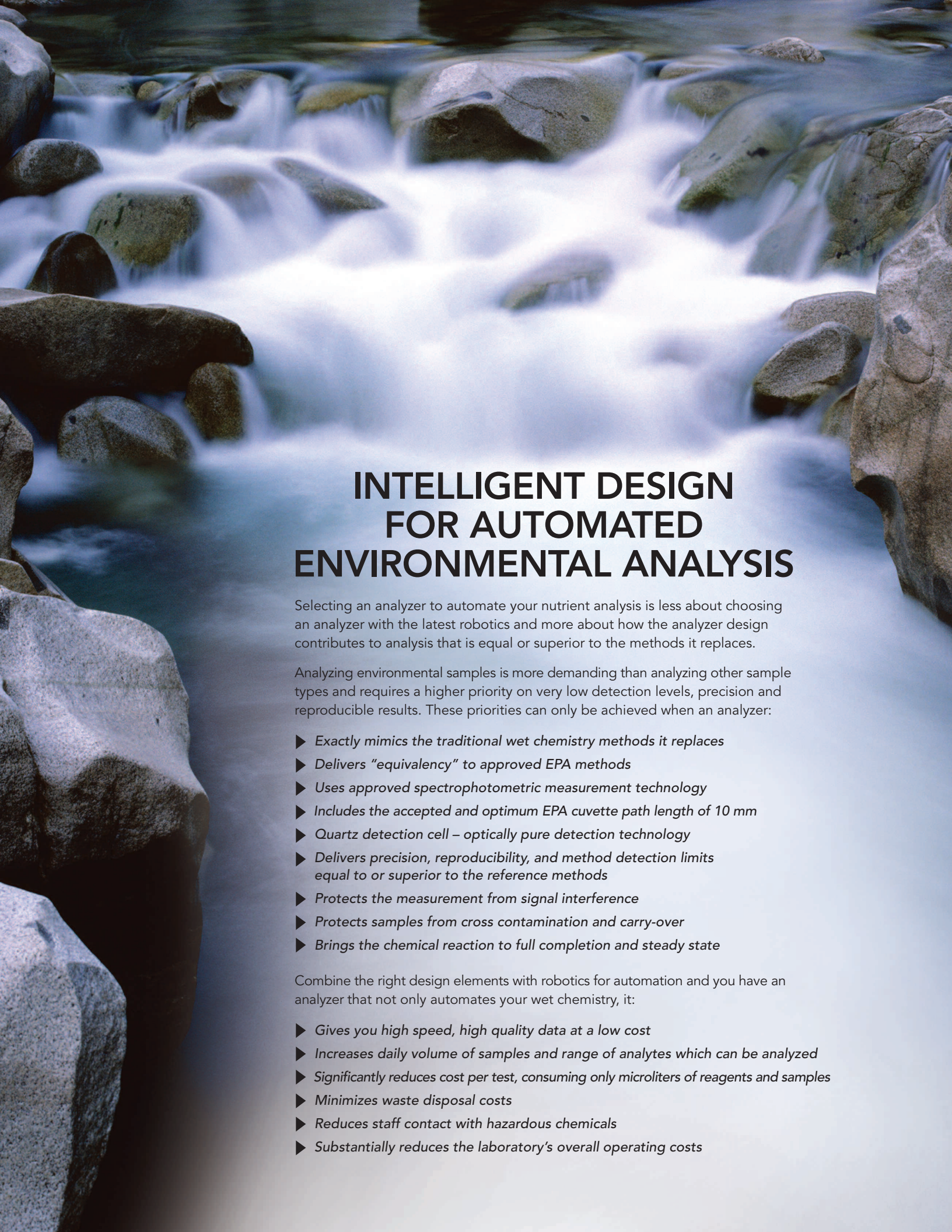
SEAL Analytical

AQ700

DISCRETE ANALYZER FOR ENVIRONMENTAL TESTING



INTELLIGENT DESIGN FOR AUTOMATED ENVIRONMENTAL ANALYSIS

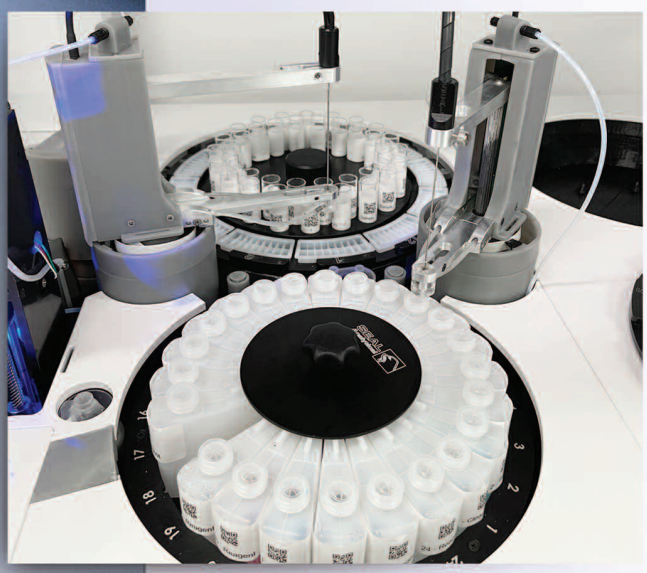
Selecting an analyzer to automate your nutrient analysis is less about choosing an analyzer with the latest robotics and more about how the analyzer design contributes to analysis that is equal or superior to the methods it replaces.

Analyzing environmental samples is more demanding than analyzing other sample types and requires a higher priority on very low detection levels, precision and reproducible results. These priorities can only be achieved when an analyzer:

- *Exactly mimics the traditional wet chemistry methods it replaces*
- *Delivers "equivalency" to approved EPA methods*
- *Uses approved spectrophotometric measurement technology*
- *Includes the accepted and optimum EPA cuvette path length of 10 mm*
- *Quartz detection cell – optically pure detection technology*
- *Delivers precision, reproducibility, and method detection limits equal to or superior to the reference methods*
- *Protects the measurement from signal interference*
- *Protects samples from cross contamination and carry-over*
- *Brings the chemical reaction to full completion and steady state*

Combine the right design elements with robotics for automation and you have an analyzer that not only automates your wet chemistry, it:

- *Gives you high speed, high quality data at a low cost*
- *Increases daily volume of samples and range of analytes which can be analyzed*
- *Significantly reduces cost per test, consuming only microliters of reagents and samples*
- *Minimizes waste disposal costs*
- *Reduces staff contact with hazardous chemicals*
- *Substantially reduces the laboratory's overall operating costs*



HOW DOES A DISCRETE ANALYZER WORK?

