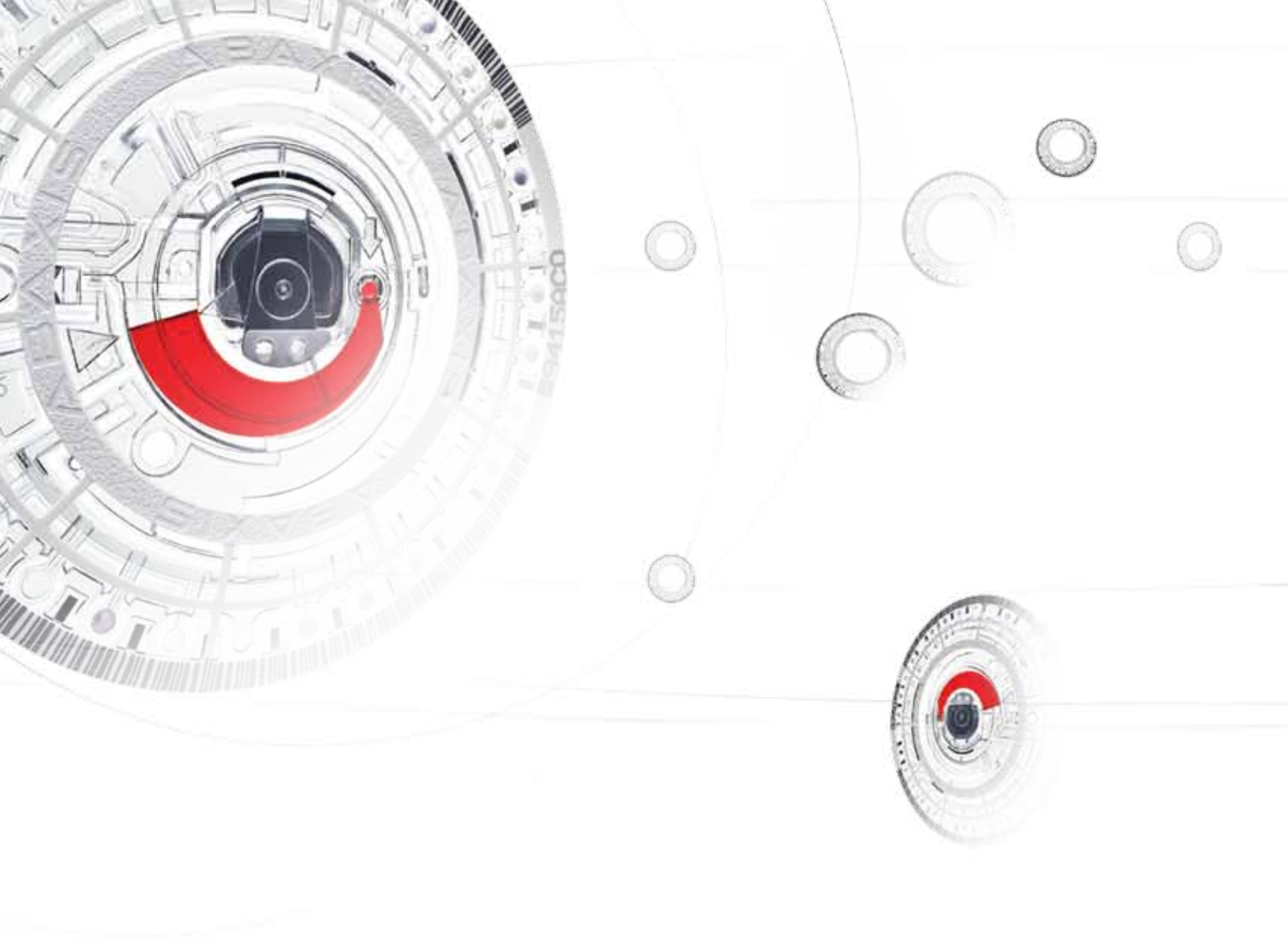
iQC

Intelligent quality control

BETTER. ACTUALLY.

VetScan® products by ABAXIS



Intelligent quality control Built In

The genesis of the Abaxis technology took place at the Oak Ridge Laboratory, where under contract to the National Aeronautics and Space Administration (NASA), scientists sought to develop and manufacture a small biochemical analyzer for use in space laboratories.

The VetScan VS2 chemistry analyzer has an extremely sophisticated Intelligent Quality Control (iQC) system and proprietary algorithms that assure quality and dependable results.

iQC is a series of automatic checks that verify the chemistry, optics and electronic functions of the analyzer during each run and ensures that operators in a wide range of environments report only accurate and reliable results. iQC automatically suppresses a single chemistry or the entire panel if it detects uncharacteristic performance and immediately alerts the operator to any problems.

iQC Checks

Chemistry and iQC

Barcode

The barcode on the top surface of each rotor encodes the type of test panel, the expiration date and the reagent calibration factors. At the beginning of the run, iQC verifies the integrity of the information in the barcode by the use of a cyclic redundancy check. It then checks the expiration date of the rotor against the analyzer's clock to verify that the expiration date has not been exceeded. The calibration information is transferred to the analyzer's memory to be used in the calculation of results.

