VGi - R14.1 - EN

ENGLISH

VGi

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Cone Beam 3D Imaging
NewTom
what's next

FIRST IN CONE BEAM, ACCURATE IN RESULTS.

360 degree imaging,
reduced image scatter
or artifacts.

Smallest possible focal spot
and single flat panel create
the clearest images.

Dedicated digital sensor
and specific image algorithms
provide a full range of information.

THE GLOBAL MARKET LEADER.

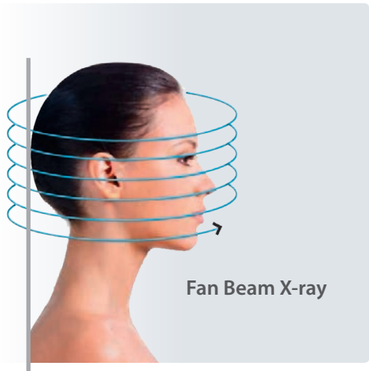
VGi

First user of Cone Beam in dental field

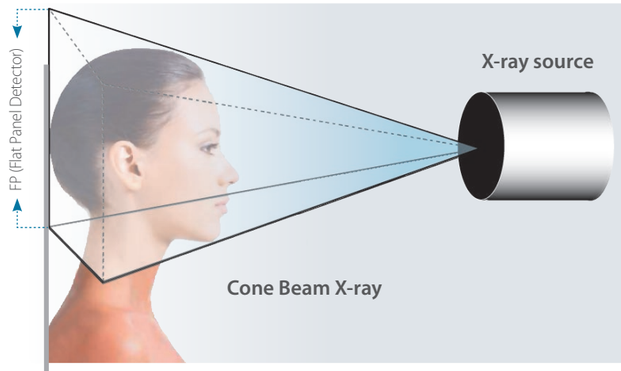
QR s.r.l. is the name that stands behind NewTom Cone Beam 3D imaging units and we were the creators of Cone Beam technology for the dental field. NewTom 9000 (also known as Maxiscan™) was the very first Cone Beam equipment in the world, which was installed in 1996. It is the forefather of NewTom product line and, in general, of the entire X-Ray units based on Cone Beam technology.
QR's 20 plus years of experience and success in research, development, manufacturing and distribution of NewTom products affirms our commitment to excellence and quality.
QR s.r.l. is based in Italy and all NewTom products are designed and manufactured by our group. Our products represent the Italian tradition of specialized manufacture and NewTom is known all over the world for its reliability, high standards and state-of-the-art technology.
QR s.r.l. is a comprehensive and independently working company consisting of a research and development department (hardware and software), production and technical assembling division, technical support staff, customer service, sales and marketing department and management offices. Our national and international sales network relies on strong and long-term partnerships with all our dealers and representatives spread all over the world.
NewTom's team-oriented staff is committed to provide not only the best product available on the market, but also excellent before and after- sales support, as a happy customer is the best advertisement.

CONE BEAM TECHNOLOGY

Cone Beam 3D vs. CT Imaging



MSCT



CB3D

Traditional CT (CAT scan) uses a narrow fan beam that rotates around the patient acquiring thin axial slices with each revolution. In order to create a section of anatomy, many rotations must be done. During these repeated rotations, traditional CT emits a high radiation dose, but it leaves a gap of information between each rotation. Therefore, a dedicated software must stitch together the images and calculate what is missing. Cone Beam 3D imaging uses a cone-shaped beam to acquire the entire image in a scan using only one rotation. The result is a more accurate image without missing information and a considerably low radiation exposure. The American Academy of Oral and Maxillofacial Radiology (AAOMR) prescribes the use of Cone Beam 3D imaging when evaluating periodontal, implant, and oral/maxillofacial surgery patients. One NewTom scan obtains a complete dentomaxillofacial image in a single database of digital information. It also helps avoid potential errors due to the image distortion found in 2D imaging technology. Various views of the information in 3D images can be created using NewTom NNT software.