A Discrete Analyzer completely automates your manual wet chemistry methods, mimicking the operation of a laboratory chemist and adding the ability to measure multiple analytes simultaneously.

A Discrete Analyzer will:

- *Automatically and precisely add sample aliquots and reagent to reacion wells*
- *Mix*
- *Wait for the reaction to complete*
- *Measure the analyte*
- *Record every step, providing an audit trail*

It should also:

- *Automatically prepare a calibration from a top standard*
- *Predilute samples*
- *Autodilute out-of-range samples*
- *Autospike samples and report recovery*
- *Perform sample blanking*
- *Automatically insert and run Quality Control (QC) checks*
- *Link easily with LIMS*

Colorimetric methods can be automated with a Discrete Analyzer. With no flow, baseline, peak shapes, pump tubes to monitor, hardware changes or shutdown procedures, your laboratory will achieve true "walk-away" analysis. After a run is finished the Discrete Analyzer even washes itself out and enters standby mode.

With miniaturized components the Discrete Analyzer needs to use only microliter amounts of reagents and samples, significantly reducing your reagent consumption and associated chemical waste.

SEAL Discrete Analyzers will reduce time and errors often associated with manual methods, generate lower cost per test and reduce overall laboratory operating costs and increase efficiency.

SEAL Discrete Analyzers are compact, bench top analyzers that don't require a fume hood, glassware, pressurization, cylinder gas, or cooling water, making them the most popular and versatile analyzers for environmental labs.

Introducing the SEAL AQ700 Discrete Analyzer

METHODS INCLUDE

Alkalinity
Ammonia
Chloride
Color
Cyanide
Fluoride
Hardness
Iron
Nitrate/Nitrite
Nitrite
Phenol
Phosphate
Silicate
Sulfate
Total Nitrogen
Total Phosphorous

PLUS MANY MORE

BENEFITS INCLUDE

Low detection limits and excellent reproducibility using 10 or 20 mm optical quartz cuvette

