

Integral Quality Monitor

The future
of Radiation Therapy
Verification is here



Real-time verification

IQM provides complete coverage for every clinical treatment technique:

- SRT / SBRT, including hypo-fractionated techniques with high dose rates
- VMAT / Rapid Arc
- IMRT, including large field ($>25\text{cm} \times 25\text{cm}$) IMRT
- 3D Conformal techniques
- Total Body Irradiation (TBI)
- Gated treatment techniques

In one device.

"IQM constitutes a paradigm shift in treatment verification..."

David Jaffray, Ph.D. Chief Technology and Digital Officer
at University of Texas MD Anderson Cancer Center, Houston, USA

IQM changes the QA paradigm in Radiation Therapy: real-time verification during the patient treatment. Quality Assurance when it really matters.

IQM independently and automatically verifies the accurate delivery of every treatment plan parameter at every single control point. In real-time, IQM detects treatment delivery errors before they can do harm to your patients. Real-time treatment verification for real-time error prevention.





Why IQM?

Optimize your process

- Independent QA. Seamlessly integrated into your clinical processes
- Improve your QA processes through complete automation
- Minimize QA time
- Increase linac and TPS capacity

Optimize your QA quality

- IQM combines the signal reproducibility of a large ion chamber with the spatial sensitivity of film
- Gain unrivaled accuracy for every treatment technique
- Introduce new and advanced treatment techniques safer and faster
- Outstanding clinical performance. Verified by some of the world's leading cancer clinics

Optimize your flexibility

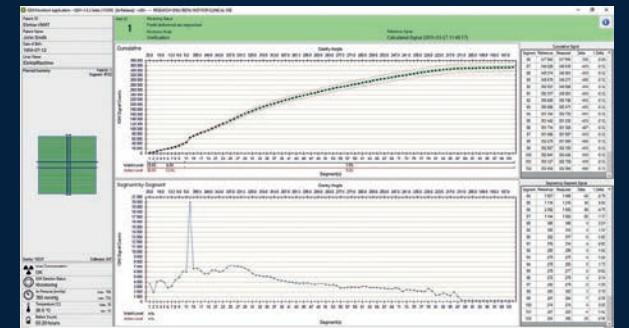
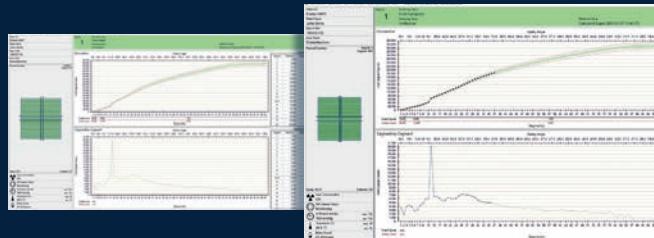
- Move patients seamlessly among matched machines
- Take care of plan QA any time throughout the day
- Simplify QA assignments - any linac user can run any QA test

Optimize your investment

- Improve return on investment
- Increase operational efficiency
- Maximize linac uptime with error trending and optimized service intervals
- Consolidate service contracts for other QA tools

Safely minimize your patient time

IQM's unique real-time verification is completely integrated into the treatment planning and delivery process, works fully automated and requires absolutely no user interaction. IQM allows you to safely introduce hypo-fractionated treatment deliveries and other new complex treatment techniques into your clinical routine. IQM's completely automated real-time verification provides unmatched verification accuracy independent from the user's experience and knowledge.



- IQM's unique real-time verification detects treatment deviations when it really matters. During the patient treatment.
- IQM verifies treatment accuracy at every control point. Ensuring the treatment is delivered exactly as prescribed. Automatically. In real-time. During each and every treatment fraction.
- IQM allows your patients the improved convenience associated with hypo-fractionation without increasing the treatment delivery risk.
- Monitoring treatments with IQM improves patient convenience without compromising patient safety.

Significantly minimize your QA time

"The quick setup and fully automated handling of all clinical data significantly reduces the time we need for Plan QA."

Otto Sauer, Ph.D., Head of Medical Physics at University of Würzburg, Würzburg, Germany

"IQM saves us 400 hours planning time, 200 hours linac time and 600 hours staff time compared to our conventional 3D arrays."

Mohammad Islam, Ph.D., Medical Physicist at Princess Margaret Cancer Centre, Toronto, Canada

"IQM saves us more than 90 minutes plan QA time. Every day."

Friederike Ehland, Head of Medical Physics at Zentrum für Strahlentherapie und Radioonkologie, Bremen, Germany

It takes less than 10 seconds to setup IQM and from there the entire QA process happens automatically. In the background. With no user interaction.

The IQM system's complete automation significantly reduces the time needed for every step of your QA process. IQM eliminates the need for specific QA plans at the TPS. IQM eliminates tedious QA device setup, alignments, and calibrations. IQM eliminates time-consuming artifacts introduced by panel sag, auto-alignment, and volume averaging. IQM's real-time verification eliminates any post-treatment data processing or analysis. Verification is completed as soon as the beam stops. IQM automatically creates the verification report and sends it as a PDF via e-mail.

Improve your SRT / SBRT verification accuracy

"Our SBRT QA study indicates that IQM is more sensitive to dose differences than [a leading manufacturer's] Portal Dosimetry and shows a better Pearson correlation for the MLC error plan types."

