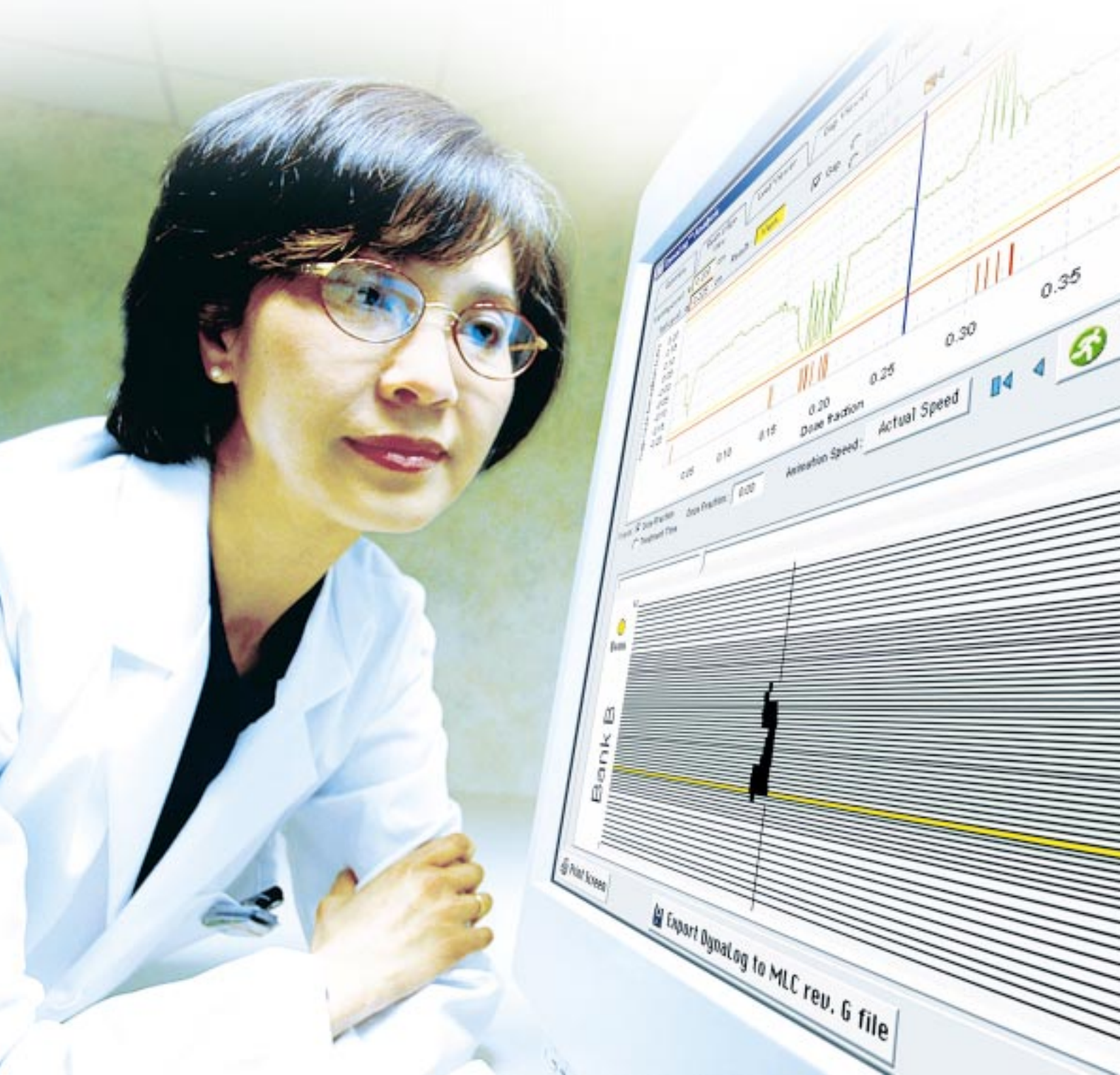
