

Transmission detector for at-treatment QA

Delta⁴ Discover
by ScandiDos



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Confidence | Safety | Accuracy | Efficiency

The innovative Delta⁴ Discover transmission detector provides confidence and patient safety based on real time measurements. Its outstanding accuracy and ease of use assures the highest efficiency in your patient QA.



The utmost in confidence and patient safety with the highest efficiency in patient QA.

With the future of radiation therapy trending towards increasingly complex treatment plans, including 4D treatments, hypofractionation and adaptive radiotherapy, the need for instantaneous plan approval and maximum accuracy during all stages of QA is greater than ever before.

To us, a solution includes both accuracy in determining the dose delivered to the patient but also efficiency and ease of use with minimal changes to the normal workflow at the clinic. It also includes the tools required for a physicist to find the cause of errors and discrepancies when they occur.

Our solution is the Delta⁴ Discover, a transmission detector that measures the transmission dose in the cleverest way, including minimal attenuation and minimal increase in skin dose to the patient without reducing treatment clearance.

With **Express Measure** – a feature of Delta⁴ Discover – the high-speed measurement system monitors all critical treatment parameters with no interaction or preparation required.

The Delta⁴ Discover has enabled the development of the **Delta⁴ Synthesis** which ensures delivered dose verification in the patient anatomy at-treatment by combining the 4D reference data of the Delta⁴ Phantom+ and Delta⁴ Discover. By easily adapting to changing clinic environments and advanced therapies, the Delta⁴ Discover delivers a complete solution.



Express Measure



Delta⁴ Synthesis



Innovative design and technical details

The ultra-thin Delta⁴ Discover detector uniquely gives you:

- Maintained clearance. The detector fits within the anti-collision zone resulting in no reduced clearance.
- Beam transparency: with attenuation ~1%* – no need for recommissioning to begin using the Delta⁴ Discover.
- Minimal skin dose: ~1%* additional skin dose – system can be used at all fractions.
- Highest resolution: verify the MLC leaf position with sub-millimeter accuracy. Delta⁴ Discover features a detector matrix consisting of 4040 detectors with 1.5 mm spacing along MLC trajectories. (see “Figure A” below)
- Dose distribution independent from log-files.
- Integrated dose delivered to the patient. Support for decisions of adaptation during the course of the treatment including adaptive radiotherapy.

*6MV, 10x10cm field

Delta⁴ Discover Advantages

- Measures with outstanding accuracy (within 1.5%¹)
- Minimum efforts with no interactions required if treatment is within acceptance criteria
- Delivers quantified information and verifies 3D dose and DVH in patient anatomy
- No recommissioning required
- Alternative to pre-treatment verification

¹Dose measurements in maintained field shape (linearity inside field)

Delta⁴ Discover Applications

- VMAT and IMRT
- FFF
- 3D Conformal
- Hypofractionation
- 4D Treatments
- Adaptive Radiotherapy
- SRS/SBRT cases with non-coplanar beams

