ENGLISH

GiANO

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08-2017 NGIAGB161500

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Cone Beam 3D Imaging
NewTom
what's next

THE DNA OF A LEADER.

Latest technology utilized to create perfect panoramic images with an accurate focal trough over the whole arch.

Large 3D FOV to include the entire mandible and maxilla for a complete diagnosis.

New generation of the NNT Software for all types of image reconstructions and analyses.

THE MASTERMIND OF CBCT IMAGING

GiANO

NewTom MASTERMIND In CONE BEAM 3D IMAGING

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 the creator of Cone Beam technology for the dental field. The NewTom 9000 (also known as Maxiscan) was the first Cone Beam system in the world and was originally installed in 1996. This unit was the forefather of the NewTom product line and of all 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 affirm 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 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 are 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.

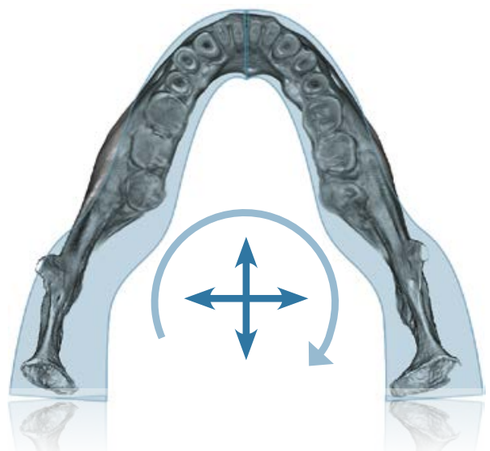
2D TECHNOLOGY

2D digital radiology

Dental radiography was developed to visualize the entire upper and lower jaws including teeth, maxillary sinuses and the nasal cavity.
This technology can help to study and evaluate bone and gum diseases, jaw fractures, tooth development, impacted teeth, TMJ disorders, sinus problems and other oral diseases.
Principal advantages are that panoramic radiographs can cover a large area, give a bilateral view of anatomy and expose the patient to a minimum radiation dose thereby making the treatment more tolerable.
One of the most valuable features is however that the unit can be installed in the dental office.
As a result, the doctor increases the level of communication with patients along with improving his credibility and his patients education.
NewTom GiANO offers two kind of panoramic exams:
- Eco mode, which reduces scan time and X-ray emission time;
- HiRes mode, which maximize sharpness and contrast, reducing the noise.

Wider focal trough and advanced kinematics

The focal trough is a specific curved volume where the maxillofacial structures must be positioned to achieve the sharpest and clearest images.
The structures that fall in front of, or behind the focal trough can be distorted, magnified or reduced in size.
To obtain high quality images, the patient must be properly positioned and aligned within the focal trough.
One of the advantages of this device is the wide focus, which allows an easy positioning, gaining in quality and repeatability of the result.
NewTom GiANO employs a specially synchronized kinematics made up of one rotary movement combined with two simultaneous translatory movements, which ensure constant magnification in all projections, thus leading to highly reliable diagnostic images.
The simultaneous translatory movements keep the X-ray detector at a constant distance from the midline of the dental arch, throughout the entire scan, so that the image magnification is constant and uniform in the resulting radiograph.



1 ROTARY MOVEMENT AND
2 SIMULTANEOUS TRANSLATOR MOVEMENTS

Removable 2D sensor

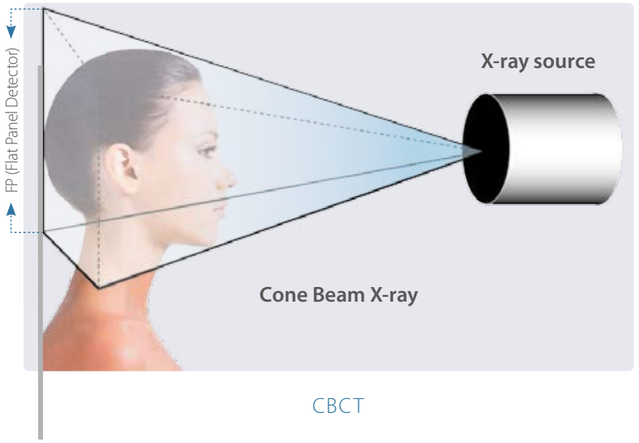
NewTom increases the value of this system by adding removable sensor technology. This allows the operator to safely switch the 2D sensor from the main structure and use it on the Ceph arm.
A removable 2D sensor is the perfect solution for those practices which require a high quality device at a competitive price.

