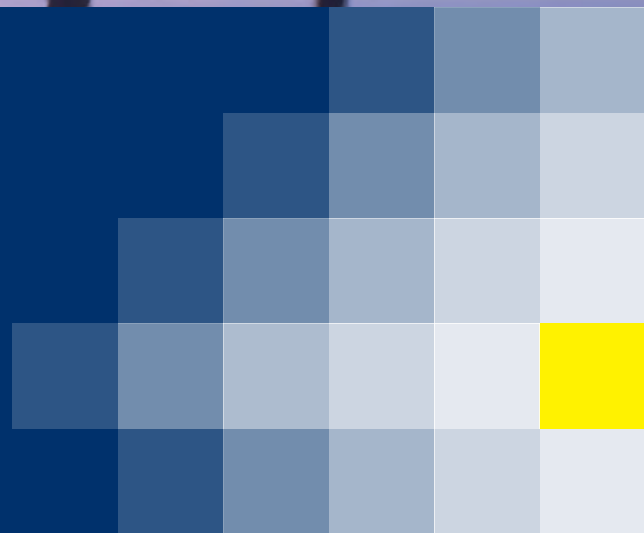
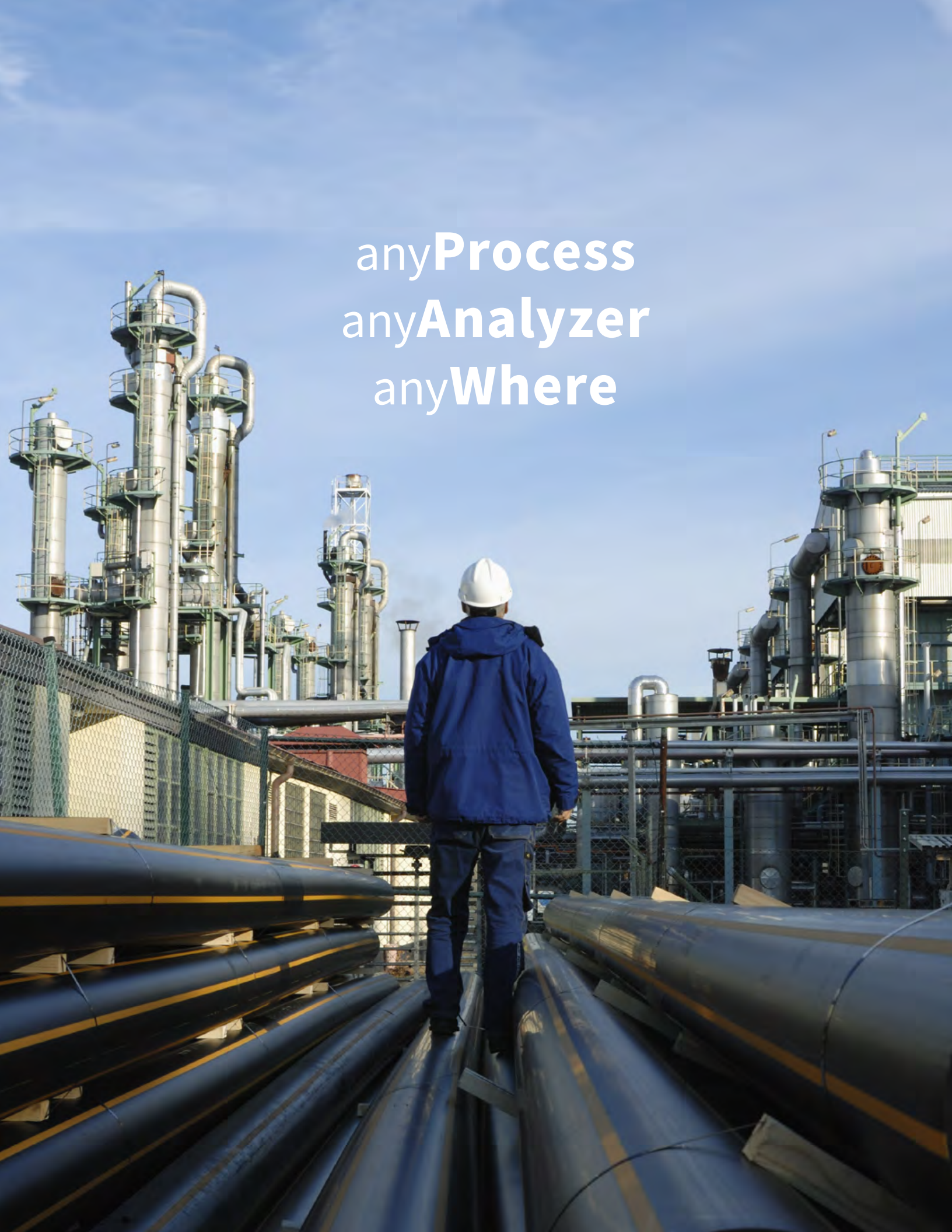