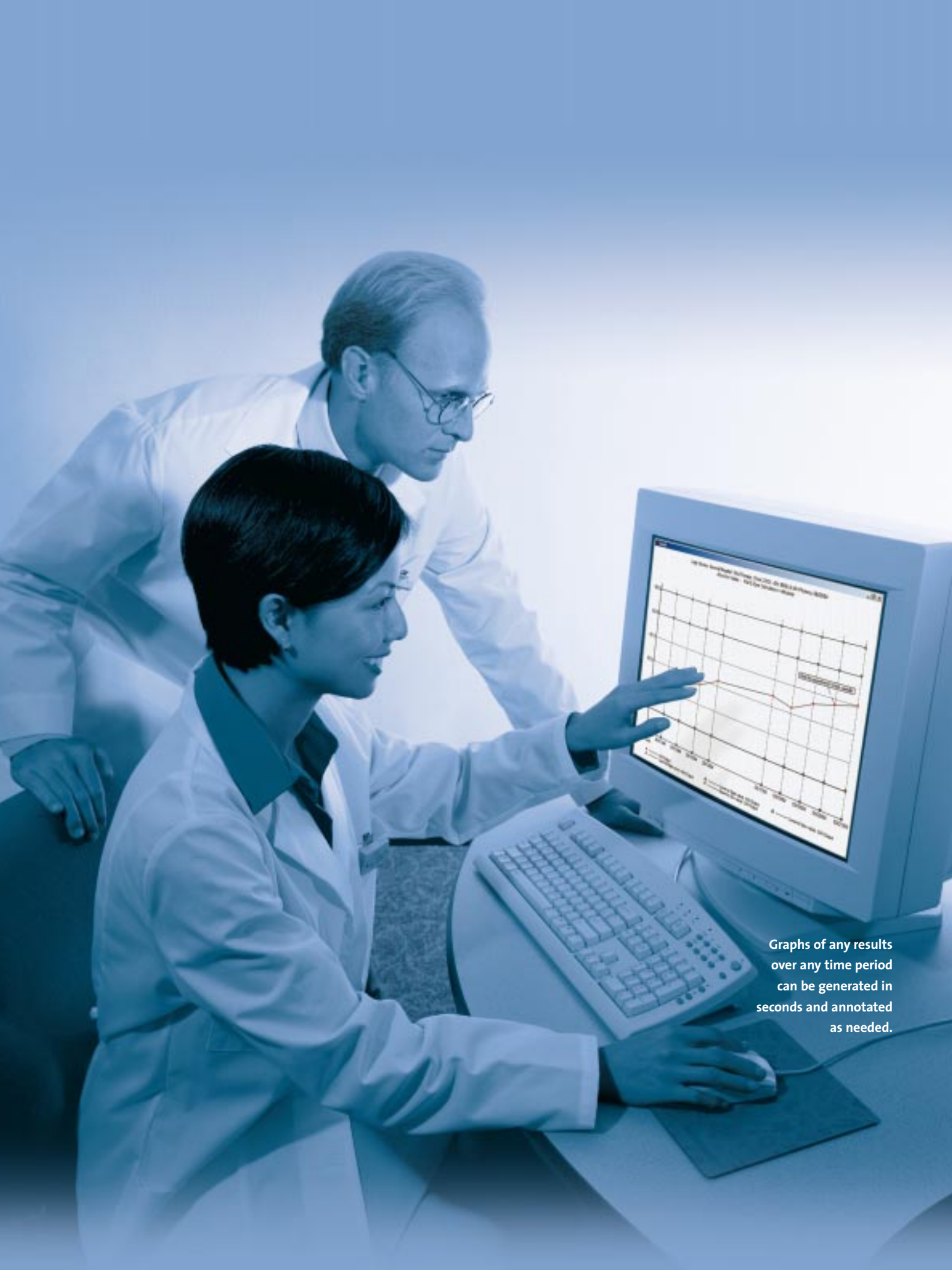