UPGRADE TO CBCT AND CEPH

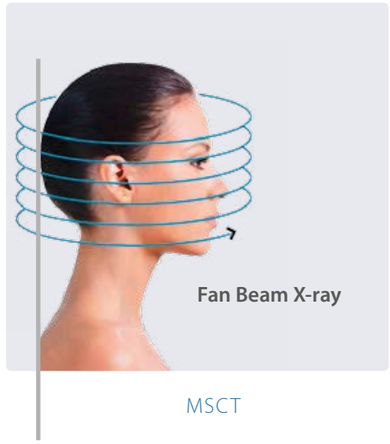
Through the development of a truly modular system, NewTom GiANO's performances can be upgraded to CBCT and Ceph with minimal effort, at any time.

CONE BEAM TECHNOLOGY

Cone Beam 3D Technology vs. MSCT



CBCT



MSCT

MSCT 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 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 lower 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.
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, Cone Beam technology creates panoramic and cephalometric images with a high quality level.
CBCT imaging technology is the standard of care for implantologists, 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 detectors (FP), the dimensions of their cylindrical FOV can be described as diameter by height (DxH).
The FOV range most suited to analysis of the different anatomic regions is governed by international standards which are based on the "ALARA" principle (As Low As Reasonably Achievable), which aims at reducing the effective dose absorbed by the patient.
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, provides a dramatic increase in the accuracy and resolution of images for all pathologies where it is necessary to identify very small details at high definition. On the contrary, with one single rotation, a bigger FOV permits the operator to scan patients where the referring doctors need to see the major part of the anatomical regions of the patient (e.g. child's teeth check-up, sinus pathologies, both jaws, implant surveys or maxilla and sinuses).
Even in these cases, NewTom GiANO has different dose protocols in order to further reduce the dose.
The NewTom Team has discovered the perfect balance between FOV, dose and accuracy, using different dose protocol for each single FOV.

Extra FOV

NewTom GiANO gains in versatility with Extra FOV, the fully automatic acquisition mode providing a vertically extended field of view which gives practitioners immediate access to a wider selection of clinical data in a single sitting.
The additional FOV scanned with GiANO 118 is 11x13 cm, and with GiANO 115 is 11x8 cm.

HIGH RESOLUTION SCAN

When using small FOV practitioners can irradiate just small portion of body, obtaining high quality images with small anatomical details.
The ability to see all aspects of the mandibular canal and other small anatomical parts, such as tooth roots and periodontal ligaments, as well as any present lesions can be useful for a proper implant assessments. Only 3D High Resolution imaging produces both the quality and the quantity of details necessary to accurately view those small details.

5x5

8x5

8x8

11x5

11x8

11x13

SafeBeam™ technology for automatic dose exposure

Only NewTom Cone Beam systems employ SafeBeam™ technology, the safest technology available for patient and staff.
Featured in all NewTom CBCT units, SafeBeam™ automatically adjusts the radiation dosage according to the density of the volume in the gantry. 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, thereby eliminating the possibility of unnecessary exposures.
In conjunction with our patented SafeBeam™ technology, NewTom GiANO has a wider range of adjustments for the X-ray voltage and current (kV 60-90 and mA=1-10) when compared to other CBCT systems. As a result, patient exposure is customized for each scan and image contrast remains consistent, regardless of patient size or bone density.

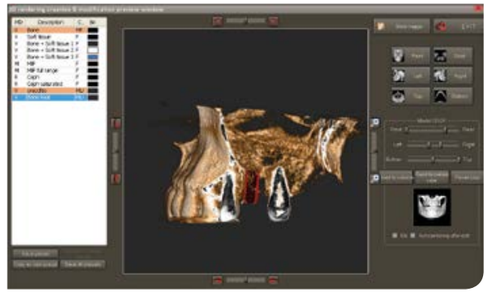
Greater patient comfort and treatment acceptance

