COMPASS


SURE.

COMPASS

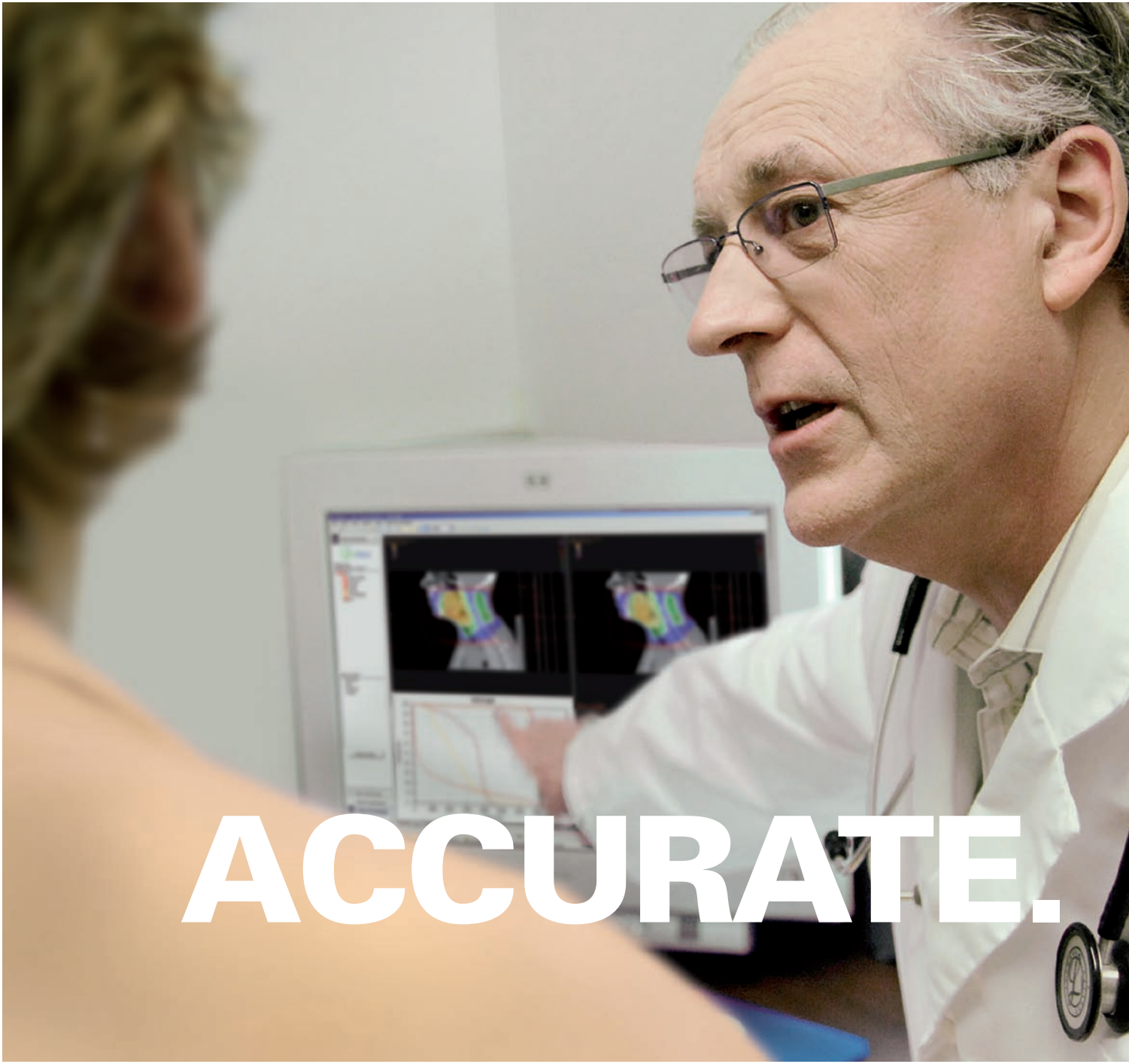
The solution that combines

- determination of dose distribution during patient treatment using a beam model, a transmission detector measurement, a fluence reconstruction and a 3D dose calculation
- display of 3D dose distribution in patient anatomy
- comparison of measured with expected dose distributions.

