



# SPECTRO ICP Automation

*Arcos  
Combined  
Autodiluter  
RObotic  
System-series*



SPECTRO ICP AT LINE Automation  
Labiron ACAROS Autodiluter and SPECTRO ARCOS ICP  
Fully Automated Sample Preparation and Analysis

Fully automated operating sample preparation and analysis system for high sample throughput

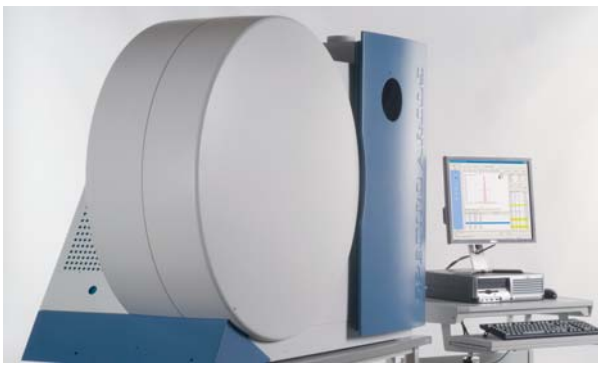
## ARCOS and ACAROS: the perfect team

### ACAROS Series Diluter Sample Preparation System

The combination of the ACAROS Autodiluter with the ARCOS ICP Spectrometer is an important step towards total quality control. Sampling, diluting and analysis will be carried out automatically in a multifunctional integrated system:

- sample storage
- automated aliquot sampling
- programmable dilution
- vortex mixing
- sample presentation to the ICP spectrometer
- automatic analyzer calibration
- automatic analyzer validation with QC samples
- data management and interfacing to LIMS

The system can process a high volume of samples per hour in fully automatic preparation and analysis mode.



#### **SPECTRO ARCOS ICP-OES Spectrometer**

The SPECTRO ARCOS has a unique high-resolution optical system and sets new standards in analytical performance: a patented major development with unbeatable resolution (8.5 picometers from 130 to 340 nm), accuracy and stability. 32 linear CCD detectors allow a full spectrum from 130 to 770 nm to be collected and stored in 2 seconds. SPECTRO's patented UV-PLUS system requires no purge gas supply or vacuum pumps for UV performance, as the sealed optical path is permanently filled with Argon. Unlike many CCD based detection systems, no sub-ambient cooling is required. The instrument can be provided with radial or axial plasma observation. The radial plasma has better tolerance of high salt content or organics in the sample and ability to handle slurries or suspensions. The axial system can be supplied for those requiring the ultimate detection limits from their ICP-OES.

Additional SPECTRO ARCOS assets include the new, extremely robust, free-running generator with a ceramic torch and solid-state power supply. SPECTRO's novel ICAL system logic automatically monitors the system to guarantee optimum operating conditions. The "Smart Analyzer Vision" graphical user interface is characterized by flexibility, clear structure and simple operation.



### Applications include

- Oils and Lubricants
- Chemicals
- Liquid waste and Environmental samples
- Brines



## ACAROS– series autodiluters Modular systems incorporating:

- sample tray accommodating sample racks. Racks are available for a wide range of sample vials of different dimensions. Typical capacity 250 x 30 ml sample vials
- surface level detection
- automatic volumetric sampling unit
- sample preparation unit for dilution and mixing - an extra mixing unit can be used to double the mixing capacity and thereby supply a continuous sample stream
- interactive cleaning system with auto-check
- sample validation with QC samples
- automatic calibrations
- user interface incorporating system control and data management, including data transfer to external databases or LIMS

### Options:

- independent sample tray for secondary tubes or wells
- system remote control
- acid resistant wetted components
- weight/volume diluting

## Sample preparation in a one-stop-system

Most samples need some preparation before analysis. This could be dilution with a neutral solvent or the addition of an active reagent. Any sample preparation will directly affect the analytical result, so great accuracy and precision are required. After dilution, thorough mixing is necessary to ensure sample homogeneity. If a reagent has been added, a waiting period may be needed to ensure complete reaction. Sometimes sample and reagents need to be transferred to a secondary vial for further processing. All these actions can be taken care of by the ACAROS, without operator intervention.