PRECISE 1:1 SCALE IMAGING

With precise 1:1 scale imaging, NewTom technology eliminates the magnification errors of conventional cephalometric and opg imaging technology. 3D imaging allows the dental professional to identify potentially serious problems, such as airway passage obstructions and soft tissue abnormalities.
CB3D imaging technology is the standard of care for implantologist, orthodontists, periodontists and oral/maxillofacial surgeons.

Multiple Fields of View

The scanner's FOV determines how much of the patient's anatomy will be visualized. If using a flat panel detector (FP), the dimensions of their cylindrical FOV can be described as Diameter by Height (DxH). Nowadays the need to scan different R.O.I. (Regions Of Interest) with different dimensions is regulated by international standards in order to reduce the effective dose to the patient following the "As Low As Reasonably Achievable" (ALARA) dose principles.
In particular the use of a small FOV (on user-defined region in endo, perio, implant surveys and for the localization of impacted teeth) in addition to reducing the dimension of the irradiated region, allows for a dramatic increase in the accuracy and resolution of images for all the pathologies diagnosis where it is necessary to identify very small details at high definition.
On the contrary, the biggest FOV (which include the roof of the orbits and the Nasion down to the hyoid bone) allows with one single rotation to scan patients where the referring doctors need to see the major part of the anatomical regions of the head (e.g. Orthodontics, Orthognatics and Maxillofacial surgeons, etc.). Even in this case NewTom has different dose protocols: finally, we can say that NewTom technical developers have researched the proper balance between FOV, dose and accuracy, using different dose protocols for each single FOV. Additionally, medium FOV are also selectable.
They can capture from the middle of the orbits down to the Menton (vertically) and condyle-to-condyle (horizontally) and they are useful for ENT, TMJ, pano's and implant surveys.

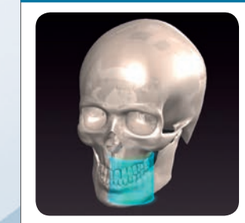
15x15

15x12

12x8

8x8

6x6



HIRES SCAN

NewTom VGi allows to irradiate small portion of body, in order to see small anatomical details.
This can be useful for proper implant assessment, because it requires the visualization of all aspects of the mandibular canal and other small parts, such as tooth roots, periodontal ligaments and any present lesion.
Only 3D High Resolution imaging produces both the quality and the quantity of details necessary to accurately view those small details.

SafeBeam™ technology for automatic dose exposure

Only NewTom systems employ SafeBeam™ technology, the safest technology available for patient and staff.
Featured in all NewTom units, SafeBeam™ automatically adjusts the radiation dosage according to the patient's age and size.
This technology uses intermittent bursts of radiation, which last only milliseconds, during image acquisition.
Other systems deliver a constant stream of radiation and the same amount of radiation, whether scanning an adult or a small child.
SafeBeam™ technology automatically and continuously monitors system operations, thus eliminating the possibility of unnecessary exposures. In conjunction with our patented SafeBeam™ technology, when compared to other CB3D systems, NewTom VGi has a wider range of adjustments for the X-ray power and quantity (kV=110 and mA=1-20).
As a result, patient exposure is tailored and image contrast remains consistent regardless of patient size or bone density.

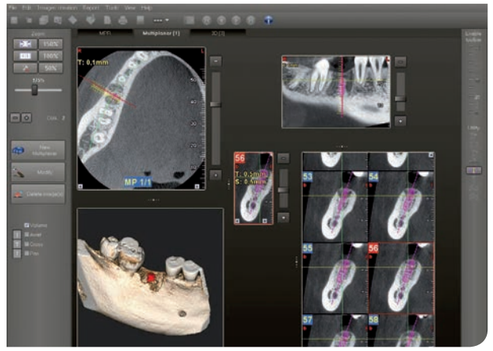
Greater patient comfort and treatment acceptance