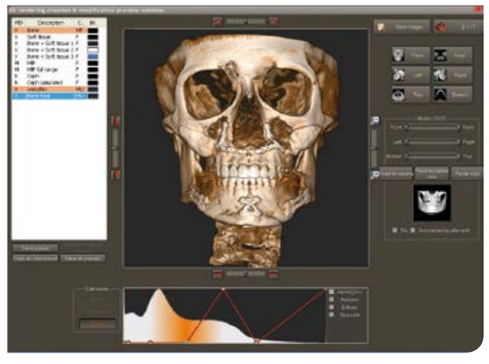
All NewTom units add a sense of comfort for the patients, allowing them to relax during the scan and limiting the patient movements, in order to improve the image quality.
NewTom scans provide the practitioner and the patient with unprecedented visualization of cranial anatomic information. This leads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

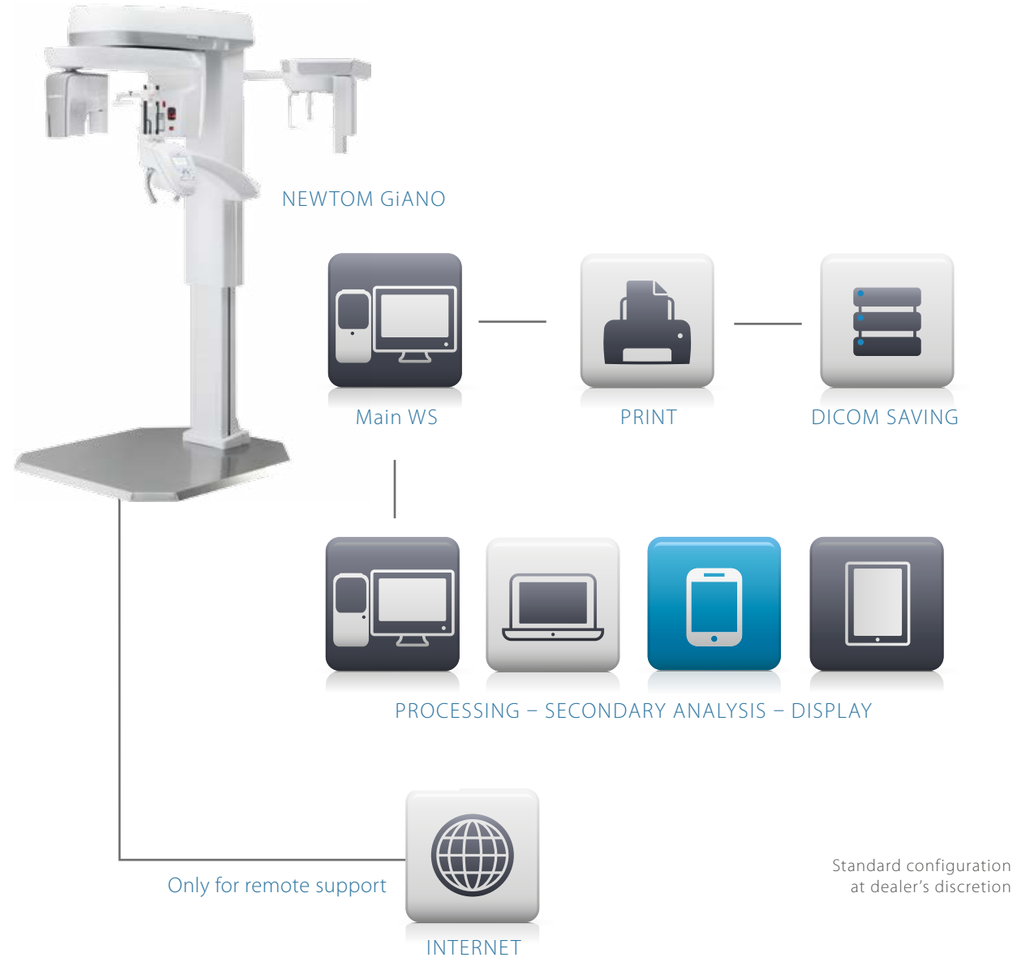




SUPERIOR THIRD-PARTY COMPATIBILITY

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.