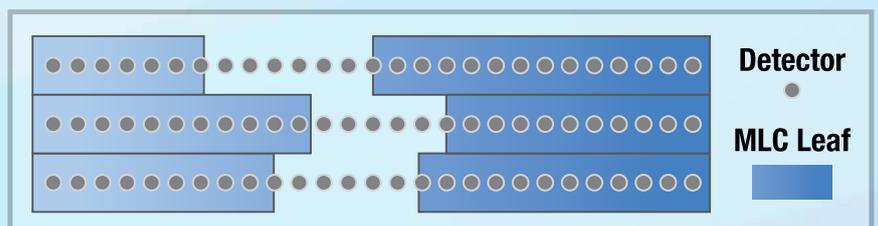
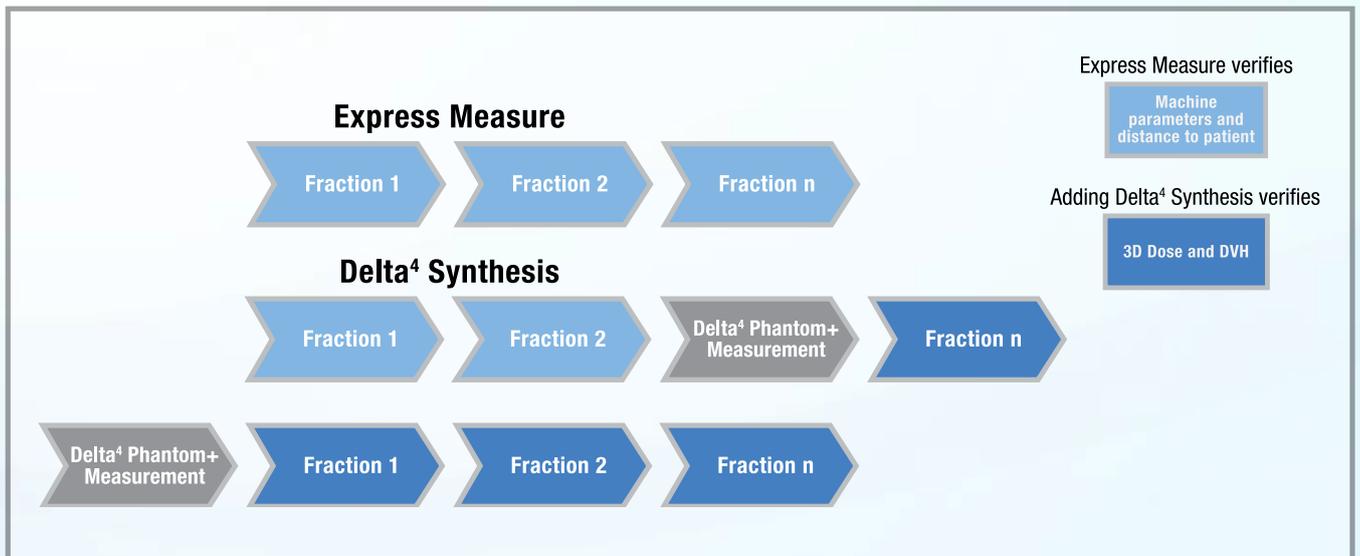


Figure A

The flexibility to optimize your QA process by using the Delta⁴ Discover

Discover the flexibility of optimizing your QA process with confidence using the Delta⁴ Discover with Express Measure or the Delta⁴ Synthesis (by combining Delta⁴ Discover with Delta⁴ Phantom+), covering both pre-treatment and at-treatment verification.



Three ways of using the Delta⁴ Discover with confidence at-treatment

Ultra fast method and limited efforts for physicist, Express Measure:

- Delta⁴ Discover is used for pre-treatment and at-treatment verification. It runs in Express Measure mode and verifies the machine parameters.

Fast method, Express Measure and when needed measurements with the Delta⁴ Phantom+:

- Delta⁴ Discover is used for pre-treatment and at-treatment verification. It runs in Express Measure mode and verifies the machine parameters.
- If tolerances / action level is exceeded the Delta⁴ Discover is calibrated towards Delta⁴ Phantom+.

Scheduled QA, Express Measure together with scheduled measurements with the Delta⁴ Phantom+:

- Delta⁴ Discover is used for pre-treatment and at-treatment verification. It runs in Express Measure mode and verifies the machine parameters.
- The measurements with the Delta⁴ Phantom+ are scheduled to before the treatment or to a predefined date or fraction.

