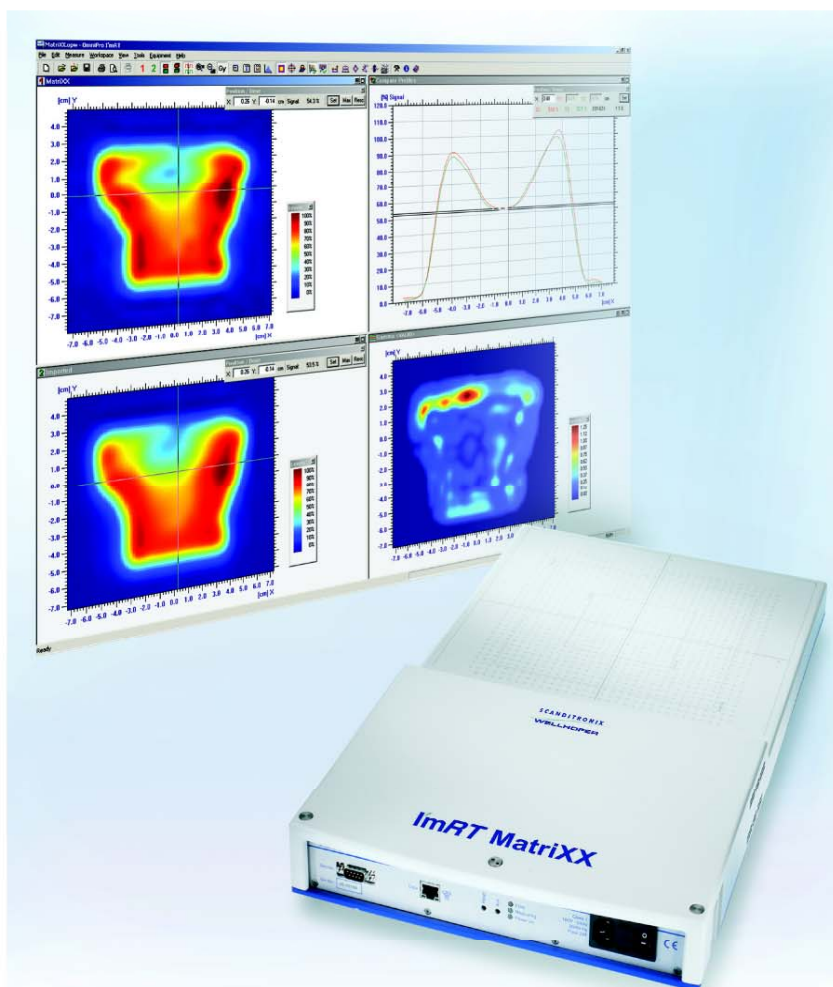


SCANDITRONIX

WELLHÖFER

The new standard in 2D IMRT verification

ImRT MatrixX



Member of the IBA Group

The 2D solution for digital IMRT verification

FAST_{est} | **most** **ACCURATE** | **most** **RELIABLE**

- ✓ Highest amount of detectors (1020) vs comparable 2D systems
- ✓ Verification of absorbed dose vs plan
- ✓ Provides an ionization chamber reference standard for films analyzed with the integrated film QA software
- ✓ No dead time during the data acquisition due to unique electrometer solution
- ✓ Automatic $k(t,p)$ correction

- ✓ No need for frequent recalibration
- ✓ IMRT verification of individual (segment) as well as integrated (composite) fields
- ✓ Fully integrated in OmniPro-*ImRT* software platform

- ✓ Small volume, high accuracy
- ✓ **Pixel Ionization Chamber Technology (PIC)**
- ✓ Long-term radiation resistance of ionization chambers
- ✓ Proven clinical results by cooperation partner Torino University and INFN (Italy)

The *ImRT* MatriXX redefines the standard in 2D IMRT QA. The new and unique **Pixel Ionization Chamber Technology (PIC)** of the 2D array allows the fastest and most accurate verification of IMRT beams as well as standard Linac QA.

The *ImRT* MatriXX verifies individual (segment) as well as integrated (composite) IMRT fields without dead time during the data acquisition. Due to the unique electrometer solution based on ASICs technology, all 1020 vented pixel ionization chambers are read out in parallel with a minimum sampling time of only 20 ms per 2D field.

As a result the **Pixel Ionization Chamber Technology (PIC)** used in the *ImRT* MatriXX significantly reduces the time spent in dosimetric verification of complex IMRT radiation fields.



Make your daily clinical workflow as efficient as possible!

OmniPro-*ImRT* enables fast verification of measured versus planned IMRT treatment cycles. It incorporates 1D profiles, 2D isodose profiles as well as fully automated modern analysis tools such as the Gamma Method.