Argus QA program automation





Graphs of any results over any time period can be generated in seconds and annotated as needed.

The power of automation

How much time are you spending on quality assurance (QA)? With increasingly complex treatments and systems, QA processes require automation. Argus™ QA software is the only comprehensive QA automation solution for the entire radiation department. It turns separate QA processes into an efficient, manageable QA program that optimizes equipment uptime, saves time on reporting, simplifies the meeting of regulatory requirements, and ultimately enables departments to offer new radiation treatment options more cost-effectively and with greater confidence.

Comprehensive QA

Where is your QA data? In notebooks? In spreadsheets? In different databases for each piece of QA test equipment? Argus replaces them all with one comprehensive solution for the entire radiation department—radiation oncology and radiology.

Efficiency

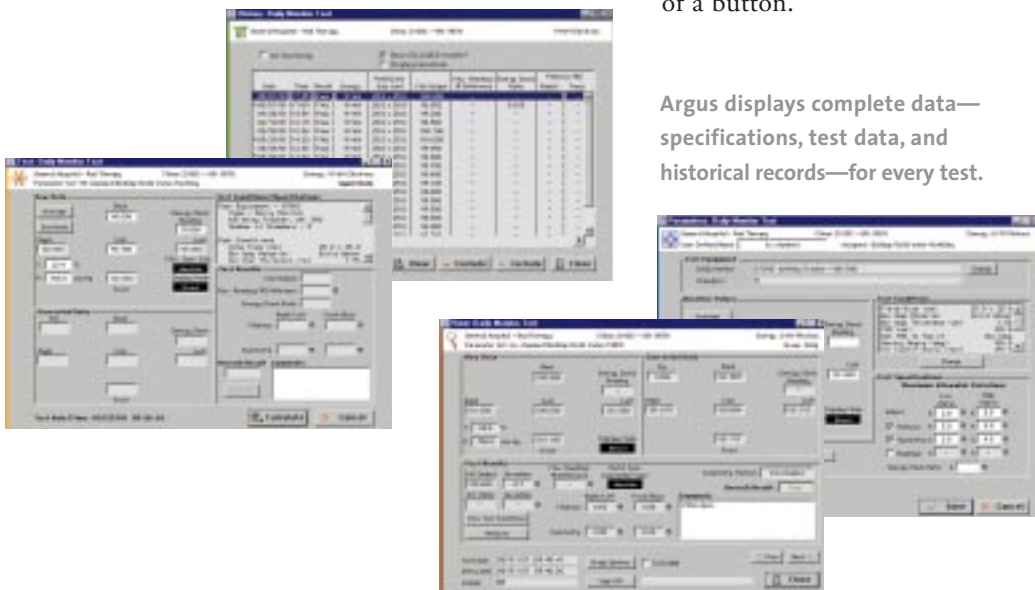
Argus reduces reporting and analysis time up to 75 percent through intelligent automation.

Ease of use

Argus makes the QA process easier to manage for physicists and easier to perform for therapists. Administrators can view the departmental performance at any time without leaving their desks.

Regulatory compliance

Meeting regulatory demands requires no special effort. Argus provides continuous monitoring of QA processes, a complete audit trail, and on-demand regulatory documentation at the push of a button.



Argus displays complete data—specifications, test data, and historical records—for every test.

What Argus can do for your department

The only comprehensive QA solution

Argus’s sophisticated relational database is the central repository for capturing, storing, and accessing all QA data. Customize your QA program from the complete lineup of Argus modules for linear accelerators, IMRT, simulators, HDR brachytherapy systems, CT simulators, CT units, R&F units, mammography systems, and film processors. The Argus IMRT module provides a broad range of MLC tests and powerful DMLC analysis tools for validating collimator operation, documenting safety checks, and organizing data.

Install Argus on a standalone workstation. Deploy it on a wide area network. Access it remotely. Argus is scalable and flexible for every department.

The Main Navigation list displays the hierarchy of testing procedures in outline form, with Facility at the top level, followed by Machine, Protocol, Test, Energy, and Parameter Set.



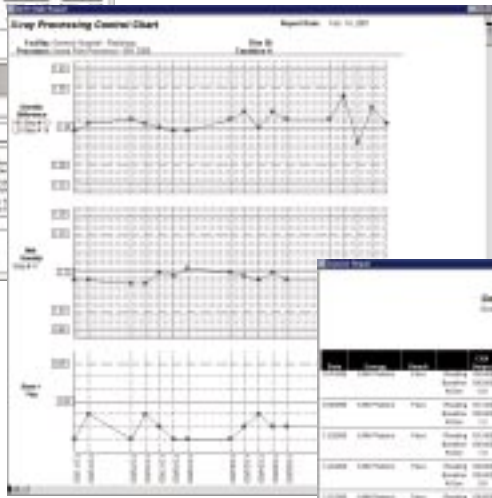
Improved QA efficiency

Argus is efficient. Automated data gathering tools acquire data in seconds. Virtual instrument interfaces are familiar and easy to use. Readings download instantly with a mouse click. Analysis is automatic and accurate. Trend and distribution analyses reveal problems immediately. Status review and variance tracking can be done at a glance. The automated report generator quickly produces point-and-click reports for all management and regulatory purposes.