COMPASS leads you into a new era in the IMRT/IGRT pre-treatment and treatment monitoring and verification. It provides truly independent analysis of the accuracy of your planned treatment and the dose delivered to the patient.

COMPASS is a solution to increase the precision and safety of the individual patient treatment.

Down to each fraction. For your peace of mind.


ACCURATE.

COMPASS

Your guide to next generation monitoring and verification.

A (patent pending) method using a high resolution ionization chamber transmission detector and a Linac beam model allows exact fluence determination by comparison of detector response with expected values from TPS.

Based on the transmission detector measurement, an advanced forward calculation algorithm subsequently reconstructs the 3D dose distribution in patient anatomy.

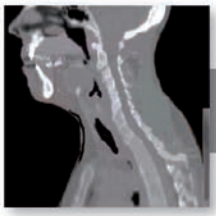
The 3D dose distribution is then compared with the TPS dose prediction. A modern set of software tools incl. DVH and statistical evaluation allows a side by side analysis of the two data sets either cumulatively or per fraction.

State-of-the-art technology. For highest accuracy.

Verify, visualize, validate.

TPS workflow

PLAN



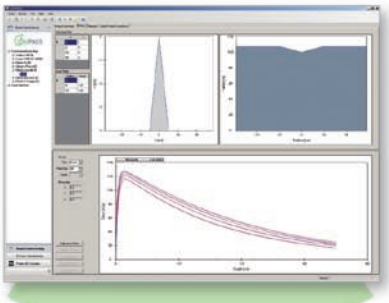
Patient CT data

CTV
OAR

Prescription

COMPASS workflow

Commissioning

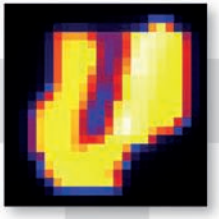


COMPASS transmission detector measurement

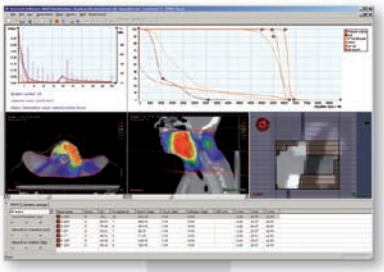
Beam model

Online measured fluence from COMPASS compared to expected fluence from TPS.