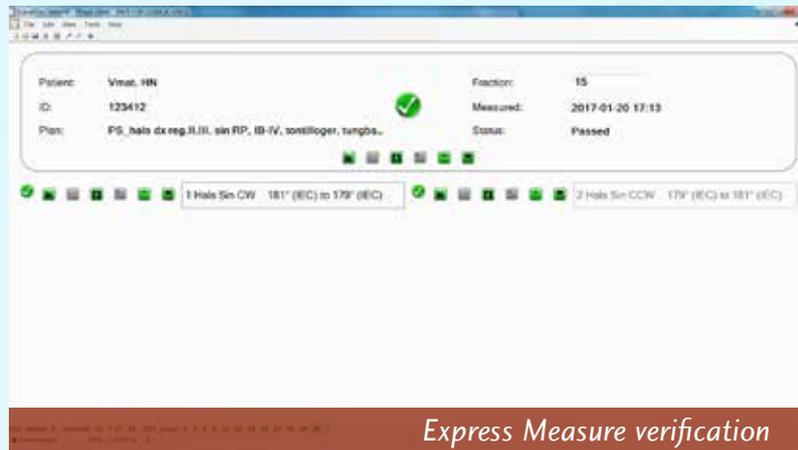
Express Measure

A feature of Delta⁴ Discover

Express Measure performs automatic, independent and comprehensive QA of the treatment delivery for all fractions.

Express Measure verifies

- MU
- MLC position
- Gantry angle
- Collimator angle
- Patient position



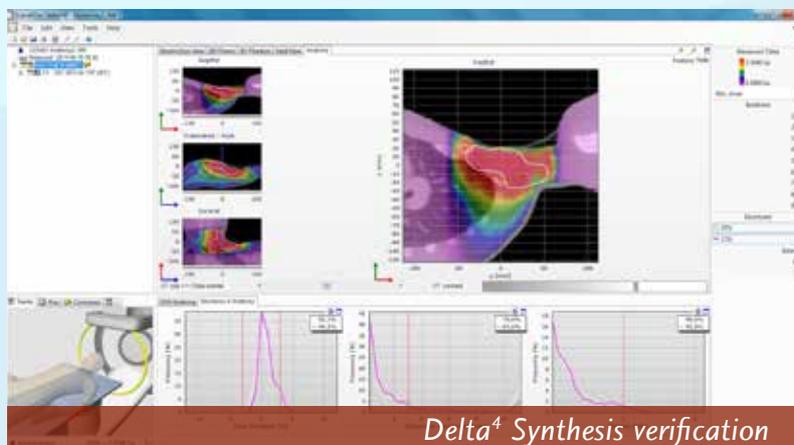
Delta⁴ Synthesis

Delta⁴ Discover enhanced with 4D reference data by Delta⁴ Phantom+

Delta⁴ Synthesis ensures delivered dose verification in the patient anatomy by combining Delta⁴ Phantom+ and Delta⁴ Discover into the most comprehensive QA system available. Set the criteria for Express Measure and view the clinical relevance by measurements with the Delta⁴ Phantom+. Delta⁴ Synthesis maximizes confidence and accuracy in delivered dose verification at-treatment.

Delta⁴ Synthesis additionally verifies

- DVH – per fraction and accumulated
- 4D Dose – per fraction and accumulated

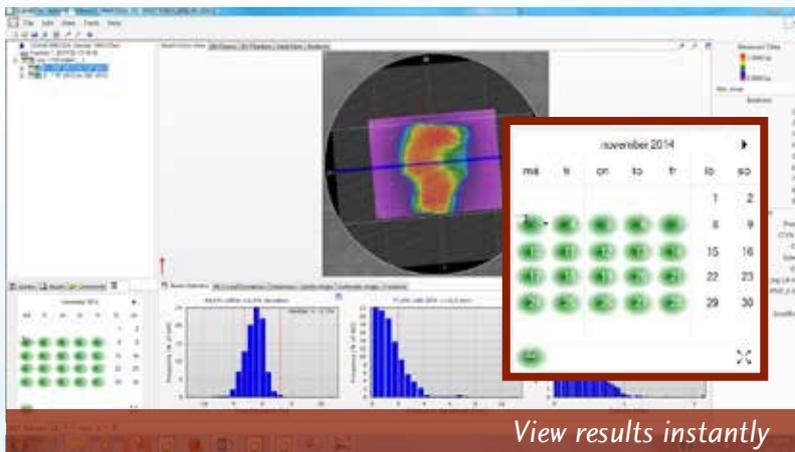


Qualified analytic tools for fast and easy analysis

The Delta⁴ Discover operates with the same user-friendly and powerful software platform featured in the Delta⁴ Phantom+. The physicist gets instant results based on set criteria, leveraging qualified analytic tools for fast and easy analysis.