This means:

- reduced overall operating costs
- minimal opportunity for human error
- optimal use of laboratory workforce

All sample preparation variables can be configured via the user interface. Some samples, like control and calibration samples, may need individual treatment. The ACAROS software allows the autosampler to be fully and flexibly configured to meet all these requirements.

## Control and communication

The system control and communication are clearly structured with an advanced user interface. The complete system can be controlled manually or automatically. Automatically operated, the tasks can be scheduled locally, or be generated by remote links to operators in the control room or the QC department.

The LABIRON ACAROS software also controls the main functions of the SPECTRO ARCOS, giving the operator complete overall system control. The analytical results are directly available via TCP/IP connections, or results can be transferred to an external database.



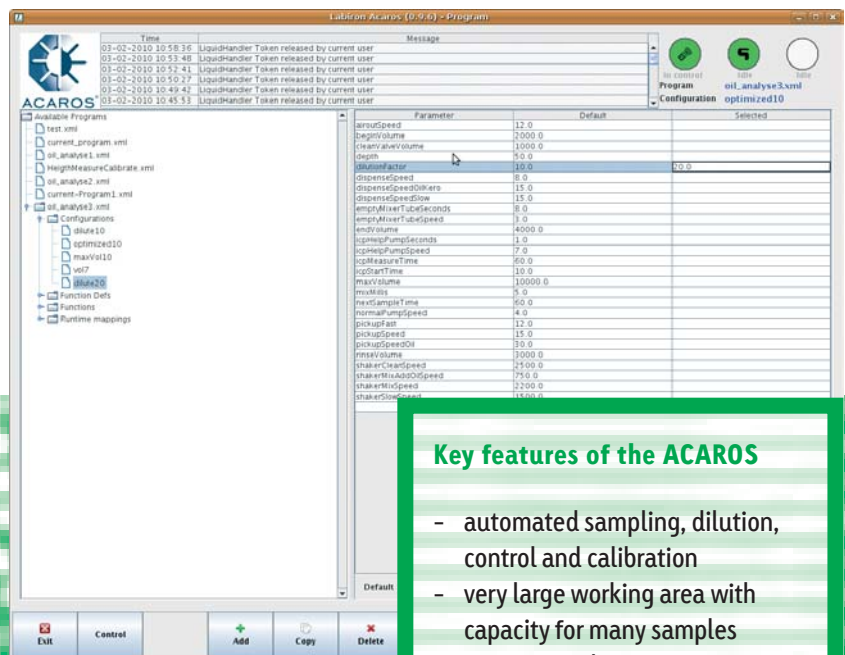


## Automatic execution of control sample and normalization measurements

To validate the operation of the SPECTRO ARCOS, the ACAROS software can introduce control samples either manually or as part of the operating schedule. If an error is detected a corrective action (ICALization, standardization, calibration) will follow automatically. If the condition is not corrected, the Autodiluter will warn the operator and shut down the sampling sequence.

## Remote control and diagnostics

The complete system can be controlled remotely from, e.g., the control room or the quality department. This enables the operator to stay in his own environment and control the system at the same time. The control and calibration of the system can be operated remotely, too although in normal operation the control and calibration is done automatically according to a pre-programmed schedule.



### Key features of the ACAROS

- automated sampling, dilution, control and calibration
- very large working area with capacity for many samples
- interactive cleaning system
- automated data acquisition and data management
- communication with customers' IT systems

LABIRON SYSTEMS BV  
Specialises in automated systems for laboratory and inline process analysis:

- sample and product handling and preparation
- analytical instrument control
- data acquisition and management
- communication with customers' intelligence systems (LIMS, etc.)

Labiron Systems is an independent Dutch company with 25 years experience in industrial and laboratory automation. Labiron Systems operates according to ISO 9001-2000 standards and is a preferred partner of SPECTRO Analytical Instruments in Kleve, Germany. SPECTRO is an AMETEK Company.



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