Harpley, A., et al (VUMC, Nashville, TN): Evaluation of the cumulative signal response with the EPID and the IQM for patient-specific SBRT QA, 2020 Joint AAPM/COMP meeting



IQM's patented continuous spatial resolution provides unmatched sensitivity for even the smallest possible field size. IQM is the only verification system that becomes more sensitive with smaller segment sizes. Even the smallest stereotactic beam segments are measured with unrivaled accuracy and specificity at any off-axis position.

IQM overcomes the constraints of conventional QA by verifying

- any clinical field size,
- any field shape at any position,
- any dose from 0.1 MU up to unlimited,
- any dose rate,
- any photon energy (incl. FFF),
- any leaf motion,
- any gantry and collimator angle.

A new level of accuracy.
Uncompromised.

Simplicity re-invented



The new and innovative IQM detector design combines the signal reproducibility of a large ion chamber with the spatial sensitivity of film. The patented gradient ion chamber design uniquely provides 100% active detection area.

IQM always measures 100% of every beam segment. No interpolation. No extrapolation.

Uniquely accurate for every possible field size from sub-cm SBRT to 40cm x 40cm. For every possible beam shape and every possible leaf motion. At any beam position. Each beam segment creates a unique and highly specific signal. IQM assesses every influence and detects any deviation from the prescribed treatment beam with unrivaled precision.

One device for all your QA needs

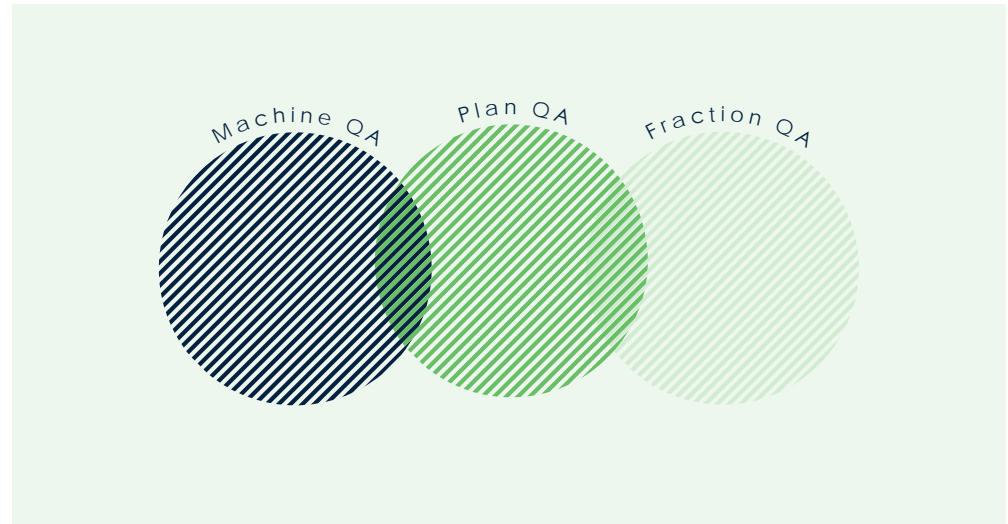
IQM's complete automation works for any dosimetric QA task.

IQM provides machine QA protocols stored as treatment plans to be periodically delivered by the Radiation Therapist:

- dose constancy
- beam symmetry
- beam flatness
- energy constancy
- picket-fence tests
- leaf speed tests
- leaf position accuracy
- leaf gap verification
- leaf transmission
- beam matching verification.

These and more tests are completely integrated, requiring only that the plan be loaded at the linac control console.

Everything else works fully automated in the background.



IQM makes Quality Assurance an integral part of the treatment planning and delivery process. IQM removes the boundaries between treatment processes and quality assurance processes. IQM does not require special user knowledge or experience to achieve highly accurate and reproducible results, making this new and innovative QA technology available to any radiation therapy clinic anywhere in the world. In clinics that already have an extensive QA program, IQM enables new insights into treatment delivery accuracy, allowing further improvement in clinical outcomes and providing optimal care to their cancer patients.

"This allows everyone to stay ahead of the game of QA..."

Stanley Benedict, Ph.D. Professor & Vice Chair of Clinical Physics
at University of California at Davis Comprehensive Cancer Center, Sacramento, USA



How do you get your IQM?

Acquiring IQM is as easy and flexible as using IQM. Whether as a capital budget purchase, through leasing/financing or through a subscription-based model, iRT is ready to support you with the purchase model that fits your needs.

As soon as we receive your purchase order our customer support team will guide you through the pre-installation process.

iRT Systems is an award-winning company with certified operational excellence. Our Quality Management System is fully certified according to ISO 13485 per MDSAP. From the very beginning we put a strong focus on product design, testing and validation. IQM is a CE class IIb medical device, and received FDA Class II market clearance and Health Canada Class III approval.

Every IQM System is thoroughly tested at a linear accelerator as the final step of our production process.

During the pre-installation we will remotely support you with IQM Server setup and configuration, interface testing and commissioning preparation. Our process ensures a smooth and fast on-site system installation and commissioning.

During the on-site installation we will guide you through our extensive system acceptance, teach you to acquire the necessary commissioning data and show you the unrivaled accuracy of your new completely automated clinical quality assurance and verification process.

When will you get your IQM?

IQM. The future
of Radiation Therapy
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For further details please contact sales@i-rt.de.

iRT was founded to introduce the Integral Quality Monitor (IQM) System to the Radiation Therapy community.

IQM represents a paradigm shift in Radiation Therapy verification: fully automated, real-time verification of all complex treatment techniques.

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