Delta^4 Discover

Oncology Imaging Systems

Safe and Independent Dose Verification At Treatment

During the last decade, with the introduction of IMRT and VMAT, radiotherapy has taken major steps towards a higher level of individualization and a higher level of precision. However, the control steps have been limited to verifying the dose prior to treatment.

Peace of mind

Now, the Delta4 Discover technology allows accurate dose delivery verification at treatment, in the patient anatomy and for every treatment fraction. You can be ensured that your patients are treated exactly according to the dose prescription and avoid errors in the dose in critical structures.

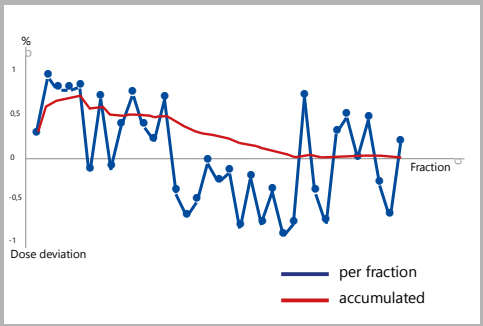
Both you and your patient can now be confident that the dose is delivered exactly as it was planned.

Dose per fraction and for the total treatment

Delta4 Discover system verifies, independently from the accelerator and the delivery system, that the correct dose is delivered to the patient. The independence adds another level of safety for the patient, for example if the wrong or a corrupted file is loaded in the treatment console.

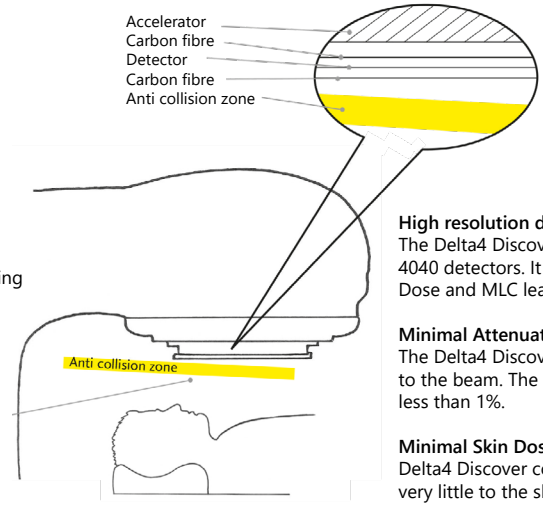
You can instantly see the dose that is delivered both overall and in each structure. If there are deviations they can be shown both per fraction and accumulated up to the latest fraction.

Dose per fraction and accumulated



Delta4 **Discover** TRANSMISSION DETECTOR

The Delta4 Discover system measures the dose that is delivered by the accelerator and automatically checks against pass-fail criteria that the treatment is done according to the plan. Together with the patient's CT you can see the exact dose that has been delivered to the patient.



Flattening Filter Free beams
Uniquely compatible with Flattening Filter Free (FFF) beams of modern accelerators.

Maintained Clearance
The detector fits within the anti-collision system resulting in no reduced clearance.

High resolution detector
The Delta4 Discover detector consists of 4040 detectors. It allows for an accurate Dose and MLC leaf position detection.

Minimal Attenuation
The Delta4 Discover is transparent to the beam. The attenuation is less than 1%.

Minimal Skin Dose
Delta4 Discover contributes very little to the skin dose. Less than 1%.

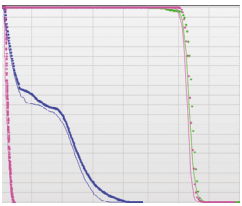
Patient position verification
With an integrated laser you can confirm that the patient is always in the right position during the treatment.

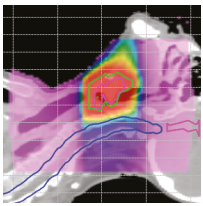
Analysis of deviations

Delivered dose in the patient anatomy

The Delta4 software has the tools you need to see the clinical significance of any deviations. The delivered dose can be overlaid on the patient CT images. The radiation oncologist can at any time compare with the treatment plan and verify that the planned dose is correctly delivered in the patient anatomy.

In addition the Delta4 Discover dosimetry system provides an excellent on-going support for clinical decisions about the treatment, for example if the plan needs to be adapted due to the delivered dose to the patient.





Technical Specification

Accuracy	
Dose measurements in maintained field shape	Within 1.5%
MLC positioning determination	Within 1 mm
Beam Attenuation	
Beam attenuation	<1% 6MV, 10 x 10 cm field
Increase of skin dose	<1% 6MV, 10 x 10 cm field
Detectors	
Total number	4040
Diameter	1 mm (disc shaped)
Spacing	2.5 mm when projected down to isocenter plane (along MLC trajectories)
Area covered	195 x 250 mm when projected down to isocenter plane
Type	p-Si
Sensitivity decrease (6MV beam)	0.04% per kGy
Weight, Dimensions - Varian Version	
Dimension	Diameter: 790mm (disc shaped) Thickness: 55 mm (total), 23 mm from collimator surface
Weight	10 kg with battery 8 kg without battery
Communication and compatibility	
Compatible with	Varian TrueBeam® Varian linacs with Millenium MLCTM.
Reduced Linac Clearance when mounted	It fits within the zone of Varian's laser guard collision detection system which means that the clinical clearance is maintained.
Linac's Light field	Delta4 Discover can be extracted so that the linac's light field is completely visible
Optical range finder	The range finder is visible both when Delta4 Discover is extracted and in normal position
Wireless data communication protocol	Wi-Fi 802.11n
Battery operational capacity	5 hours Rechargeable Li Ion battery – Charger is included.

Technical specifications are subject to change without notice

ScandiDos

Delta4 Discover is a trademark of ScandiDos AB (publ)
® TrueBeam is a registered trademark and Millenium MLC is a trademark of Varian Medical Systems, Inc.

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