

Delta⁴

by ScandiDos

Delta4 Phantom+ IMRT

The fastest and most accurate 4D verification system



Pre-treatment

CONFIDENCE | SAFETY | ACCURACY | EFFICIENCY



**We drive the
development
of solutions
for safer
radiation therapy**



Delta⁴

by ScandiDos

Reinforcing confidence in radiation therapy by making the process safe and efficient.

We are ScandiDos – an innovative forward-thinking company with groundbreaking software and hardware solutions for patient quality assurance in modern radiation therapy.

The Delta4 Family of products delivers a comprehensive QA solution, ensuring safe and accurate treatment. By using innovative solutions that further individualize radiation treatment, we make the process safe and efficient – while reinforcing confidence in radiotherapy clinics.

Empowering professionals with power and performance.

Our organization is a trusted authority when it comes to improving the daily workflow of medical physicists. We give them the tools and confidence they need to ensure clinic efficiency, accuracy, and patient safety.

The Delta4 brand guarantees efficient, accurate, and compelling QA products for medical physicists and physicians worldwide.



Complete and independent treatment validation

Delta4 Phantom+ IMRT provides fast and accurate dose and treatment delivery verification for your advanced treatment plans.

- Full 3D IMRT plan verification
- Meets the TG-218 requirements
- Fast setup, measurement, and analysis for efficient QA

ACCURATE PATIENT QA IN LESS TIME THAN EVER

Delta4 Phantom+ IMRT system offers the most accurate and efficient verification of your IMRT plans.

It is the ONLY system that measures the dose distribution in the isocentric region and not simply in one single flat or wrapped plane.

The patented geometric, dual orthogonal detector planes and the nature of the detectors make the Delta4 Phantom+ IMRT a unique quality assurance system.



Real measurements in the isocentric target region

To keep up with increasing complexity, and ensure each patient is treated with confidence and accuracy, it's paramount that clinics perform a thorough verification of treatment plans. The Delta4 Phantom+ IMRT provides fast and accurate dose and treatment delivery verification for your advanced treatment plans.

Measure where it really matters. The patented detector configuration with two orthogonal detector planes provides real measurements in the isocentric target region.

Instant pass/fail analysis. Since measurements are made in the target, the relevant dose is instantly available when the irradiation has been delivered. The delivered dose is instantly compared with the planned dose and analyzed against your pass/fail criteria.

Machine QA. In addition to patient QA the Delta4 Phantom+ IMRT can perform checks of the beam constancy and the MLC performance.



The Delta4 Phantom+ is a valuable tool for us at Herlev Hospital. We find great value in having an independent measurement of treatment plans. At Herlev Hospital we now have a complete range of Scandidos' Delta4 products covering TrueBeams, Halcyons and MRIdian.

Ulf Bjelkengren
Technical Manager, M.Sc., Medical Physics, Herlev and Gentofte Hospital

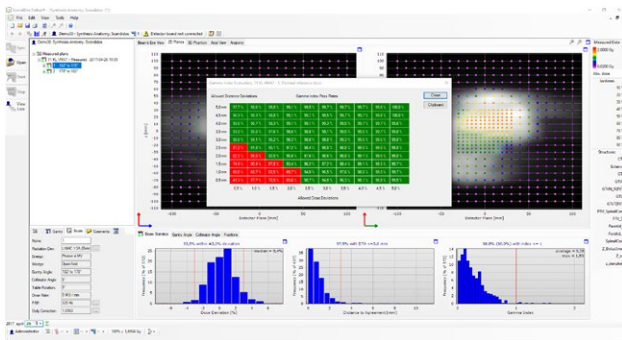
Instant results and automatic analysis

INTEGRATED IN THE WORKFLOW

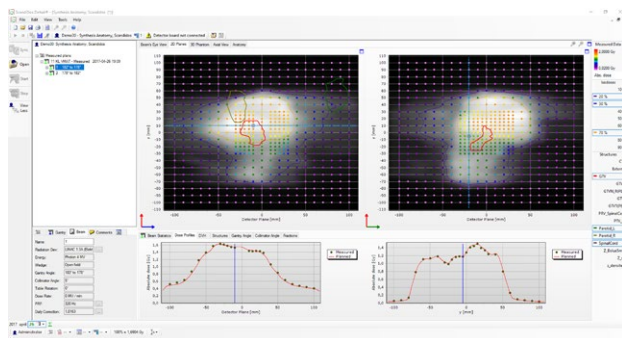
The Delta4 software is fully integrated in the clinical workflow. TPS plans are easily imported together with TPS dose and structures.

