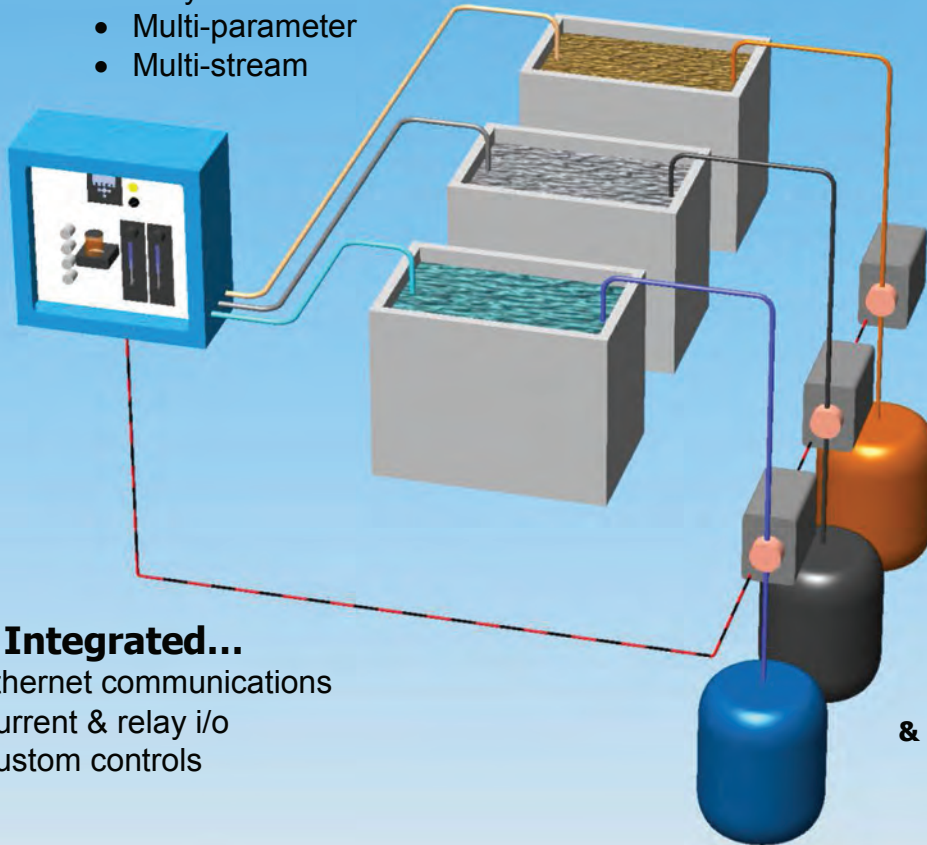# Complete Chemical Process Analysis and Control

**At Line Analysis & Reporting**
- Fully automated
- Multi-parameter
- Multi-stream

**With Integrated...**
- Ethernet communications
- Current & relay i/o
- Custom controls

**& Replenishment**
- Analysis based
- Event based
- Operator based

## Complete systems for chemical processes & water treatment.

Just as required...

Complete, integrated, flexible!

Recipe-driven analysis and control delivers both comprehensive capability and unprecedented flexibility for online chemical process control. And it's all integrated into one package – whether for centralized data collection or distributed control with coordinated responses, it's easy to use.

## Reliable, proven, cost effective.

Liquid Analysis Systems' L400 and L500 systems bring your process under control and...
- Maintain product consistency
- Capture process history
- Minimize process downtime
- Maximize product quality
- Eliminate process upsets
- Simplify & centralize operations
- Reduce hazardous chemical exposure

## Liquid Analysis Systems, Inc.

www.LiquidAnalysis.com

sales@LiquidAnalysis.com

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# Close the loop with complete control!

## Analysis options

Liquid Analysis Systems offers a suite of online analysis options to accomplish your analysis and control requirements with:

- Automated, at line sampling
- Titration via pH, ORP, ISE, turbidity
- Precision, auto calibrated pH
- Colorimetric & Raman spectroscopy
- Multi-stream & multi-parameter capability

## Communicate, coordinate, & control

Process status and alarms are displayed locally at the analyzer display, remotely via relay or current loop outputs, and optionally via PC interface or Ethernet connection. Replenishment and a variety of other control means are offered to close the loop, based on analysis results, production rates, operator inputs, or other process parameters.

| Process Examples | |
|---|---|
| Plating | Copper, nickel, nickel-iron, electroless copper, electroless nickel, solder, chrome, zinc, and more |
| Anodizing | Sulfuric, chromic, etch, deoxidize, seal, conversion coat |
| Cleaning/Etching | Alkaline, acidic, SC1, SC2, peroxide slurry |
| Other | Mining, automotive, aerospace, waste treatment, recycling |

| Analyte Examples | |
|---|---|
| Cations | $Cu^{2+}$, $Ni^{2+}$, $Fe^{2+}$, $Zn^{2+}$, $Al^{3+}$, $Cr^{6+}$, $Cr^{3+}$, $Pb^{2+}$, $Sn^{2+}$ |
| Anions | $Cl^-$, $SO_4^{2-}$, $SO_3^{2-}$, $SCN^-$, $NO_3^-$, $PO_4^{3-}$, $F^-$, $H_2PO_2^-$ |
| Other | pH, acidity, alkalinity, $H_2O_2$, EDTA, $NH_4OH$, $B(OH)_3$, Cl, Br |

| Analyzer Features | |
|---|---|
| Sample selection | Multiple sources can be automatically sampled including process streams, grab sample, and auto-calibration standard(s). |
| Auto detection | Sample present, reagent present, water flow, waste flow, leak |
| Enclosure | Wall mount: 16 to 24" W x 20" H x 10 to 16" D |

| Process Control Options | |
|---|---|
| Process inputs | Analog or digital signal or event. Configurable response. |
| Control outputs | Digital: relay or pneumatic. Analog: voltage, current loop. |
| Replenishment | Closed loop pump control, alarming, and inventory. |
| Alarms & reports | Visual, audible. Excel, SQL, email. |

| Interface Options | |
|---|---|
| Keypad and display | View results, history, and alarms. Enter analyzer and process settings. Manage replenishment. |
| Supervisory PC | Control, monitoring, and analysis recipe editing are easily performed through Windows™ based PC software. |
| Remote | Monitor and control remotely via Ethernet or serial port. |

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