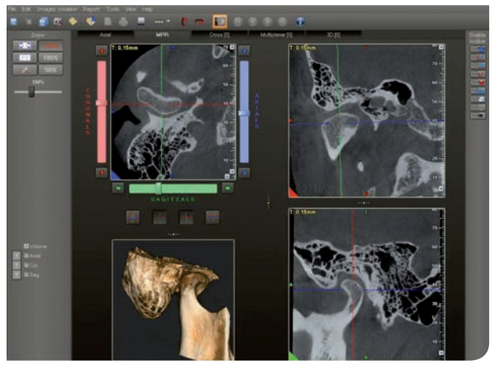
All NewTom units add a sense of comfort for patients, allowing them to relax during the scan and limiting the patient movements in order to improve the image quality. NewTom scans provide the practitioner and the patient unprecedented visualization of cranial anatomic information. This leads to a better diagnosis and better treatment planning, increasing the patient treatment knowledge. The result is a more cooperative and informed consent process, understanding the need for treatment and improving the doctor-patient relationship.

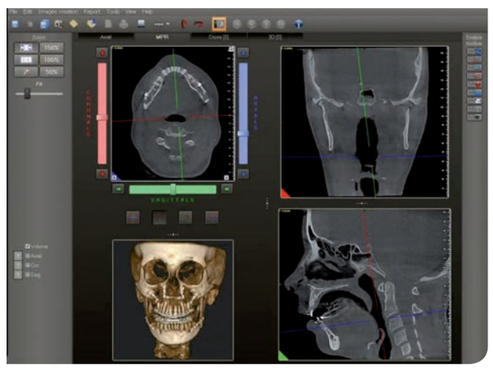
NewTom NNT analysis software

NewTom NNT analysis software is the perfect solution for 2D and 3D imaging.
NNT allows the creation of different kinds of 2D and 3D images in a 16 bit grey-scale and it takes only few seconds to evaluate the data taken during the scan. The software is totally designed by NewTom engineers and, thanks to the various application modes specifically design for different fields of use, it fulfills all the requirements and needs of our clients. NNT, with a new integrated implant planning application, can easily identify and mark root inclination, position of impacted and supernumerary teeth, absorption, hyperplastic growth, tooth structure anomalies and the mandibular canal. The software delivers extremely high quality images which facilitate safer surgical planning. The images can be gathered and used in report templates which are defined by users and can be delivered digitally (burnt to a CD or DVD), on paper, fi lm or pdf.
The software is available in different versions: the Expert version is used for taking scans, the Professional version permits data processing and the NNT Viewer gives other professionals the ability to view the images processed by NNT.
The images can be exported in DICOM 3.0 format at any time, in order to allow easy sharing between imaging centers and referring doctors.
The NNT DICOM Datasets are fully compatible with most third party software programs.