Fast payback and long-term value

Argus is a good investment, typically paying for itself in two years or less. It improves the ability to predict and prevent equipment downtime, preventing revenue loss. It enhances productivity, enabling more in-depth QA while reducing the time and resources needed for oversight and reporting.

By increasing QA efficiency, Argus enables more advanced treatment options for improving patient care. For example, Argus IMRT makes QA of complex IMRT plans faster, while simultaneously increasing your confidence.



| Test | Pass | Fail | Warning | Energy | Flux | Flux Rate | Flux Rate Error | Flux Rate Error % | Flux Rate Error % Error |
|-------|------|------|---------|--------|------|-----------|-----------------|-------------------|-------------------------|
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 12000 | Pass | Fail | Warning | 12000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |

QA reports can be generated with the click of a button.

Easier QA program management for physicists

Physicists have more responsibilities every day, and Argus relieves the pressure by making the QA process more manageable.

Access all information in one place—online.

All radiation equipment can be monitored from the desktop. Argus replaces a shelf full of binders and makes conventional test review a thing of the past.

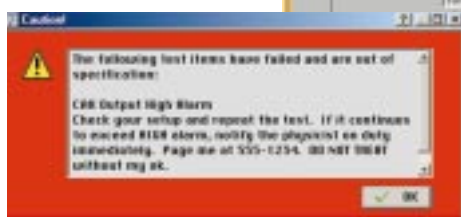
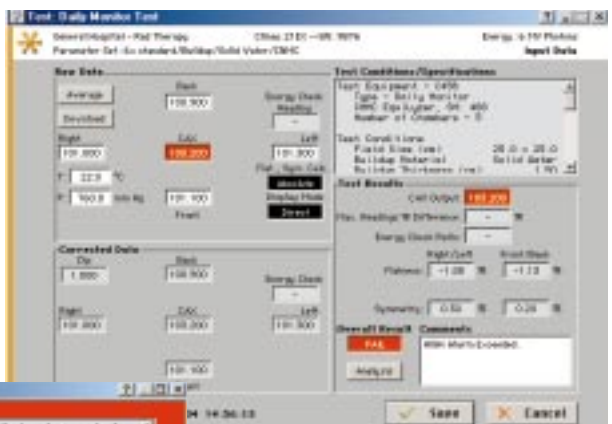
Define your own QA program. Argus gives physicists complete control to define the tests, schedule their frequency, and set baseline values and tolerances.

Enhance communications. The physicist can create condition-specific messages for the therapists running routine tests and communicate with therapists using Argus' internal messaging system.

Review the program quickly and easily. Argus provides easy-to-use review tools. Online test status provides a quick look at what passed and failed. Graphs can be highlighted and annotated for future reference. A sign-off feature helps keep track of what has been reviewed.

Simpler daily QA for therapists

Argus makes daily testing simple and worry free. An online schedule keeps therapists informed about what tests to run and when to run them. Test data is acquired with a mouse click, and analysis results display automatically. Customized instructions provide guidance when specific out-of-tolerance conditions occur. Using the internal messaging system, therapists can send questions to the physicists with tests attached. Once they try Argus, your staff will wonder how they managed without it.



Out-of-specification conditions are highlighted. These conditions trigger an alarm and customized instructions.

QA by design: Continuous quality improvement

PLAN

Setup

Define users and privileges, facility information, machines, measurement devices, and preferences. Frequently used information is entered once and easily recalled when needed.

Main Navigation

Setup

- Users
- Passwords
- Facilities
- Machines
- Test equipment
- Preferences

Configure

- Protocols
- Tests
- Parameter sets

Configure

Once setup information is entered, configure your protocols (the frequency at which you perform a particular group of tests), your tests (the tests that are performed for each protocol), and your parameter sets (how tests will be performed).

ACT

Report

- Raw Data
- Concise
- Full Text
- Variance
- Status
- Messaging

Reporting

Argus offers a wide variety of report formats: raw data, concise tabular summaries, variance, regulatory compliance, in-house reports, and full-text documents. Status, remote access, and messaging enable you to constantly monitor your program and maintain communication.