Analytical Services and Solutions Overview



any**Process**
any**Analyzer**
any**Where**



Experience

The delivery of your analytical system is only the beginning of our commitment to you for our advanced analytical products. We supply professional installation, start-up and commissioning services, as well as training on the proper operation and maintenance of your analyzers. This is critical to ensure long-term reliable performance of your analytical system. We have the experience and resources to work with you during all phases of the field installation and commissioning. In addition, service and parts can extend past commissioning with the establishment of a service contract. As part of the Yokogawa global service team, we can work with you regardless of where the plant site is located.

Furthermore, we have the knowledge and expertise to provide service and maintenance on nearly any type and manufacture of process analyzer on the market. Whether the analyzer is a simple oxygen or infrared analyzer, or a complete analytical shelter filled with process gas chromatographs, mass spectrometers, or total sulfur analyzers, we have the skills to be the single source for all of your service and maintenance needs. In addition to analyzers, we also provide services for field instruments such as temperature and pressure transmitters and flow meters. Whatever the instrument and scope, we have the flexibility to tailor a service program to meet your specific needs and budgets.



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





Field Installation and Supervision

The first 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 Furnace Installation: 11 days
- GC8000: 3 to 8 Days, Application and Site Dependent
- Field Instruments: By Scope, Application and Site Dependent
- 3rd Party: By Scope, Application and Site Dependent

TDLs Analyzer Startup and Commissioning Service

TDLs analyzer commissioning and startup typically includes:

- 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 input to the TDLs, startup analyzer(s), and remote interface unit(s), ensuring operation of all components
- Adjusting analyzer optical alignment for optimum signal
- Setting up and calibrating temperature and pressure compensation inputs (application dependent)
- Configuring and testing digital outputs
- Inputting application-specific parameters to the analyzer(s) and verifying the measurement
- Evaluating gas absorption spectra on-process
- 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

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







GC Startup and Commissioning



GC startup and commissioning typically includes:

- Meeting with the site coordinator to discuss results of the installation
- Discussing application data, FAT results, and performance goals
- Inspecting utility gas, wiring, tubing, utilities, and ensuring all connections are done according to their respective drawings
- Confirming power and purging operation
- Powering up GC, confirming operating mode, and confirming communication to DCS
- Setting and checking carrier gas pressures
- Setting temperature of the oven and evaluating stability
- Configuring detector bridge current and baseline signals to minimize offset from zero; optimizing stability in chromatogram
- Collecting chromatograms of the GC running a process sample and calibration gas
- Evaluating chromatograms for good separation, time shifting, column deterioration; especially in GCs with molecular sieve columns
- Comparing current GC calibrations and table settings to original data sheet to spot potential problems
- Opening the GC housing; performing a visual inspection to confirm that there is no visible corrosion or damage, all LED's are glowing, no water or condensation present, and purge switches are extinguished
- Checking all wiring connections; verifying absence of loose wires or corrosion
- Placing GC in normal operating mode; ensuring all alarms cleared
- Confirming normal operating status of the system
- As time allows, informal (over-the-shoulder) training may be performed during the startup process

Optional:

- On-site classroom training may be scheduled during startup visit or at your convenience
- A demonstration GC simulator is available for training upon scheduled request
- 3rd party and associated field instrument startup and troubleshooting



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 Freeport, Texas, or at your plant location if desired. A variety of courses are offered; each taught by an instructor with years of experience in the subject matter. Courses available include:

- **Process Analyzer Sample Systems** - Defining the sample system requirements from the sample tap to the process analyzer using actual sample conditioning hardware and hands-on exercises to reinforce the subject matter
- **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 Transform 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 difficulty in finding qualified analytical and field instrument service technicians. 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 resulting in 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





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