NNT Station
Cone Beam 3D Imaging



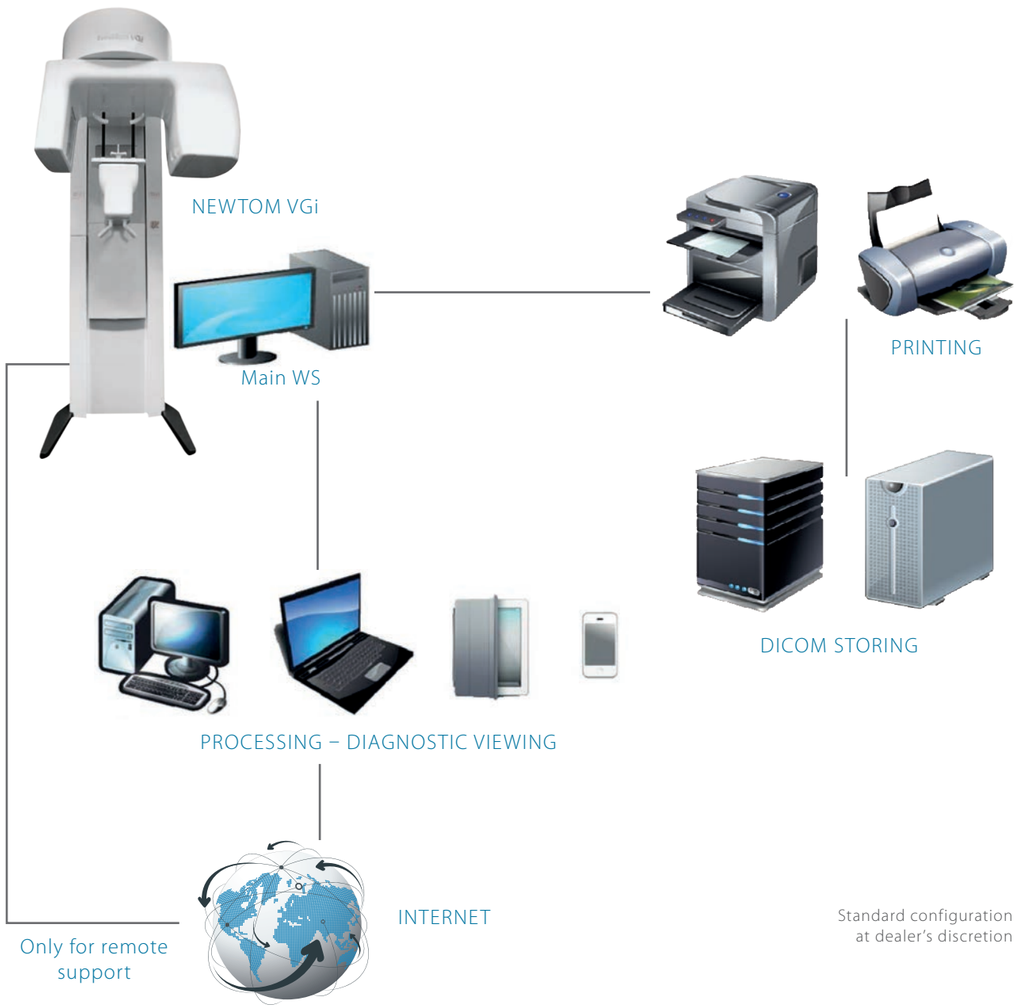




SUPERIOR THIRD-PARTY COMPATIBILITY

NewTom images are compatible with most major third-party software programs on the market as well as guided implant and maxillofacial surgery software. 3D imaging data is highly adaptable and can be imported and used in countless diagnostic and educational modes.
Software segmentation adjusts the amount of soft tissue, underlines the hard tissue and accentuates the structure of the skull. Different intuitive software applications allow the creation of realistic models that can be positioned on images obtained from the scan.
This creates infinite options that help in diagnosis, treatment planning, pre-surgical analysis, and patient education.

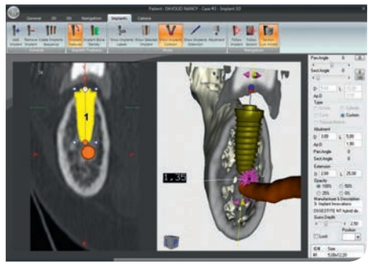
Newtork set-up



Standard configuration at dealer's discretion

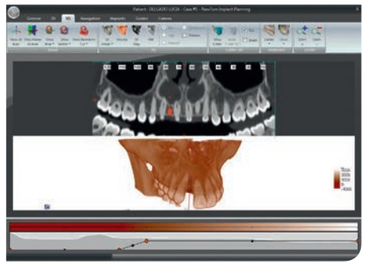
NewTom Implant Planning

NewTom Implant Planning is a software package that allows the creation of 3D implant simulation on any PC. It can simulate the implant placement on 2D and 3D models, identify the mandibular canal, draw panoramics and cross sections of the bone model.
It also shows the 3D bone model and calculates the bone density.
NewTom Implant Planning is used to plan prosthesis implant surgery in a faster, safer and more efficient way. It also allows the ability to export in .stl format.



A useful communication & motivation tool

All the images generated by NewTom Implant Planning can be used to communicate with the patient, in compliance with the compulsory rules about the informed consent. The most interesting cases can be saved on a CD-ROM through the image exporting functions.
Thanks to the user-friendly interface, learning is a quick matter.

