

TomoDose™

TomoTherapy® Beam QA Made Easy

Two dimensional detector array for quality assurance of a TomoTherapy Hi-Art® machine.



Introduction

TomoDose is designed for TomoTherapy Hi-Art® machine QA. TomoDose includes a 50cm detector array with nine opposing arrays of detectors designed to easily fit into TomoTherapy's Hi-Art bore for rapid full field measurement *without* a water tank.

Saved standard measurements can be compared to periodic measurements to verify that the beam is within tolerance. TomoDose is ideal for quality assurance after component replacement and has also been credited for revealing target erosion of Hi-Art machines over time.

Simple to Setup, Easy to Use

A water tank or phantom can take hours to setup. TomoDose sets up in minutes—simply align the TomoDose on the treatment couch, and connect a single cable.

TomoDose Hardware

TomoDose utilizes 223 solid state detectors that measure only 0.8 x 0.8mm. The small detector size allows for very precise dose measurement and is not susceptible to the dose voluming issues as seen in ion chambers. The X-axis length is 530mm and the nine Y-axes are each 98mm long. Detectors are spaced every 5mm along the X-axis, and 4mm or 8mm along the nine Y-axes. This arrangement allows for simultaneous measurement of the lateral and longitudinal beam profiles in the center of the radiation field and eight longitudinal beam profiles at off axis distances of $\pm 50\text{mm}$, $\pm 100\text{mm}$, ± 150 , and $\pm 190\text{mm}$.



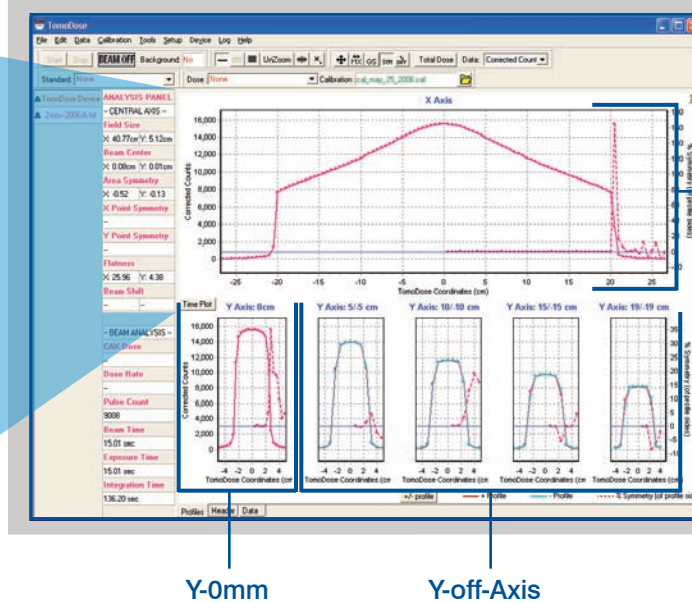
Software

TomoDose software has an intuitive user interface that makes it possible to view all data in a single window for analysis. Key data is automatically calculated, including symmetry, flatness, field size, beam center, and CAX dose. The data is conveniently displayed to the left of the profiles, and up to ten profiles may be viewed and compared at any time.

Automatic Analysis

Main Screen with X and Y Axes

ANALYSIS PANEL	
-- CENTRAL AXIS --	
Field Size	
X: 40.77cm	Y: 5.12cm
Beam Center	
X: 0.08cm	Y: 0.01cm
Area Symmetry	
X: -0.52	Y: -0.13
X Point Symmetry	
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Y Point Symmetry	
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Flatness	
X: 25.96	Y: 4.38
Beam Shift	
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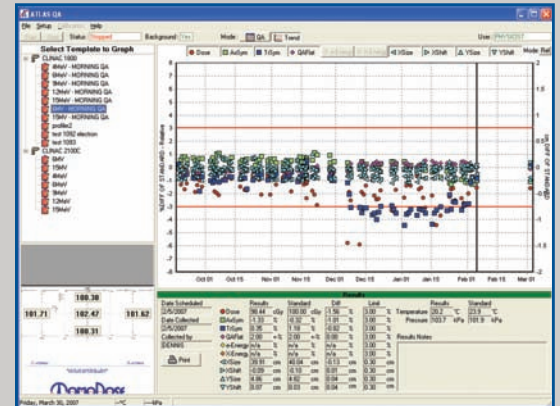


Buttons in the main window make it possible to toggle between mirror symmetry along the X-axis, mirror symmetry along the selected Y-axes, or the percent difference between the selected Y-axes. Compare between two profiles to determine percent difference. Easily zoom in and out to scrutinize data.

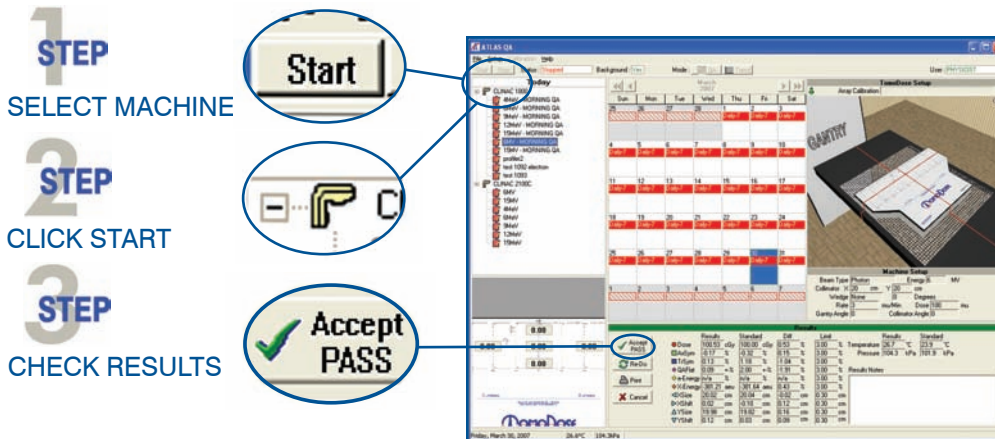
Track data with ATLAS QA



A graphical representation of data for each test is presented as a function of time. This provides a means to visualize trends emerging in beam parameters. Single instances can be clicked for further examination.



TomoDose also includes ATLAS QA 'Base' software for scheduling and trending of routine QA tests. Data is collected in real-time and accepted results are stored in the ATLAS database. ATLAS software for TomoDose allows the physicist to define unique QA schedules and requirements. Daily, weekly, monthly, or other routine measurements are completely automated.



All data used is best available at time of publication. Data is subject to change without notice