INSTANT RESULTS

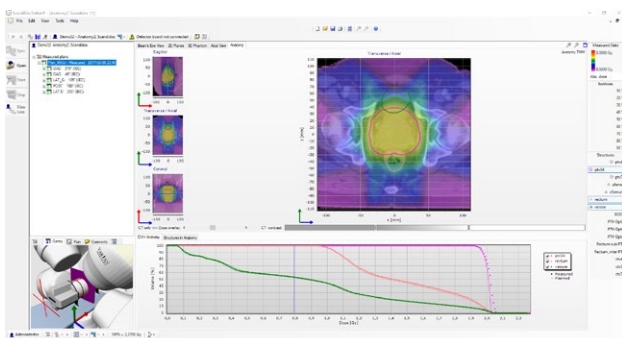
Your QA results, including dose deviation, distance to agreement (DTA) and gamma index, are instantly available without any further processing and QA reports are easily customized to your specific needs.



Instant display of dose deviation, distance to agreement, gamma pass rate, and plan pass/fail status



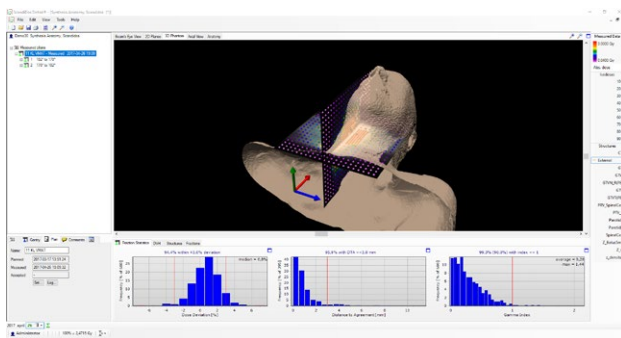
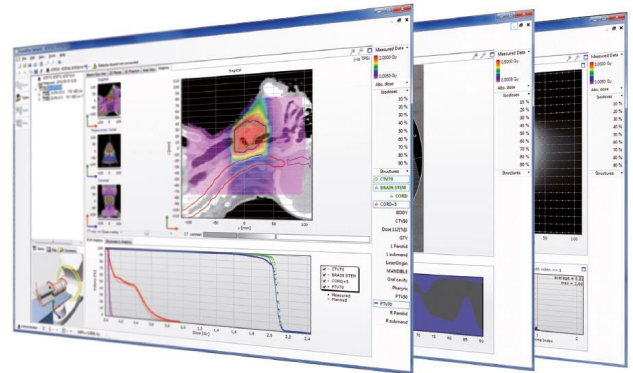
Wide range of analysis tools including profile display, isodoses, structure overlaying, continuous dose display, and dose-volume histograms.



Possibility to calculate continuous dose distributions within the patient.