History/Analysis

Create and display reports of historical information. Autocalculation and warning flags signal out-of-tolerance results, while status of tracking and variance reporting reveal equipment and departmental performance problems. Analytical tools include trend graphs, statistical analysis, and frequency distributions.

History

- Previous results
- Previous raw data
- Previous parameters

Analysis

- Graphs
- Statistics

DO

Test

Enter test data, calculate, and save the results. Use virtual instrument interfaces to transfer readings directly from your test equipment to tests or parameter sets.

Test

- Record data
- Switch tests
- Switch energies

STUDY

Using Argus: Setup

Automated protocols, parameters, and schedules simplify QA program planning. Frequently used information is entered only once and easily recalled when needed.

Define your protocols

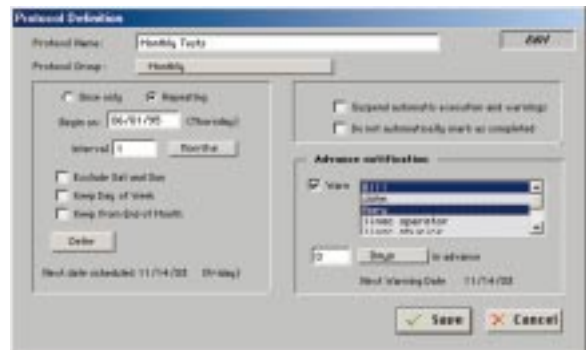
You schedule each protocol and set options for execution using the Protocol Definition window. Name your protocol and assign it to a Protocol Group for grouping, filtering, and sorting of test results. Then enter the schedule you want—once, at specified intervals, e.g., daily, daily except weekends, weekly on the same day, or last day of the month. Before protocols are due, automatically send advance notification to a list of recipients you specify.

Argus allows you to defer scheduled protocols. You can stop repeating protocols from automatic execution. A protocol can be automatically marked as complete when all tests have been performed, or you can require an authorized user to review and manually mark the protocol as complete.

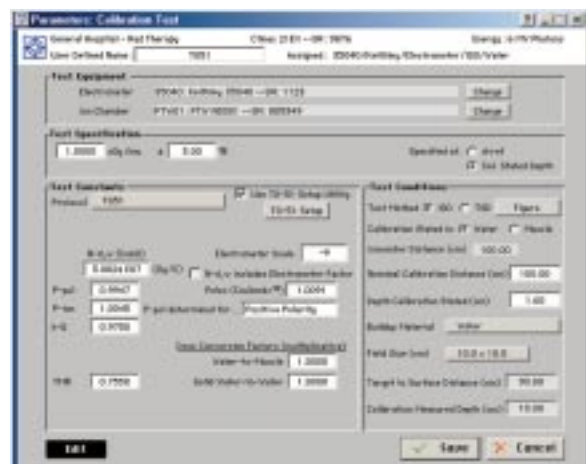
Set your test parameters

You define the setup, specifications, and testing options for each test in the protocol using the Parameter Set window. This window displays facility and machine information, as well as energy and X-ray tube information when appropriate.

- Give the parameter set a user-defined name.
- Select the test equipment to be used from your defined list.
- Define the machine and test equipment setup, geometry, and other options.
- Define the constants used to calculate results.
- Set the baselines and tolerances for the test.
- Choose the test method.



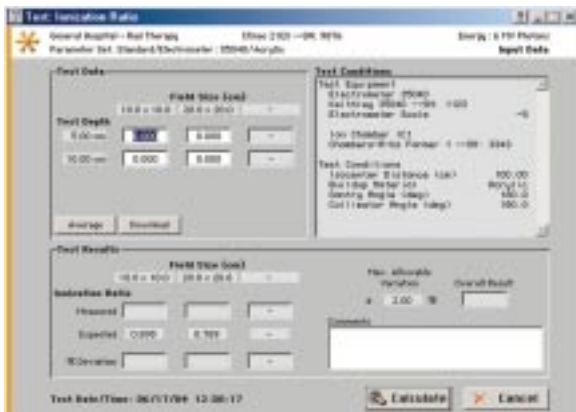
Define protocols to schedule and manage your QA, including repeat of protocols at customized intervals and notification in advance of a scheduled QA event.