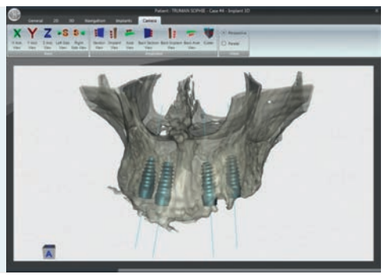


Measures and information

NewTom Implant Planning can plan the prosthesis implant surgery by identifying both the implant and the mandibular canal position. It measures accurately the proportion and density of the bone and makes the surgery more effective and faster.

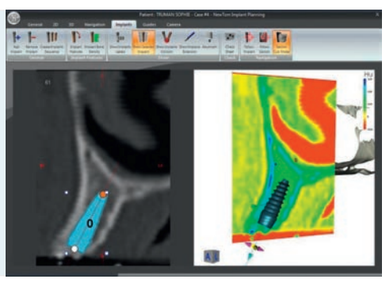
2D & 3D

It generates panoramics, cross sections and 3D bone models reading axial slices.
This helps identifying all the anatomic aspects of the patient, the mandibular canal, the bone structure and the exact implant positions, in order to facilitate the surgery.



SUPPORTED FORMATS

NewTom Implant Planning reads axial slices saved in DICOM 3.0 or in NNT format, which is the same format used by NewTom 5G, NewTom VGi, NewTom GiANO and previously released systems (NewTom VG, NewTom 3G and NewTom 9000).

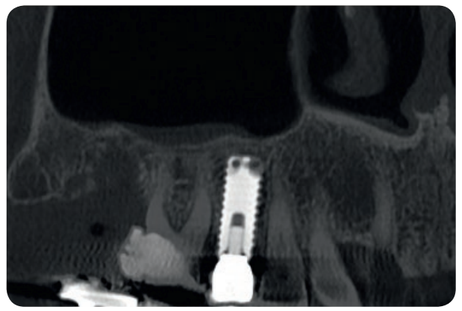


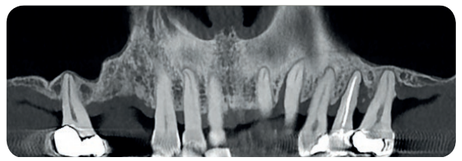
VGi

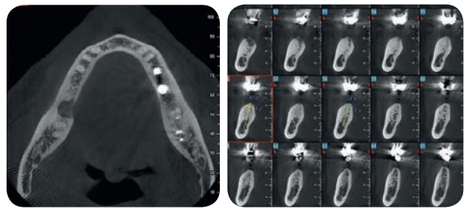
CLINICAL CASES

Implants

CB3D is one of the most effective tools available for analyzing implant sites. 3D images can accurately identify possible pathologies and structural abnormalities.
Cross sectional and panoramic views facilitate various measurements such as: height and width of the implant sites, mandibular edentulous site, a potential implant site near the mental foramen, width of the buccal/lingual ridge and cortical bone density. 3D images highlight the cortical bone thickness, the cancellous bone density, the inferior alveolar nerve and mental foramen location. They also influence the choice of the appropriate implant to be used, its placement, its width and consideration of "die back" from dense cortical bone.