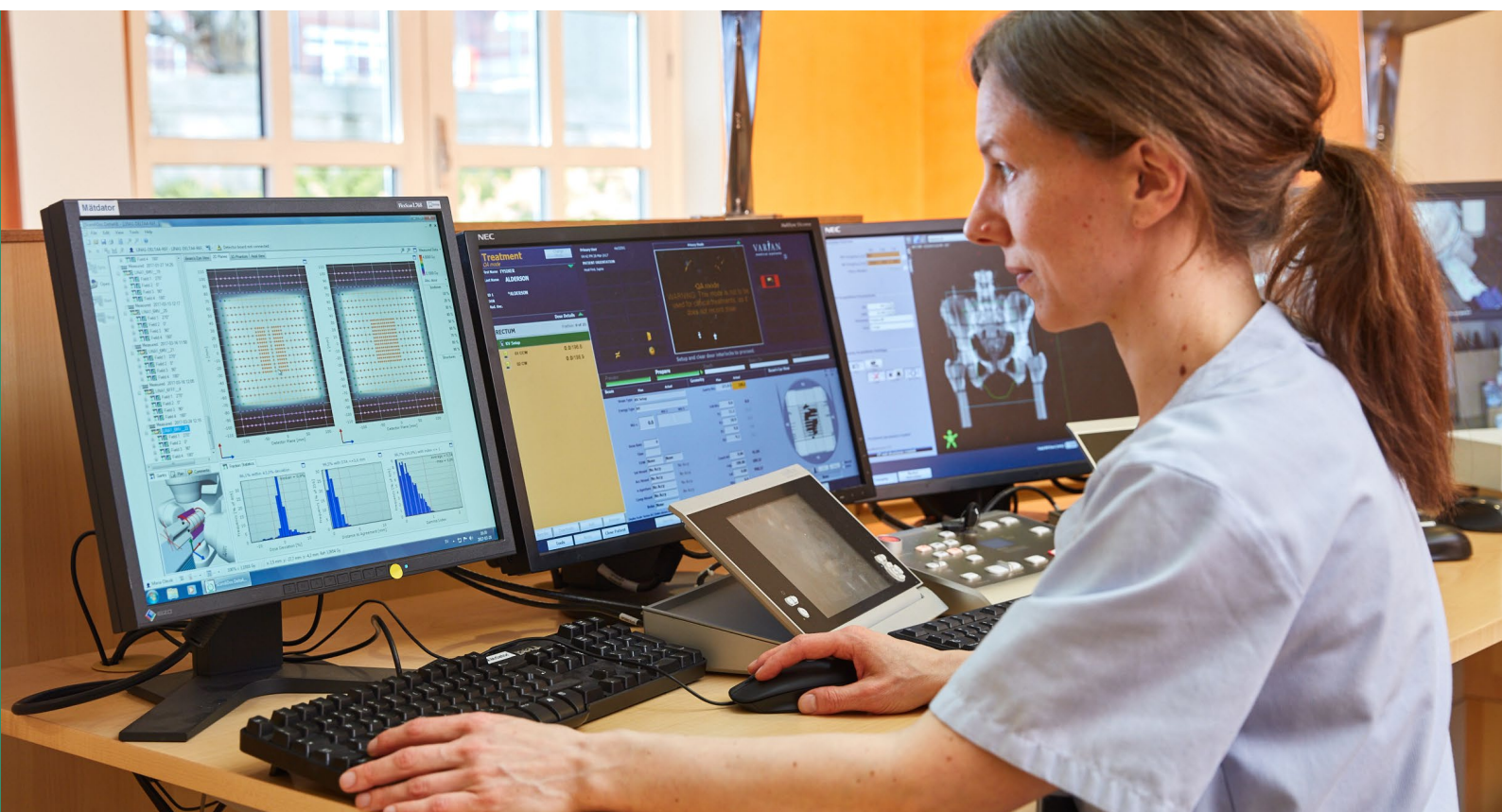
INTUITIVE

The genuinely intuitive software flattens your learning curve. You can easily navigate between patients, measurements and analysis and all the information you need is just a click away. The QA analysis is performed automatically as soon as the dose has been delivered instantly indicating pass or fail.



POWERFUL ANALYSIS

With unique 4D measurements you also have the data to analyze the delivered dose for fraction, beam or control point. The delivered 4D dose can also be analyzed in the patient anatomy. The Delta4DVH suite of software modules provides unique analysis tools to find the clinical significance of a deviation.



Streamlined Workflow

Fast set-up. The phantom is easily transferred to the treatment couch with the Delta4 Trolley. You never have to lift the phantom! The Trolley also serves as a neat and compact roll-and-store platform for the phantom.

Alignment is easily done with clear markers on the phantom, allowing you to accurately position the Delta4 Phantom+ IMRT in 5 dimensions.

Instantly ready for measurement. The Delta4 Phantom+ IMRT transfers data via Ethernet. Just turn on the power and you are ready to measure.

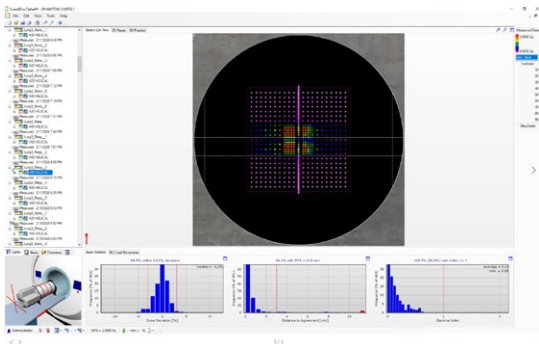


Quick and easy setup

- Trolley eliminates all lifting
- Trolley available for all types of treatment tables
- Delivery verified with one measurement

Easy levelling

- Levelling with 3 or 4 point adjustment



Easy analysis and intuitive software

- Fully automated
- Instant results in one place
- Powerful analytic tools
- Clear and modifiable reporting

With an ambitious team of coworkers and strong relationships with the industry, ScandiDos continues to be the golden standard for patient QA.