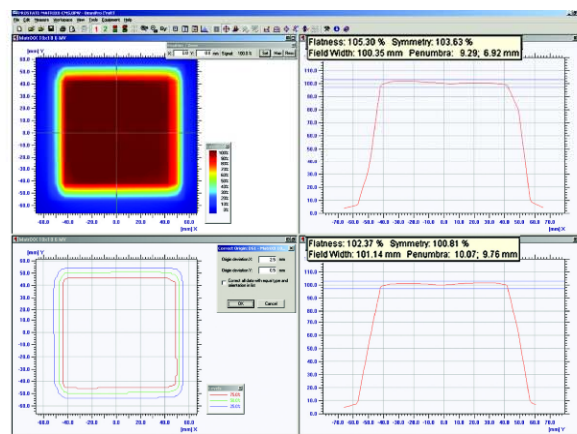
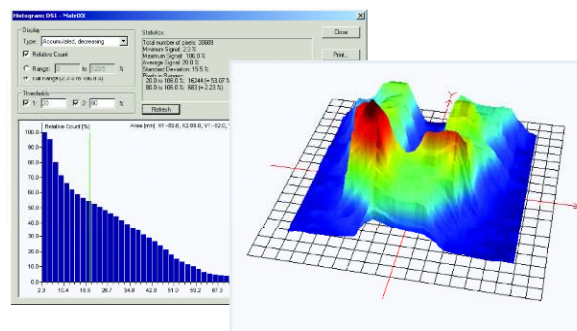
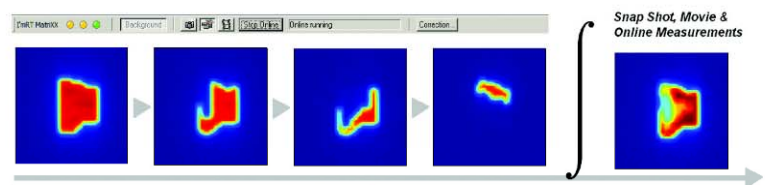
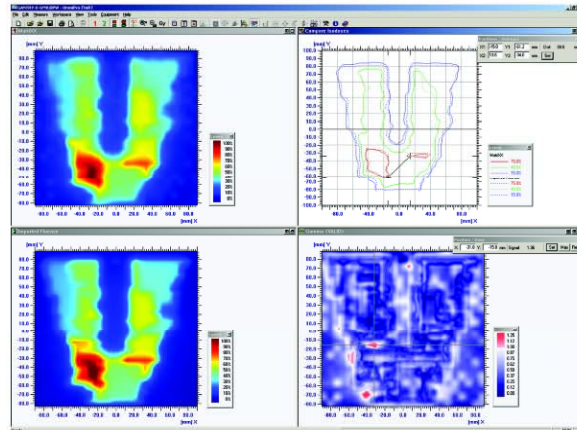
The *ImRT* MatriXX acquires both individual IMRT segments as well as integrated fields from either static (step and shoot technique) or dynamic (sliding window technique) IMRT treatments. Subsequent verification down to individual segment level enables fast and efficient error finding and correction in case of an inconsistency between measured and planned data.

Measured and treatment planning data can be automatically analyzed based on basic (e.g. sum, difference) as well as advanced maths (e.g. Gamma Method, DTA). For the data display the OmniPro-*ImRT* software offers advanced tools such as histograms and 3D dose distributions.

Different QA protocols enable online analysis of penumbra, symmetry, flatness and field size.

Critical Linac QA parameters can be monitored and adjusted real-time in inplane and crossplane dimensions.

The data is transferred via Ethernet and TCP/IP protocol. Remote access through a convenient integration into your clinical network enables you to analyze the data online or at a later time.



Due to the unique **Pixel Ionization Chamber Technology (PIC)** the *ImRT* MatriXX is the most advanced solution for fast, accurate and reliable digital IMRT verification. The PIC technology combines the advantages of vented ionization chambers using PCB technology with a state-of-the-art ASICs based electrometer. The *ImRT* MatriXX was designed and built in cooperation with Torino University and INFN, who brought in their experience in leading edge high energy physics.

Technical specifications

l'mRT MatriXX

l'mRT MatriXX

Application:	QA and dose verification of IMRT beams; QA of high energy radiotherapy beams
Measuring quantity:	absorbed dose, dose rate
Intrinsic build-up:	3 mm water equivalent
Backscatter material:	RW3, thickness 22 mm
Dose rate range:	0.1-20 Gy/min
Resolution	
(dose and dose rate):	0.5 mGy resp. 0.5 mGy/min
Resolution (mm):	7.62 mm, interpolated down to 1 mm
Dead time:	zero
k(t,p) correction:	temperature (10-40 °C), pressure (70-110 kPa)
Dimensions:	56 cm (L) x 6 cm (H) x 32 cm (W)
Weight:	≈10 kg
Power supply:	100-240 V, 50/60 Hz, power cord with US or German power plug included

Sensor

Number of chambers:	1020
Active area:	24.4 x 24.4 cm ²
Sensor layout:	matrix in a plane arranged in a 32 x 32 grid
Pixel distance:	7.62 mm center-to-center
Chamber type:	vented plane-parallel ionization chambers
Chamber size:	4.5 (Ø) x 5 (h) mm, sensitive volume 0.07 cm ³
Typical sensitivity:	2.4 nC/Gy (Co60)
Effective point of measurement:	3 mm from surface

Electrometer

Electrometer:	16 TERA ASICs (each contains 64 independent electrometers)
Channels:	1020
Charge resolution:	0.1 pC/count
Sampling time:	min. 20 ms
Readout:	parallel with no dead time

Minimum computer requirements

Operating system:	Microsoft Windows™
Processor:	Pentium at 1300 MHz
Memory:	512 MB RAM (minimum), 1 GB RAM (recommended for real-time intensity mode)
Hard disk:	with at least 160 MB available, recommended 40 GB for data archiving
Monitor and graphics:	supporting a resolution of 1024 x 768 pixel at True Colour (32-bit)
Ports:	available Ethernet connection RJ-45 for l'mRT MatriXX

Technical data is subject to change without prior notice.

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