Define all test parameters—test equipment, test conditions, calculation constants, baseline values, tolerance specifications, etc.—in one place. Define parameters once, and never search through notebooks again.



Quick and accurate downloading of measurements is available via interfaces to a variety of popular QA test devices.



Enter test data in intuitive test windows and get immediate results.

Using Argus: Test

Streamlined testing procedures let you do more testing in less time. A variety of analytical tools and reporting formats enables you to study all aspects of departmental performance and act on conditions as they are identified.

Argus test templates are powerful tools for entering, calculating, and saving test results.

- View facility and machine information, as well as energy or X-ray tube information as appropriate.
- View test conditions and setup information.
- Enter information necessary for calculating test results.
- Automatically apply the average of several readings to some fields.
- Download readings directly from test equipment with Argus interfaces.
- Control common test equipment functions through certain Argus interfaces.
- View calculated results, together with baselines, expected results, and deviations.
- Save calculated results, preventing loss or deletion.

Use the Full Text Report functions to create your own report. With text, data, graphs, and images you can customize a report for any need from simple data printouts to a detailed, professional report for regulatory agencies.



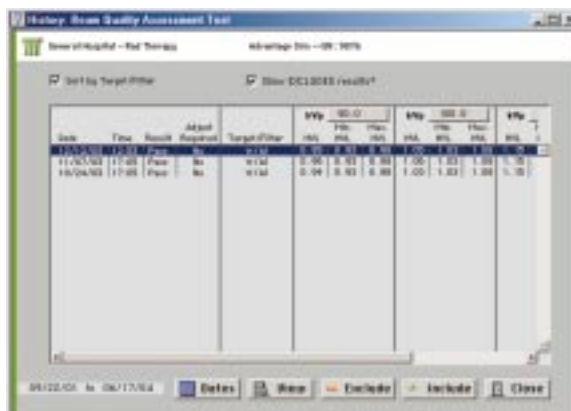
Using Argus: Review

Argus enhances understanding of department performance. Autocalculation and warning flags signal out-of-tolerance results. Status tracking and variance reporting reveal equipment and performance problems. Analytical tools include trend graphs, statistical analysis, and frequency distributions. Argus provides easy access to historical data.

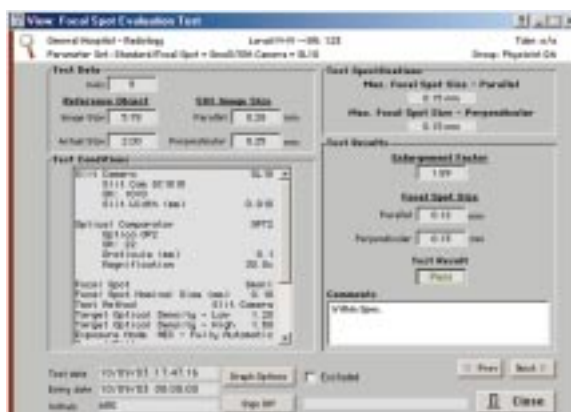
Argus automatically generates reports for every need: regulatory compliance, accreditation, annual calibration, and evaluation of equipment performance. You choose the facility and machine, date range, tests, protocol group, and energies to include in the report. Argus provides a variety of flexible report formats:

- *Concise* displays one test result per line.
- *Variance* shows only tests with failed results.
- *Raw Data* assembles all test data and parameter set fields.
- *ACR-style* creates a report in MQSA/ACR format for mammography units and film processors.

In addition, a Full Text Report utility enables you to define your own reports. Simple point-and-click data selection populates the reports. Filters present just the data of immediate interest. Graphing choices aid interpretation.



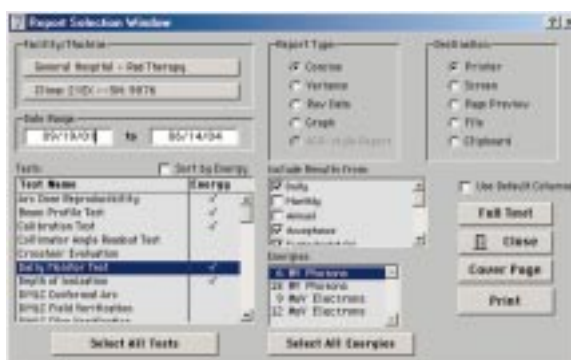
See a concise history of data for any test. Filter and sort records to see just the data you need.



