compliance requirements, and others have maintenance staffs which are not able to meet the service demands of their installed devices.

Our maintenance service contracts can be customized to fit your specific needs.

Customization options available to include in a contract include:

- Contractual duration (from one to five years)
- Number of plant visits per year
- Selecting a scope of plant analyzers or field instruments to be included in the contract
- Spare parts management programs
- On-site training







Co-innovating tomorrow™

www.yokogawa.com

Yokogawa Electric Corporation

9-32, Nakacho 2-chome
Musashino-shi, Tokyo 180-8750
Japan

Yokogawa Corporation of America

12530 W. Airport Blvd.
Sugar Land, TX 77478
USA

Yokogawa Europe B.V.

Euroweg 2
3825 HD Amersfoort
The Netherlands

Yokogawa Engineering Asia PTE. LTD

5 Bedok South Road
Singapore 469270
Singapore

Yokogawa China Co., Ltd.

3F Tower D, Cartelo Crocodile Bldg.
No.568 West Tianshan Road
Shanghai 200335
China

**Yokogawa Middle East &
Africa B.S.C.(c)**

P.O. Box 10070
Manama Building 577
Road 2516
Busaiteen 225 Muharraq
Bahrain