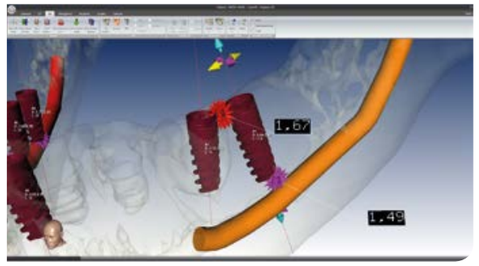
Newtork set-up



Standard configuration
at dealer's discretion

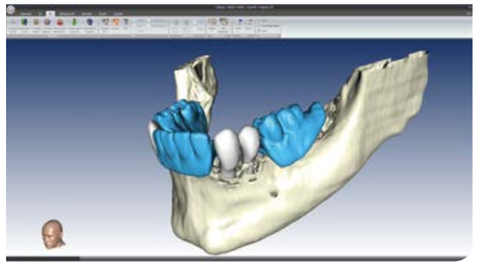
NewTom Implant Planning

NewTom Implant Planning is a software package which allows the creation of 3D implant simulation. The software can simulate the implant placement on 2D and 3D models, identify the mandibular canal along with drawing panoramic and cross sections of the bone model.
It also shows the 3D bone model and calculates the bone density.
The NewTom Implant Planning software 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.

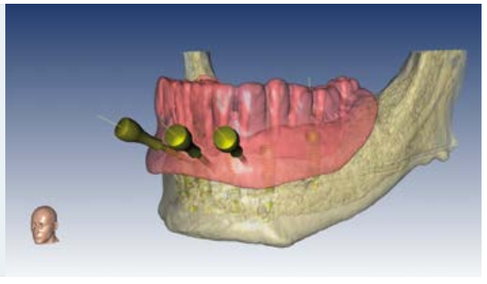


Measures and information

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

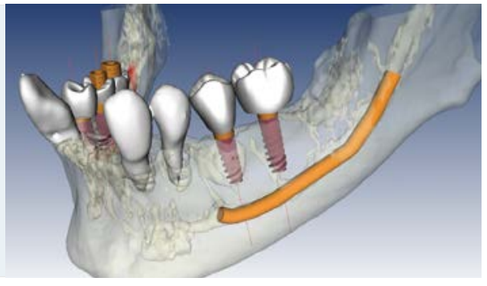
2D & 3D

The NIP software generates beautiful panoramic images, cross sections and 3D bone models by reading the information from the axial slices. This helps identify all the anatomic aspects of the patient, the mandibular canal, the bone structure and the exact implant positions, in order to facilitate the surgery.



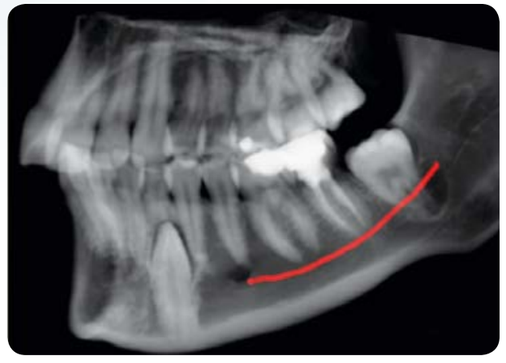
SUPPORTED FORMATS

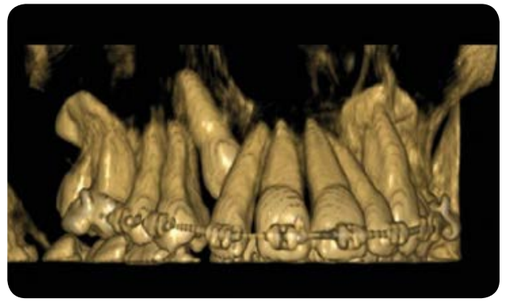
NewTom Implant Planning reads axial slices saved in DICOM 3.0 or in NNT format, which is the same format used by NewTom GiANO, NewTom 5G, NewTom VGi and previously released systems (NewTom VG, NewTom 3G e NewTom 9000).