Sample size flexibility from 1.2 mL – 10 mL

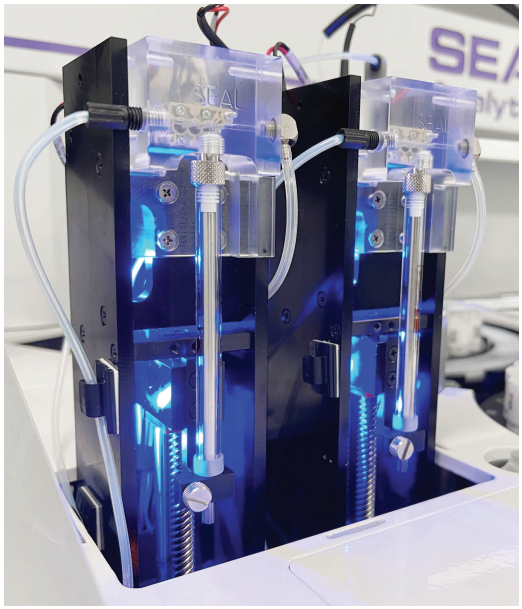
Sample capacity from 160 – 480 depending on vial size. Up to 864 tests.

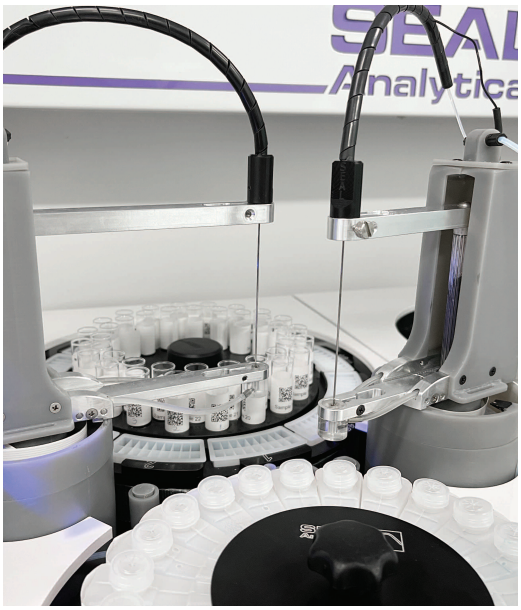
Optional internal barcode reading for samples and reagents for traceability

Cadmium reduction module for nitrate analysis

Premade reagents available

With **4 robotic arms** and **4 sample trays**, high capacity, high throughput with long walkaway time and unattended operation, the AQ700 brings nutrient analysis to a new level.





Analysis according to Standard Methods, EPA, ASTM, ISO, UKAS and other international standards

- ***True unattended operation – including ability to run overnight***
- ***Automated standard preparation and dilution of over range samples***
- ***Tests programmable per sample to reduce analysis time***
- ***Add samples after a run has started***
- ***Total volume per test only 500 – 600 µL***
- ***Varying size sample trays available to accommodate different workloads***
- ***Segregated chemical waste and wash minimizes waste disposal***
- ***LIMS compatible – export in .csv format***

Designed by chemists **for chemists.**

SEAL Analytical

AQ700

Highest speed and capacity. Lower detection levels.

TESTS / CHEMISTRIES	
Simultaneous Chemistries	1 - 20
Tests Programmable Per Sample	YES
Test Capacity	864
Cadmium Coil	Integrated
Total Volume Per Test	500 - 600 µL (sample & reagent)
SAMPLES	
Sampling Rate	Subject to chemistry
Sample Blanking	YES
Add Samples After Run Commenced	YES
Sample Trays (removable)	4 (40, 120)
Sample Capacity	160 - 480
Sample Consumption	2 – 500 µL
Sample Cup Sizes	1.2 mL, 2 mL, 5 mL, 10 mL
Sampling Arms	3
REAGENTS	
Reagent Capacity	24
Reagent Cooling	YES
Reagent Volume	40 mL
Reagent Wells	Disposable
Reagent Monitoring	Automatic
Reagent Level Sensing	YES
OPERATION	
Auto Start-up & Shut-down	YES
Auto-dilution	YES
Automated Spike Preparation	YES
Automated Standard Preparation	YES
Segregated Wash Waste	YES
TECHNOLOGY	
Wash Stations	4
Integrated sampling probe washer	YES
Cuvette Path Length	10 mm – 20 mm
Optically Pure Cuvette	Optical Quartz Cuvette
Cuvette Cleaning	Automatic
Barcode Reader	YES (sample & reagent)
Simplified Access For Maintenance	YES
Detector	Stationary measurement cell
Filter Wheel	9 filter positions, 350-880 nm
Lamp	Quartz Tungsten – Halogen
SOFTWARE	
Data Output	LIMS compatible. Export in .csv
Software Updates	Free
Requirements	Windows version 7 or later
SPECIFICATIONS	
Bench-top Analyzer	YES
Dimensions (cm)	120 W x 90 D x 90 H
Weight	250 lbs
Power Requirements	110 V 60 HZ or 220-240V 50 HZ. Configurable.