Fluidics

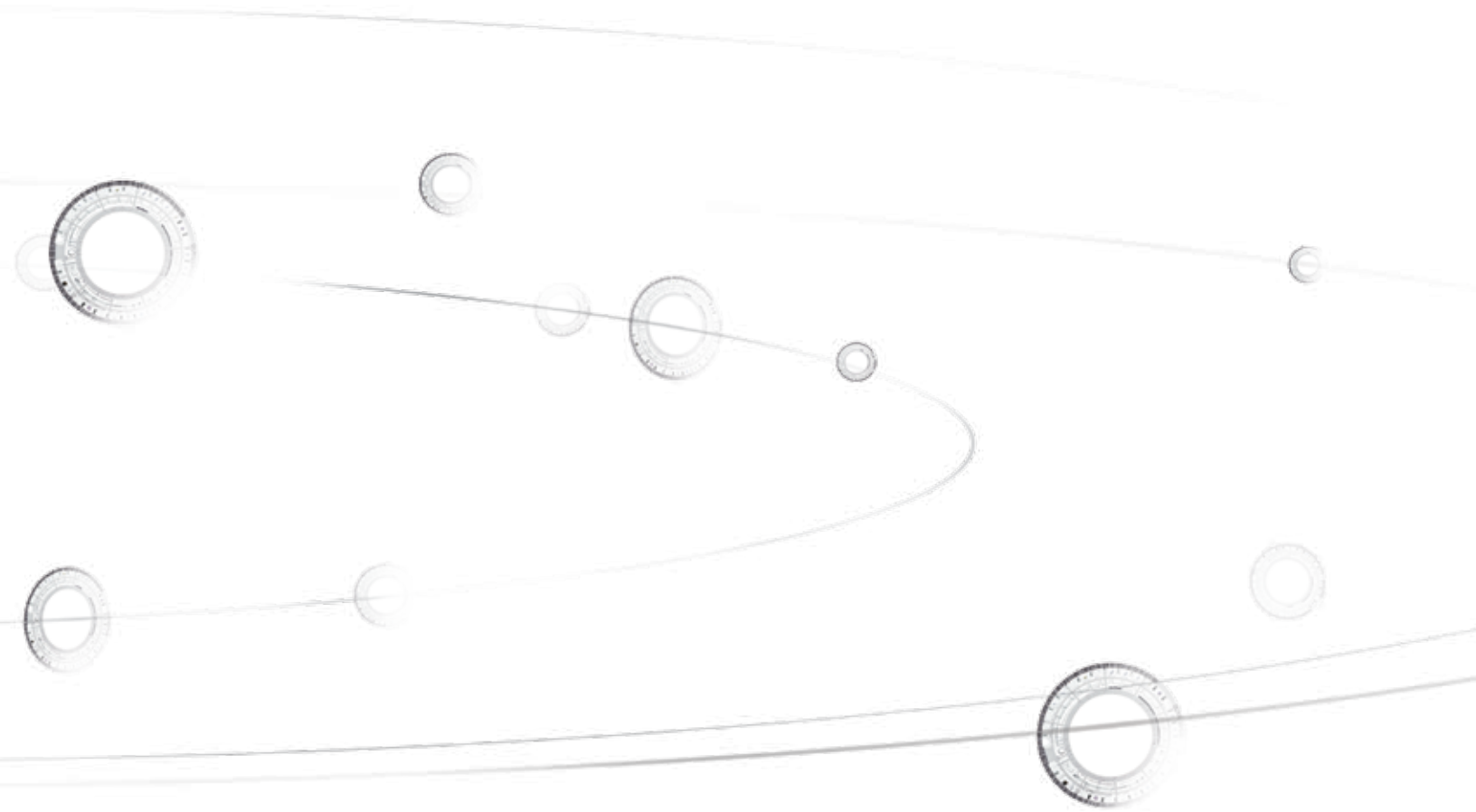
The metering and movement of fluids (sample, diluent, and diluted sample) are controlled at all stages of the run by the analyzer's motor and design features of the rotor. The analyzer verifies the presence of adequate sample volume by sensing overflow into the "sufficient sample" cuvette. iQC will alert the operator if the presence of sufficient sample cannot be verified.

iQC Reactions

Chemistry QC reagent beads reveal and quantify any degradation of the analyte-specific reagents in the rotor due to suboptimal storage conditions (moisture and temperature). If degradation exceeds a defined level, the run is cancelled and an error message is displayed.

Sample Evaluation

iQC eliminates the need for visual evaluation of the sample for physical interferents (hemolysis, lipemia and icterus). The VS2 evaluates the quality of the sample and reports the measured values for each interferent. If a limit is reached for one or more analytes, the results are suppressed for those analytes only. The level of interference is indicated on the result printout.



Optics and iQC

Signal Adjustments

iQC includes a series of flashes through the “minimum-absorbance” cuvette at the beginning of each run. It monitors changes in flash intensity and adjustments for maximum dynamic range. Simultaneously, it monitors the noise associated with the lamp intensity at all wavelengths. When changes in the lamp intensity exceed the range for any wavelength, iQC will cancel the run and display an error message.

Background noise is ever-present in every system. iQC includes a series of flashes through the “maximum-absorbance” cuvette at the beginning of each run, measuring the background noise to detect electrical problems. When the background noise is outside the acceptable limits, iQC will cancel the run and display an error message.

The effect of the inherent flash-to-flash variation in light intensity is eliminated by the use of a reference wavelength.

Electronics and iQC

Microprocessors and Memory

The architecture of the instrument consists of two microprocessors:
1) a real-time controller that monitors and controls all the measurements
2) an input/output controller for memory management, calculations and data storage

Software

The analyzer's software is comprised of two matching software programs. One program processes the information and controls the measurement engine. The second program reports analyte concentrations.

Calculations from Absorbance Data

Each reported absorbance is calculated from a series of hundreds of flashes through the cuvette. The calculations are verified by a series of algorithms programmed into the analyzer's software. These algorithms can detect errors in absorbance data and errors in the calculations. When errors are detected, results for a particular analyte are suppressed.

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