GiANO

3D CLINICAL CASES





Orthodontics

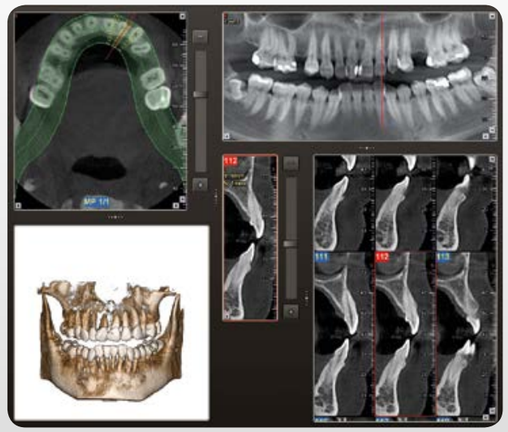
Thanks to its three-dimensional image acquisition capability, Cone Beam (CBCT) radiology generates various image types including panoramic, cephalometric and 3D images, all of which are ideal for orthodontic and aesthetic procedures, as well as for the treatment of more serious diseases. 3D images are 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.

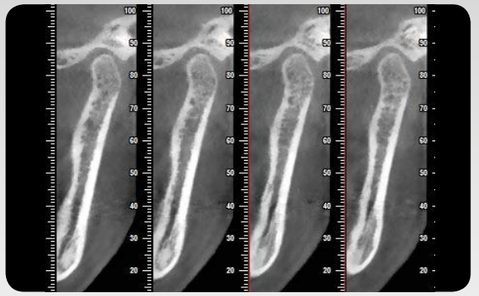
Implants

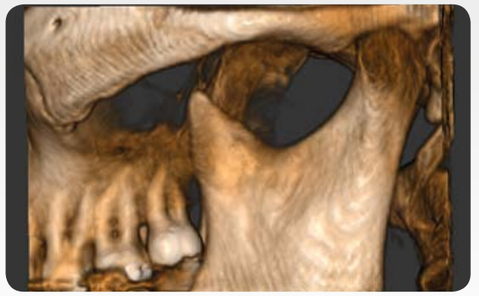
CBCT is one of the most effective tools available for analyzing implant sites. 3D images can accurately identify possible pathologies and structural abnormalities. Cross sectional and panoramic views facilitate various measurements such as: height and width of the implant sites, mandibular edentulous 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.

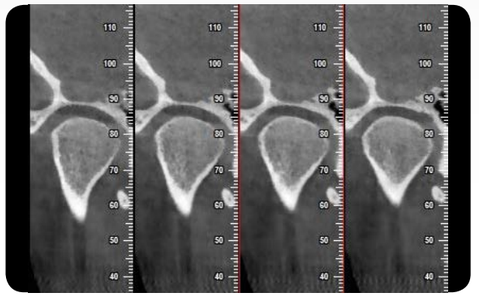
Endo-Perio

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.



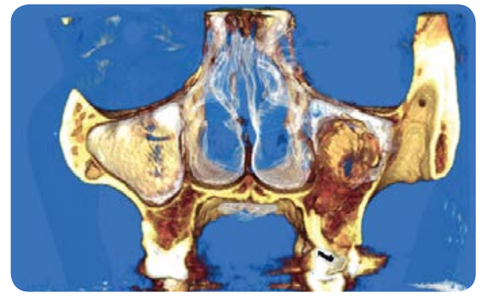


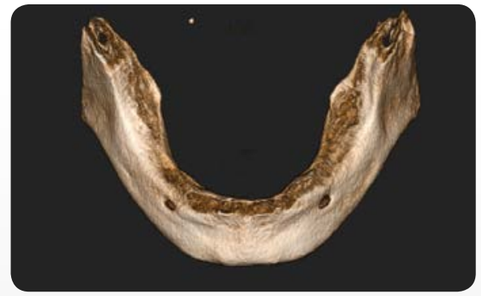




TMJ

CBCT 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.

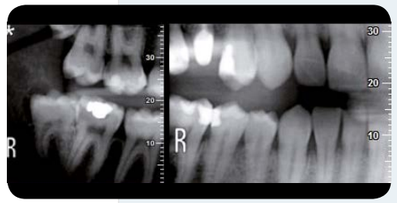
2D CLINICAL CASES

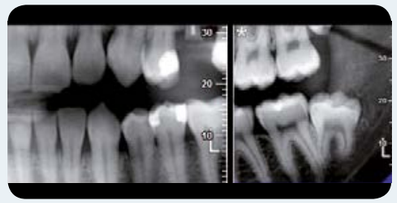
NewTom GiANO performs several 2D examination types

With much less radiation than other devices, panoramic X-rays generates high quality images of teeth, bones and soft tissue of the sinus areas, nasal areas and mandibular nerve.
As a result, specialists have all the information that they need to evaluate impacted teeth, fractures and bone irregularities for dentures, braces and implants.