View detailed information on each and every historical test record. Append comments to the record, and add initials and date to keep track of what has been reviewed.

Using Argus: Graphing

The Argus graphing utility turns test data into meaningful information. For most stored data, you can create both trend and distribution graphs. Trend graphs can correlate multiple data items, incorporate baseline and tolerance traces, and present data as absolute or deviation values. The ability to highlight and annotate data points aids interpretation. For any data point in an on-screen graph, you can easily drill down into the data record.



Use powerful searching and sorting tools to create just the report you want in predefined report templates.

Specifications

Complete QA testing of your linear accelerator is fully integrated into Argus core functionality.

Tests by module

Linac

Arc Dose Reproducibility
Beam Profile
Calibration
Collimator Angle Readout
Crosshair Evaluation
Daily Monitor
Depth of Ionization
Dosimetry – Dose Rate
Dosimetry – Dose Rate Accuracy
Dosimetry – Gantry Angle
Dosimetry – Monitor Units
Dosimetry – Short Term
Field Size
Flatness and Symmetry
Gantry Angle Readout
Interlock Checklist
Ionization Ratio
Laser Alignment
Light vs. Radiation Field
Mechanical Isocenter Variation
Optical Distance Indicator
Output vs. Cone Size
Output vs. Field Size
Percent Depth Dose
Percent Ionization
Point Dose Measurements
Radiation Isocenter – Collimator
Radiation Isocenter – Couch
Radiation Isocenter – Gantry
Radiation Survey
Safety (Linac)
Table Lateral Motion
Table Longitudinal Motion
Table Rotational Motion
Table Vertical Motion
TMR/TPR
Tray Attenuation Factors
Wedge Attenuation Factors

IMRT

Crosshair Evaluation
DMLC Conformal Arc
DMLC Field Verification

DMLC Plan Verification
DMLC Sliding Window
DMLC Step and Shoot
Fluence Map Cross Comparison
IMRT Checklist
Light vs. Radiation Field
Mechanical Isocenter Variation
MLC 50% Fluence Analysis
MLC Collimator Backdrive
MLC Interdigitation
MLC Leaf Positioning
MLC Leaf Speed
MLC Leaf Travel Range
MLC Positioning Repeatability
MLC Shaper Checklist
Point Dose Measurements
Radiation Isocenter – Collimator
Radiation Isocenter – Gantry

CT Sim

Beam Quality Assessment
Contrast Scale
CT Artifact Evaluation
CT Dosimetry Index
CT Image Quality
CT Number Assessment
CT QA Checklist
CT Simulation Checklist
Focal Spot Evaluation
High Contrast Resolution
Image Uniformity and Noise
kVp Accuracy and Reproducibility
Laser Alignment
Low Contrast Resolution
Radiation Survey Test
Simulation Accuracy
Slice Thickness
Table Longitudinal Motion
Table/Gantry Alignment
Table/Gantry Tilt
Timer Evaluation
Treatment Planning QA Checklist

HDR

HDR QA Checklist
Patient Treatment Checklist
Radiation Survey
Source Calibration – Well Chamber
Source Calibration in Air
Source Change Checklist

Source Position
Timer Evaluation
Treatment Planning QA Checklist

Sim

AEC Performance
Beam Quality Assessment
Collimator Angle Readout
Crosshair Evaluation
Delineator Wires
FAD/SID Readout
Field Size
Fluoroscopic Exposure Rate
Focal Spot Evaluation
Gantry Angle Readout
IID/Cassette Readout
kVp Accuracy and Reproducibility
Laser Alignment
Light vs. Radiation Field
Optical Distance Indicator
Radiation Isocenter – Collimator
Radiation Isocenter – Couch
Radiation Isocenter – Gantry
Radiation Output
Radiation Survey
Safety (Linac)
Simulator QA Checklist
Table Lateral Motion
Table Longitudinal Motion
Table Rotational Motion
Table Vertical Motion
Timer Evaluation
Film Processor
Crossover Analysis
Film Processor Sensitometry
Fixer Retention
Processor Replenishment Rates
Solution Temperatures

R&F

AEC Density Control
AEC Performance
Artifact Evaluation
Beam Quality Assessment
FAD/SID Readout
Field Size
Fluoroscopic Exposure Rate
Focal Spot Evaluation
kVp Accuracy and Reproducibility
Light vs. Radiation Field