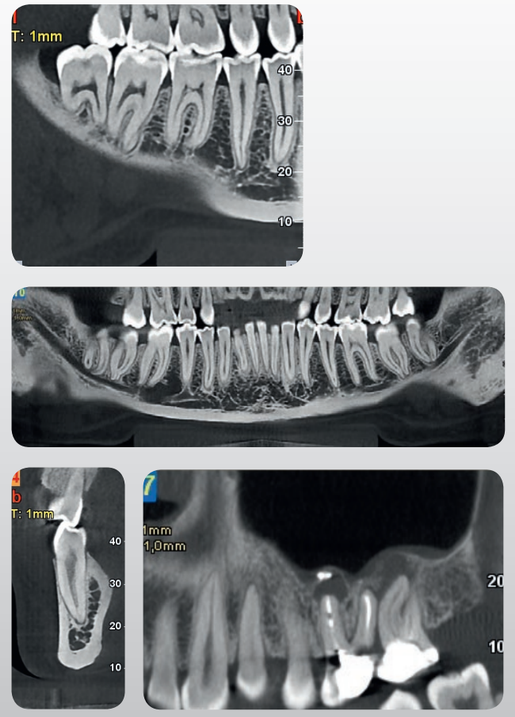


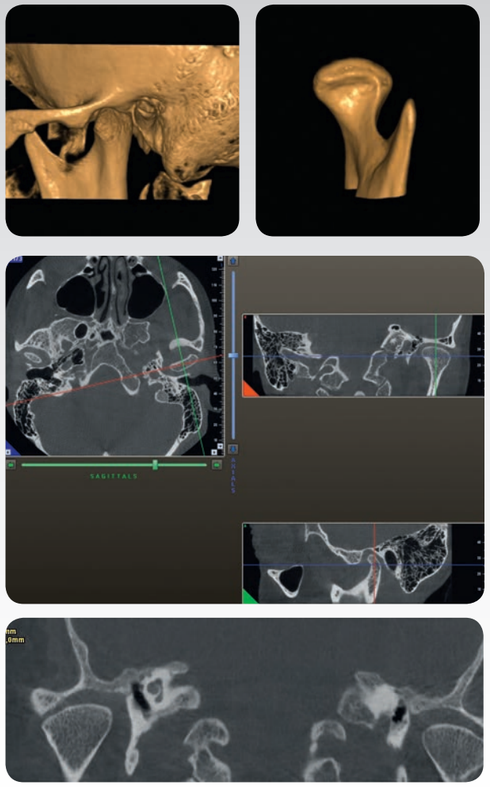




Endo-Perio

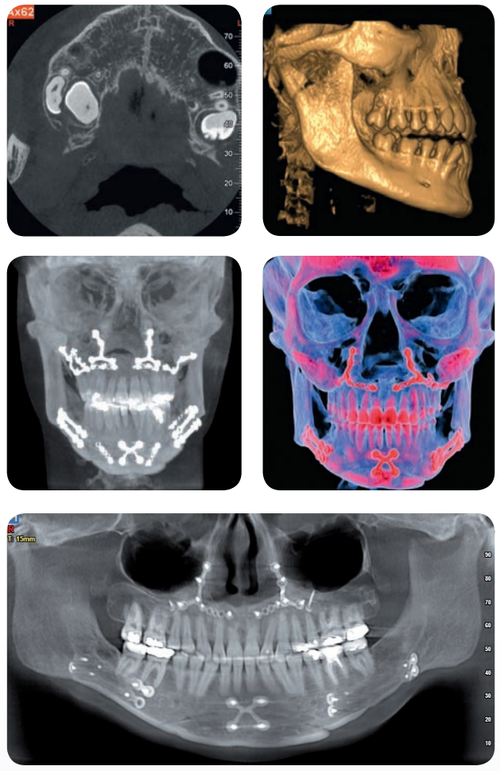
In order to perform certain procedures, like treating a fractured tooth, mandibular canal therapy and caring for the surrounding tissue, endodontic and periodontic specialists require extremely high quality images that will allow them to identify every detail of the treatment area, make an accurate diagnosis, and establish an effective treatment plan.
Upon carrying out a thorough examination of the area in question, the user will gain a full appreciation for the device's less invasive nature and greater suitability.





TMJ

CB3D takes the examination of the Temporomandibular Joint to a new level.
After a single scan, Sagittal and Coronal views can be sectioned to show joint space and pathologies.
3D image reconstruction can clearly provide detailed information of the TMJ and Cervical Spine anatomy.
A wide panoramic view provides a quick screening tool, where differences in condylar and ramus height as well as other dental pathologies can be checked.