Quick facts about us:

- 1000+ systems installed
- Systems in 50+ countries
- 800+ customers

Next generation technology that works for your benefit

Unique detector configuration

- Isocentric measurements in two orthogonal detector planes
- Merge large fields up to 38 cm longitudinal
- Resolution of 10 mm can be increased indefinitely in the axial direction by merging multiple measurements

Superior ScandiDos detector

- Long term stable, detectors, eliminates re-calibration of relative sensitivity
- Isotropic response
- FFF compatible



Absolute measurement

- Quick and accurate absolute dose verification
- Ion chamber measurements can also be performed in the same phantom



As a Clinical Scientist, I value the straightforward, meaningful data that Delta4 provides. It is quick and easy to use, and one staff member has even described it as 'an absolute dream'.

Karen Hawthorn. Clinical Scientist, Newcastle upon Tyne Hospitals NHS Foundation Trust

WHY PERFORM PRE-TREATMENT PATIENT QA?

Modern radiation therapy uses complex plans with techniques such as IMRT. A single plan can consist of more than a hundred control points and include MLC leaf movements, gantry and collimator angle rotations etc. in order to produce steep dose gradients within the patient.

To keep up with increasing complexity, a thorough verification of treatment plans is paramount for clinics to treat each patient with confidence and accuracy. For this purpose it is necessary to independently verify:

- The TPS dose.
- The transfer of data from TPS to the delivery system.
- The performance of the delivery system.
- The relationship of the delivered dose to the target and OAR's.



The Delta4 Family of products delivers a comprehensive QA solution, ensuring safe and accurate treatment. By using innovative solutions that further individualize radiation treatment, we make the process safe and efficient while reinforcing confidence in radiotherapy clinics.



Technical Specifications

DELTA4 PHANTOM+ IMRT

Cylinder Phantom

Material PMMA

Diameter 22 cm

Length 40 cm **Total Length** 71 cm **Total Weight** 27 kg

Ion chamber insert in cylinder Inserts for common cylindrical ion chambers available.

Detectors

Type p-Si

Total number 881

Layout Distributed on coronal and sagittal plane.

Max field size 20 x 38 cm² (when merging two consecutive measurements, otherwise 20 x 20 cm²).

Distance between detectors Resolution of 10 mm can be increased indefinitely in the axial direction by merging multiple measurements.

Size (radial x axial) 1 x 0.05 mm³= 0,00004 cm³

Detector stability (6MV beam) Better than 0.1 % per kGy, typically 0.04%/kGy.

Power and Communication

Power Power adaptor is included.

Communication Ethernet connector (RJ-45).

Compatibility

Modalities Photon beams, with and without flattening filter.

Treatment plan import Compatible with any treatment planning system that can export DICOM RT plan, RT Dose, and RT Structure.

Usage Notes Designed for use with fixed-field IMRT plans. Measurement of VMAT and Tomo treatments requires an upgrade to the wired or wireless version of the Delta4 Phantom+.

Upgrade Options

Delta4 Phantom+ (Wired): Provides a higher detector density with 1069 detectors in total, including a 6 x 6 cm high-density area.

Delta4 Phantom+ (Wireless): Provides a higher detector density with 1069 detectors in total, including a 6 x 6 cm high-density area, as well as wireless communication and battery operation.



Being a solid-state array, the measured planer resolution is lower than that of film or EPID. Delta4 makes up for this in two ways; First, ray-scaling is used to calculate dose in 3D space at the same resolution as your calculated plan. Secondly, consecutive measurements with small shifts can be acquired and merged together to gain a measured resolution of 0.25 cm.

Michael Butkus, Chief Resident of Medical Physics, Yale University School of Medicine & Yale New Haven Hospital

Innovative and Efficient QA delta4family.com

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