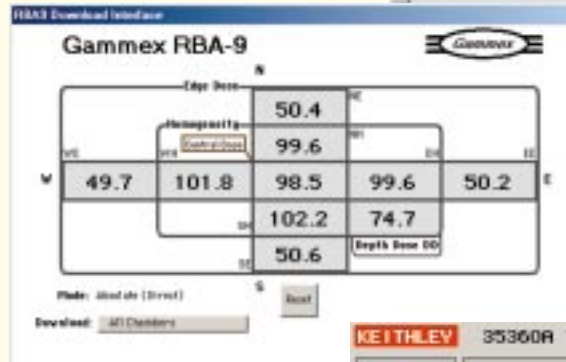
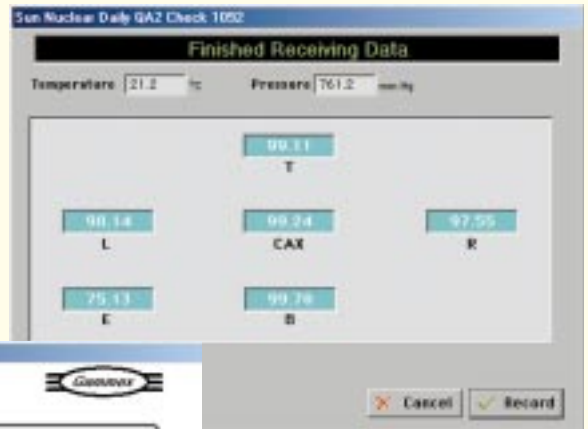
R&F Checklist
 Radiation Output
 Radiation Survey
 Repeat Film Analysis (X ray)
 Timer Evaluation

MSpec

AEC Density Control
 AEC Performance
 Artifact Evaluation
 Beam Quality Assessment
 Breast Entrance Exposure
 Collimator Assessment
 Compression
 Darkroom Cleanliness Checklist
 Darkroom Fog
 Focal Spot Evaluation
 Image Quality Evaluation
 Infection Control Checklist
 kVp Accuracy and Reproducibility
 Mammography Unit Assembly Evaluation
 Phantom Image
 Radiation Output
 Radiation Survey
 Repeat Film Analysis (X ray)
 Screen Cleanliness Check
 Screen-Film Contact
 Uniformity of Screen Speed
 Viewbox/Viewing Conditions Checklist
 Visual Checklist

CT

Beam Quality Assessment
 Contrast Scale
 CT Artifact Evaluation
 CT Dosimetry Index
 CT Image Quality
 CT Number Assessment
 CT QA Checklist
 Focal Spot Evaluation
 High Contrast Resolution
 Image Uniformity and Noise
 kVp Accuracy and Reproducibility
 Laser Alignment
 Low Contrast Resolution
 Radiation Survey Test
 Slice Thickness
 Table Longitudinal Motion
 Table/Gantry Alignment
 Table/Gantry Tilt
 Timer Evaluation



Virtual instrument interfaces allow control directly from the workstation.



Interfaces

Daily Monitors

- CNMC EquiLyzr
- CNMC Sentinel (629)
- CNMC Sentinel II
- Gammex / RMI RBA 3 (also Protea RBA3 and RMI 447)
- Gammex / RMI RBA 5 (also PRM TM-3m)
- Gammex / RMI RBA 9
- Gammex / RMI 444D Daily Constancy Tool
- Keithley Tracker (Inovision)
- Precitron Hermes
- Sun Nuclear QA (check) Plus (Model 1090)
- Sun Nuclear QA (check) 2 (Model 1092)
- Victoreen 7200 Double Check (Inovision)

Electrometers

- CNMC / Sun Nuclear DataBridge
- Keithley 35040 (Inovision)
- Standard Imaging MAX 4000

Densitometers

- Victoreen / Nuclear Associates 07-440
- Victoreen / Nuclear Associates 07-444
- X Rite 301RS
- X Rite 380, 390, and 391

Linear Detector Arrays

- Sun Nuclear Profiler

New Interfaces!

- PTW® UNIDOS®
- PTW UNIDOS E
- PTW MULTIDOS® (for use with QC6PLUS™ detector only)

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