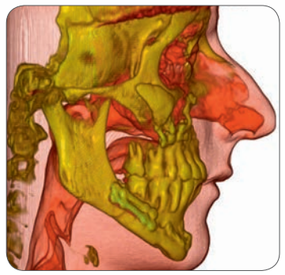
Oral and Maxillofacial Surgery

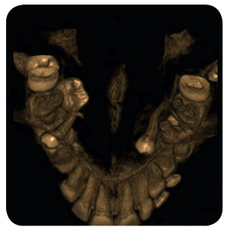
This discipline deals with the correction of various soft and hard tissue diseases afflicting the maxillofacial area. Scans performed using NewTom devices precisely illustrate specific characteristics, such as the presence of teeth or fractures, bone density and depth, and the shape and the inclination of the root.
Furthermore, in the case of post-operative scans, the presence of any metallic elements will not affect image quality. On the contrary, thanks to the low number of rays necessary, the scattering effect is almost non-existent, thus allowing the anatomical structures scanned to be clearly displayed.
The detailed images obtained using the MIP and Volume options generate cooperative relationships between doctors and their patients.

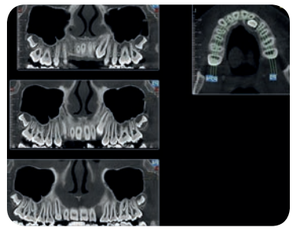
VGi

Orthodontics

Thanks to its three-dimensional image acquisition capability, Cone Beam (CBCT) radiology generates various image types including panoramic, cephalometric and 3D images, all of which are ideal for orthodontic and aesthetic procedures, as well as for the treatment of more serious diseases.
3D images are capable of clearly illustrating specific details, such as the buccal bone and the roots of the teeth. For the purpose of determining the existence and the form of an impacted tooth (and its roots), above all in the maxilla, there is a significant difference between the descriptive capacity of a two-dimensional radiographic plane and that which is offered by three-dimensional imagery. 3D images provide a comprehensive representation of the scanned area, even allowing for the angle of view and the depth of the reconstructed images to be modified.

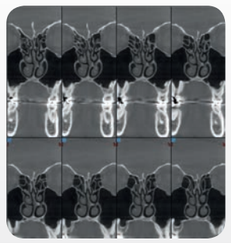


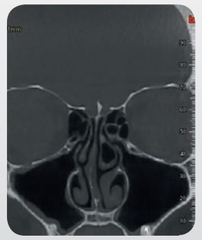


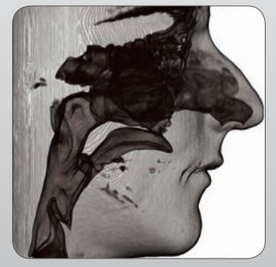


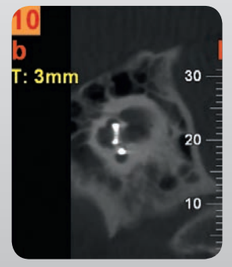
ENT Protocols

The unit's exceptional precision and various FOV possibilities provide for a clear view of the airways, sinuses and ear structures. The scans are carried out using the most suitable radiological parameters in order to avoid any unnecessary ray emissions. During the pre-examination phase, the operator selects the most suitable protocol for the anatomical area to be analysed. Most examinations carried out using conventional CAT/CT scans can also be performed with NewTom devices, which, in contrast, provide for more detailed images while simultaneously decreasing patient exposure.









NEWTOM BENEFITS

A greater comfort for patients leads to a better acceptance of the treatment.

SafeBeam™ Technology adjusts the radiation dosage for patient safety.

Multiple FOV and different scan modes are selectable from the software and adaptable to various fields of application.

The margin of error is reduced thanks to the precise 1:1 scale and a 16-bit grey scale.

NNT software makes the image sharing process easier.

VGi

NewTom VGi, from the company that was the first to use the Cone Beam technology in dental field, represents the newest in CB3D technology. NewTom VGi takes an image at every degree of rotation, 360° rotation = 360 images, increasing the range of possibilities for image manipulation.
It couples a **revolutionary** flat panel X-ray detector technology with a very small focal spot (0.3 mm), to produce the clearest, sharpest images possible.
VGi features an **adjustable Field Of View**, which allows doctors to irradiate just the right volume, depending on the different clinical applications.
The size of FOV can vary from the smallest 6x6 cm to the biggest 15x15 cm and they can be selected directly from the software, before the scan.
VGi by using a "pulsed" emission, that unlike other systems, activates the X-ray source only when required.
For a full scan, it takes no more than 5 seconds of total X-ray exposure.