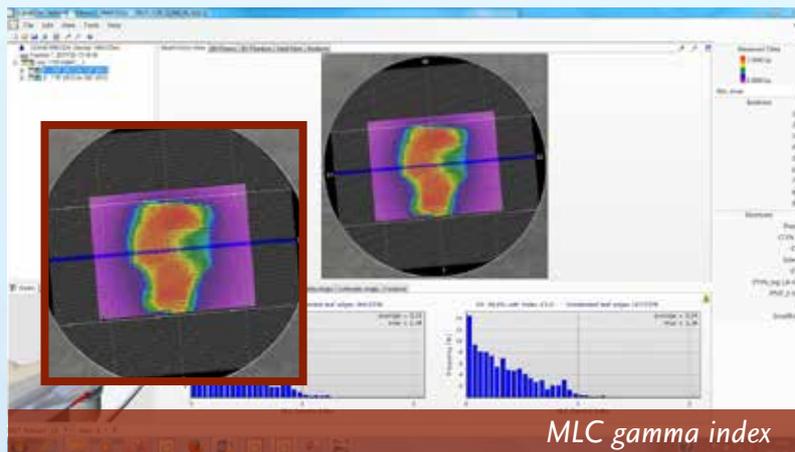
The physicist's view

Delta⁴ Discover's software enables the physicist to instantly view the results of verified parameters at any given time. The physicist can view the results per fraction or accumulated after a certain amount of fractions. The software displays parameters including beam statistics, MLC leaf deviations, gantry angle, collimator angle and fraction.



MLC Gamma

The MLC Gamma provides the physicist with an excellent tool for verifying that all MLCs perform correctly for each specific treatment. The MLC Gamma is an index combining deviation in MLC leaf positioning and gantry angle.



Delta⁴ Discover Software Benefits

- Instant results
- User-friendly software
- Fast and easy to perform analysis
- Simple implementation

A comprehensive solution for all stakeholders



Benefits for the physician, physicist, patient and therapist.

For the physician

- Evidence for the delivery of the prescribed dose
- Permanent control of delivered dose to the OAR
- Optimizes staff workflow and ensures patient safety
- Sets the stage for adaptive radiation therapy
- Adheres to the IHI Triple Aim (USA)

For the medical physicist

- Optimizes workflow with unmatched efficiency and accuracy
- Real time dose verification
- Flexibility to choose the optimal QA for the patient
- Independent verification of ALL treatment parameters
- Scheduling minimizes time and effort for pre-treatment verification

For the patient

- Ensures treatment safety
- Evidence for the delivery of the prescribed dose
- Independent verification of ALL treatment parameters

For the radiation therapist

- In Vivo dosimetry without placing diodes
- Ensures patient safety and team confidence
- No extra workload
- Maintained clearance
- Light field and ODI visible



Physician confidence



Physicist efficiency



Patient safety



Therapist seamless process



Innovative and Efficient QA

The ScandiDos mission

The Delta⁴ family of products are developed, engineered and manufactured by ScandiDos, a company that strives to improve the treatment of patients with cancer worldwide. ScandiDos achieves this by reinforcing the confidence in radiotherapy clinics using innovative solutions that further individualize the radiation treatment, making the process safe and efficient. The Delta⁴ Family of products delivers a comprehensive solution for radiation therapy and quality assurance, ensuring safe and accurate treatment. Today, we support our customers worldwide with offices and partners in Europe, USA and Asia, continuing our mission of **empowering professionals with power and performance**.

ScandiDos AB, a worldwide leader in quality assurance solutions and dosimetry for radiation therapy.

For more information about the Delta⁴ family of products, please visit delta4family.com.

For more information about ScandiDos, please visit our corporate website at ScandiDos.com.

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