- 12 Panoramic and dentition examinations
- 14 TMJ examinations
- 3 Maxilla Sinuses examinations
- 10 Cephalometric examinations

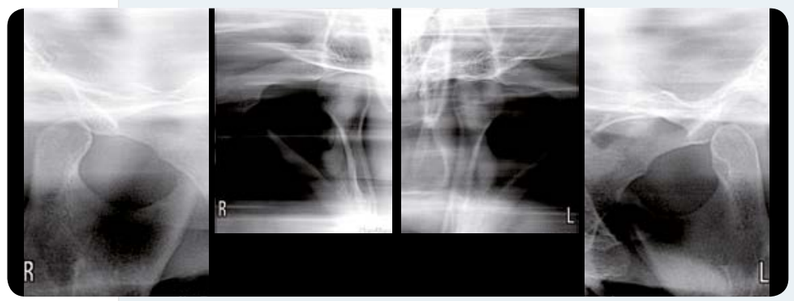
PANORAMIC





Bite wings

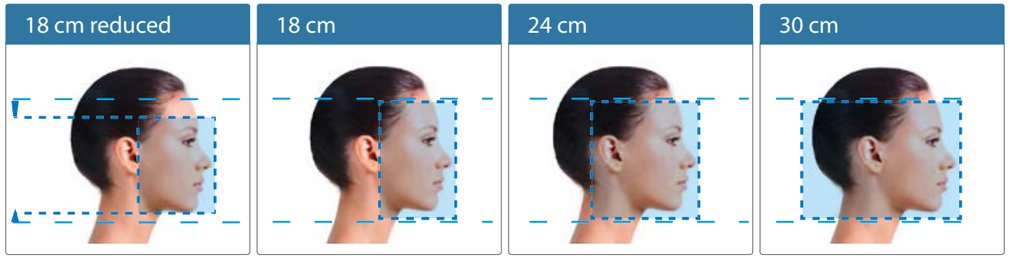
Sinuses



TMJ

CLEVER COLLIMATORS

The primary servo-controlled collimator allows to select the appropriate area for X-ray exposure, minimizing the dose.
The secondary collimator is concealed within the rotating module, allowing more space for both operator and patient.



49% of irradiated area

60% of irradiated area

80% of irradiated area

100% of irradiated area

Cephalometric radiographs

Cephalometric radiographs are used for studying the relationship between the teeth, jawbone and soft tissue. The images obtained with a single shot are used to diagnose facial growth abnormalities, identify fractures and injuries to teeth and jawbone, provide information about malocclusions and measure the teeth.
The quality of the images obtained by NewTom GiANO enables the specialist to plan a precise and safe orthodontic intervention.

Carpal radiography

With the carpal support, the specialist can perform exams on children's hands and wrists to assess the bone growth in relation to the biological age of the child.

NEWTOM BENEFITS

The largest FOV available combined with the highest CBCT technology create the clearest possible images.

A dedicated digital sensor and specific algorithms provide a full range of information.

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

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

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 use.

NNT software makes image sharing easier and quicker.

Simple upgradability to CBCT and Ceph gives added value.