FAST, ON-DEMAND ANALYSIS

Easy, rapid colorimetric testing with minimal start-up time.

INTEGRATED OPTICAL QUARTZ CUVETTE

10 mm pathlength or longer for maximum sensitivity and lower detection levels. Quartz is superior to styrene for sample analysis ensuring highest precision.

LOWER DETECTION LEVELS

Critical for environmental applications, lowest possible detection levels are a priority. This is made possible with the right combination of mixing technique, longer path length, optically pure detection, accurate dispensing and completion of chemical reaction.

NO CROSS CONTAMINATION

The only discrete analyzer with integrated probe washer. Eliminates cross contamination between reagents and samples. Keeps the probe free of reagents, oil and grease. Ideal for wastewater.

EFFECTIVE SAMPLE & REAGENT MIXING

Reproducible results thanks to sample and reagent mixing that approximates manual mixing in a flask.

DISPOSABLE REACTION WELLS

Inexpensive, disposable wells that reduce carryover and cost per test.

REAGENT WEDGES

With onboard cooling; built-in level sensor to verify reagent volume required for each test.

REDUCED REAGENT CONSUMPTION & WASTE GENERATION

Uses only µL dispenses of reagents and samples to greatly reduce the amount of chemical used and waste generated with each test.

EXTERIOR SEGREGATED WASTE MANAGEMENT SYSTEM

Segregated chemical and wash waste minimizes hazardous waste disposal costs. Easy to access and outside of instrument.

COMPLETE REACTION

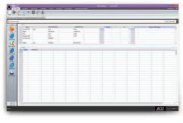
Constant heating and programmable reaction time for a highly controlled reaction. This means the reaction is brought to completion increasing precision and accuracy of test results.

INTEGRATED CADMIUM COIL

Allows flexibility in nitrate + nitrite testing. Software automatically switches the coil inline. All 4 x EPA approved nitrate + nitrite chemistry options available. In-situ regeneration.