The exam can be performed while the patient is standing or seated.
The scanner is wheelchair accessible.
Patient positioning tools include cross-hair lasers and a mirror, which are powerful tools for exact vertical **patient positioning**.
The small footprint and the variable positioning make NewTom VGi the best choice for locations, where space is at a premium.
NewTom VGi does not need an air-conditioned room, its weight does not require a reinforced floors and it can function in rooms without complicated and expensive radiation protection structures.
All the operations executed by NewTom, the patient's examination and the following calculations, are **computer guided**.
The user, when performing the scan, is supported by user friendly menus.
Each step is associated to a mouse-activated icon. Following the same process, one can easily review the integrated file of image-data.

SPECIFICATIONS

	3D					
X-ray source	High frequency, rotating anode: 110 kV; 1-20 mA (pulsed mode)					
Focal spot	0,3 mm					
Acquisition technique	Single scan and Cone Beam acquisition SafeBeam™ control reduces radiation based on patient size					
Effective dose	99 µSv Full FOV (ICRP 2007, estimate for adult)					
Scan time	18s ÷ 26s					
X-ray emission time	3,6s ÷ 5,4s					
Image acquisition	360 images - 360 degree rotation					
Image detector	Amorphous silicon flat panel, 20 cm x 25 cm Field of View (7.87 in x 9.84 in)					
Signal grey scale	14-bit scanning, 16-bit reconstruction					
Multiples scan modes	FOV sizes D x H		Voxel size options (µm)			
	Centimeters	Inches				
Standard Scan – Boosted Scan	**15 x 15**	**5.90 x 5.90**	**300**	**250**	**200**	**150**
	15 x 12	5.90 x 4.72	300	250	200	150
	12 x 8	4.72 x 3.14	300	250	200	150
	8 x 8	3.14 x 3.14	300	250	200	150
HiRes Scan	**12 x 8**	**4.72 x 3.14**	**150**	**125**	**100**	**75**
	8 x 8	3.14 x 3.14	150	125	100	75
	6 x 6	2.36 x 2.36	150	125	100	75
Patient positioning	Standing or seated and wheelchair accessible					
Reconstruction time	Approximately 1 minute					
Weight	Scanner unit 272 kg (600 lb), Control box 100 kg (220 lb)					
Software	NNT™ with free Viewer and sharing application					
Power required	10A @ 100/115V~, 5A @ 200/215/230/240V~, 50/60Hz					

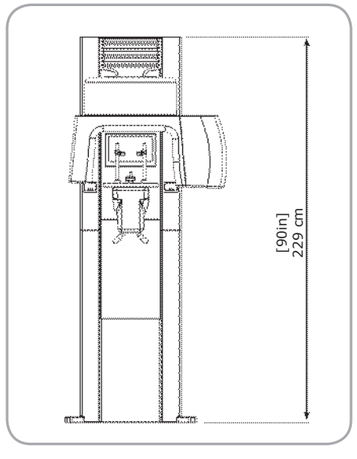
Specifications subject to change without prior notice.

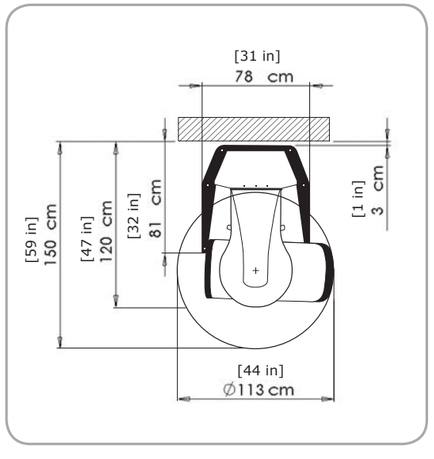
NewTom
Today's standard of care

> Free Viewer and Sharing Application
> Full DICOM 3.0 Compliant
> Improved Software Integration
> Small Footprint

Available on the App Store

Dimensions in centimeters (dimensions in inches)





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