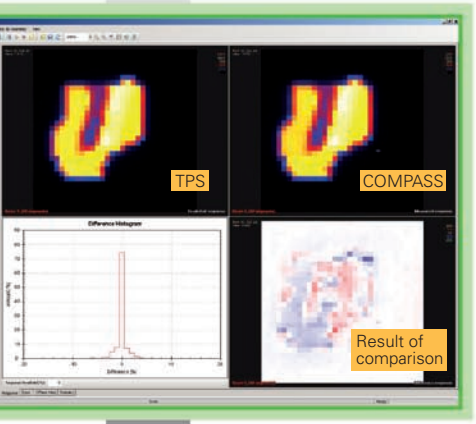
TPS
calculated fluence

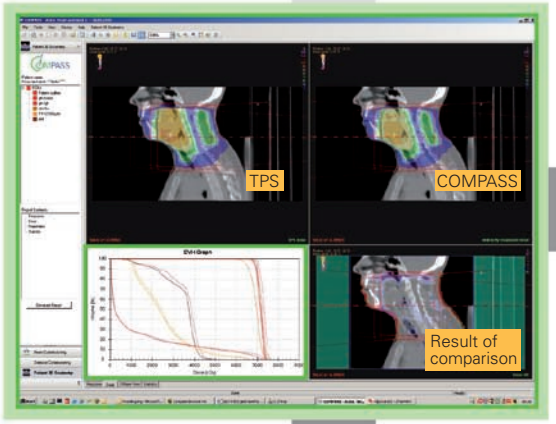


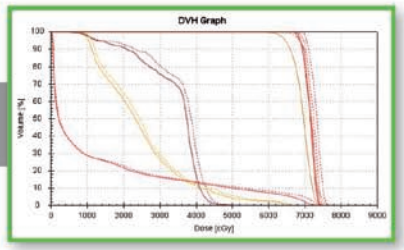
Planned dose distribution



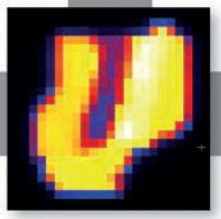
Determined 3D dose distribution in patient measured with COMPASS compared to 3D dose in patient planned with TPS.



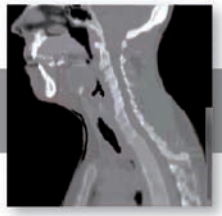




DVH COMPASS
compared to DVH TPS.



COMPASS
measured fluence



Patient CT data

COMPASS forward
dose calculation


RELIABLE.

COMPASS

Seeing through the treatment chain.

- Independent, measurement based solution.
- Optimized pre-treatment verification.
- 3D dose distribution in patient anatomy.
- Direct identification of discrepancies between plan and delivery.

Increased treatment efficiency and safety.
For better results.


COMPASS
iba
PRECISE.

Technical specifications

	Transmission detector
Number of chambers:	1600 air vented plane parallel pixel ionization chambers
Chamber size:	3.8 (Ø) x 2 (h) mm, chamber volume: 0.02 cm^3
Nominal sensitivity:	1.8 nC measured in transmission in the detector central area when delivering 1 Gy at isocenter at 5 cm depth with a 10x10 cm field and 6 MV photons
Active area:	40 x 40 cm^2 projected to isocenter
Pitch:	6.5 mm, corresponding to the width of 1 cm leaves projected to isocenter
Beam attenuation:	approx. 3 % (at 6 MV)
Attenuation uniformity:	better than 1%
Weight:	≈ 15 kg
Power supply:	SMPS 100-240 V, 50/60 Hz, power cord with US or German power plug included
Positioning:	dedicated holder and adapter for Elekta, Siemens and Varian accelerators, precise alignment to MLC system through an x-y table with 0.1 mm resolution

	Electronics
Electrometer:	28 TERA ASICs (each contains 64 independent electrometers)
Channels:	1600
k(t,p) correction:	temperature (15 to 35 °C), pressure (50-110 kPa)
Interface to PC:	Ethernet data link, point to point or through network, TCP/IP communication protocol
Readout:	parallel and synchronous readout of all chambers with no dead time
Charge resolution:	0.1 pC/count

	Minimum computer requirements
Operating system:	Microsoft® Windows® (XP Professional) with Service Pack 2, US English
Additional software:	.NET™-Framework 2.0 with Service Pack 1 (Internet Explorer 5.01 or newer is required for installation)
Processor:	Intel® Core™ Duo Pentium® processor (or equivalent), 2 GHz or better
Memory (RAM):	recommended 4 GB
Hard disk:	180 MB for the program; 100 MB for .NET™-Framework 2.0; additional disk space for data storage
Monitor and graphics:	recommended screen resolution of 1600 x 1200; graphics card capable of OpenGL® standard 2.0 or above (recommended NVIDIA GeForce 8Series)
Ports:	Ethernet (RJ-45) connection; second network card in PC for device if simultaneous access to LAN and device with direct connection is required
Other requirements:	second network card in PC for device if simultaneous access to LAN and device with direct connection is required

The system is currently intended for use in 6 MV x-ray beams only.

Technical data is subject to change without prior notice.

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COMPASS is developed
in cooperation with
RaySearch Laboratories AB.

Patent Pending

CE 0124