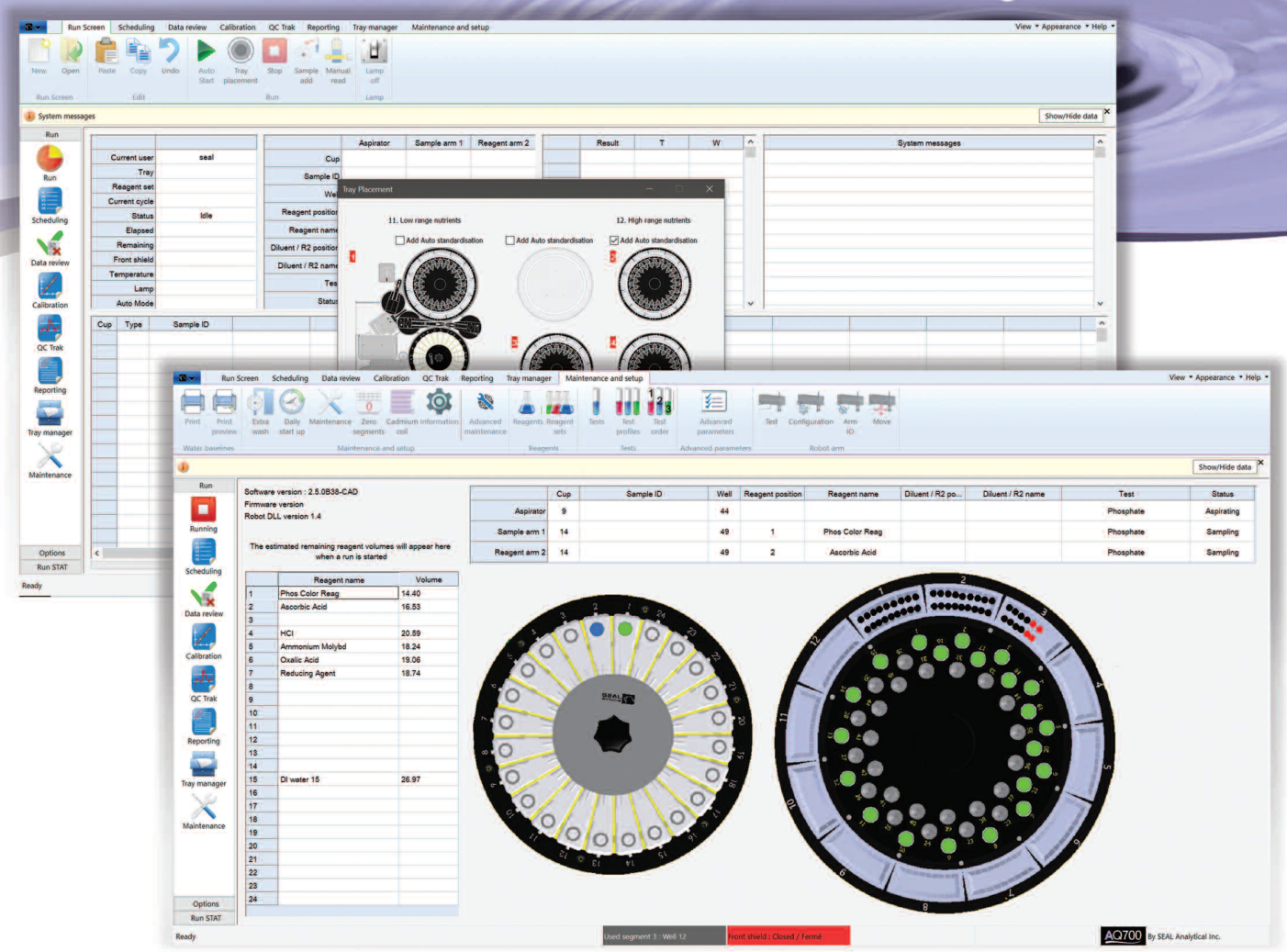
USEPA, ASTM, ISO APPROVED METHODS

Also complies with other international regulatory methods.



LIMS READY

Customizable output for easy integration.



Software Designed for Environmental Laboratories

AQ700

User-friendly, intuitive, highly flexible software streamlines run set up

Continuous in-house development incorporates user requested features

Controls all analytical procedures from working standard dilution to sample analysis, cuvette washing and system QC

Automated system quality control with built in QCPro™

User can specify Quality Control types, limits and automated corrective actions upon failure

FEATURES

- Real-time monitoring of reagents
- Provides an audit trail of all sample analysis
- Prepares working standards from a stock solution
- Prepares spiked samples and calculates recoveries
- Automatic rerun of over-range samples. Diluted over-range samples will be batched with associated QC needed for reportability
- Intuitive Range Switching - over or under range sample results matched to other calibration curves intuitively by the software
- Data exportable to LIMS or worksheets
- Assigns tests in the highest order of efficiency
- Automatically performs system calibration and general maintenance
- Easily monitor run status with color coding to visually indicate reagent, sample and test status
- Quickly run multiple tests in any order
- Predicts when analysis will be completed for better task planning
- Continuously monitors analyzer status and temperature of reaction ring

Colorimetric Nutrient Analyzers

DISCRETE ANALYZERS

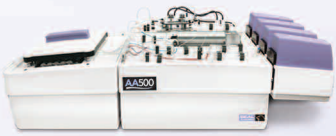
AQ300

AQ400

AQ700

SEGMENTED FLOW ANALYZERS

AA100



AA500

QuAAtro39

50 Years of Experience in Environmental Analysis Built into Every Analyzer

50 years' experience in designing, developing and manufacturing automated wet chemistry analyzers specifically for very low detection levels in environmental applications has helped SEAL to apply the most useful, easy to use features into the SEAL range of Discrete and Segmented Flow analyzers. The SEAL analyzers are widely acknowledged as the best for environmental analysis, giving you everything you need to achieve equal or superior results to the manual and approved laboratory methods the SEAL analyzer replaces.

Digestion Systems

FOR METALS AND TKN, TP DIGESTION

BD50

SmartBlock II

DEENA

SEAL Analyzers are monitoring environmental samples in every corner of the globe. They are manufactured in the USA, Germany and the Netherlands. Engineering and chemistry support is provided from SEAL global facilities in USA, Germany, UK, the Netherlands and China along with a worldwide network of specialist distributors.

COMPREHENSIVE SUPPORT

We offer comprehensive applications, technical service and software support.

INCLUDING

- A choice of preventative maintenance and service contracts to meet your specific requirements
- In-house and online training
- Guaranteed availability of genuine consumables and spare parts
- Adaptation of methods to specific requirements such as matrix, range or detection limit
- Continuous in-house development of software to incorporate new customer requested features

Robotic Handling Systems

SEAL Robotic MiniLab systems for automating sample pretreatment in the laboratory — improving your sample handling efficiency. Typical applications include BOD, pH, COD, Alkalinity, and conductivity measurements with options such as decapping/capping, sample splitting, and filtration. Call us about your laboratory needs and we will design a robot to suit you.

SEAL MiniLab

SEAL Analytical

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