GiANO

NewTom GiANO, manufactured by the company that was the first to use the Cone Beam technology in dental field, represents the perfect solution for dental specialists who want to increase the value of their practice. Thanks to NewTom high technology and a competitive price, GiANO can be considered the most competitive hybrid available today. The specialist has at his disposal a device which can perform a wide range of exams depending on his requirements: **2D, 3D, Ceph and carpal exams**. NewTom GiANO with a 2D configuration can be enhanced to 3D or Ceph at any time. Thanks to the modular sensor, (which can easily be switched and used on the Ceph head), the short exam time and the low dose, GiANO can offer a more complete and immediate diagnosis.
NewTom GiANO takes an image at every degree of rotation, 360° rotation = 360 images, increasing the range of possibilities for image manipulation. A **revolutionary** flat panel X-ray detector produces the clearest, sharpest images possible. NewTom GiANO features an **adjustable Field Of View**, which allows the operator to irradiate just the right volume, depending on the required clinical application.
The size of the collimated FOV can vary from the smallest 5x5 cm's to the largest 11x8cm's and they can be selected directly from the software or from the display, before the scan. NewTom GiANO, unlike other systems, actives the X-ray source only when required, by using a pulsed emission technology.
For a typical CBCT scan, this equates to no more than 4 seconds of total exposure to the patient. The exam can be performed while the patient is standing or seated.
The scanner is wheelchair accessible.
To guarantee perfect **patient positioning**, cross-hair lasers are generated on the chinrest and on the Ceph support.
The small and compact footprint makes NewTom GiANO the best choice for locations, where space is at a premium.
NewTom GiANO does not need an air-conditioned room, its weight does not require a reinforced floor and it can function in rooms without complicated and expensive radiation protection structures.
All the operations executed by NewTom including the patient's examination and the associated calculations are **computer guided**. With its new design, the integrated touch screen panel, the handy USB port and the user-friendly menu, this device is what all practitioners are searching for.

SPECIFICATIONS

	3D	2D
X-ray source	High Frequency, Stationary Anode: 60-90 kV; 1-10 mA (pulsed mode) 0.5 mm focal spot	High Frequency, Stationary Anode: 60-90 kV; 1-10 mA 0.5 mm focal spot dimension, IEC 60336-1993
Detector	Flat Panel Amorphous Silicon	CCD (Charge Coupled Device), Detector Resolution (lp/mm): 10,4 Image Resolution (lp/mm): more than 5 Detector height (mm) for Pan:146 Detector height (mm) for Ceph: 220
Acquisition technique	Single scan and Cone Beam acquisition SafeBeam™ Control reduces radiation based on patient size	Panoramic and Teleradiographic
X-ray emission time	3.6 s to 9.0 s	Adult Panoramic HD: 13s Child Dentition: 7.5s Child Ceph, Lateral: 3.4s
Scan time	Min: 18 s	
Reconstruction time	Minimum render time: 15s	Instantaneous
Signal grey scale	Dynamic range 16-bit	Dynamic range 14-bit
Effective dose	ICRP 103 (µSv): CBCT 11x8, Std Res 33.5 CBCT 11x8, High Res 78.6	ICRP 103 (µSv): Panoramic 6.7 Dentition only 4.3 Ceph Lateral, Reduced 1.0

Multiples CBCT Scan modes	Voxel Size Options (µm): Minimum slice thickness 75 micron						
	FOV Sizes D x H	cm	11 x 13	11 x 8	11 x 5	8 x 8	8 x 5	5 x 5
		in	4.33 x 5.12	4.33 x 3.15	4.33 x 1.97	3.15 x 3.15	3.15 x 1.97	1.97 x 1.97

Patient positioning	Standing or seated. Wheelchair accessible
Weight and dimensions	Height: min 1650 mm (65 in) - max 2410 mm (95 in) Width: 1340 mm (52.8 in), width with Ceph: 1830 mm (72 in) Depth: 1430 mm (56 in), depth with bracket for wall fixing 1520 mm (59.8 in) Total weight: 170 Kg (375 lbs), with teleradiographic arm 190 Kg (419 lbs)
Software	NNT™ with free viewer and sharing application
Power required	15A @ 115 V~, 10A @ 240 V~, 50/60 Hz

Specifications subject to change without prior notice.

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> Accelerated 3D Engine
> Full DICOM 3.0 Compliant
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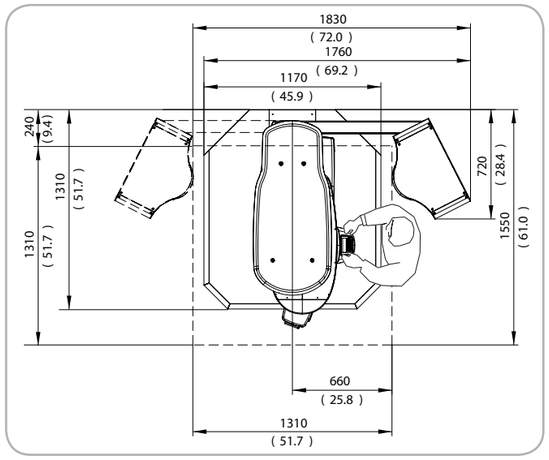
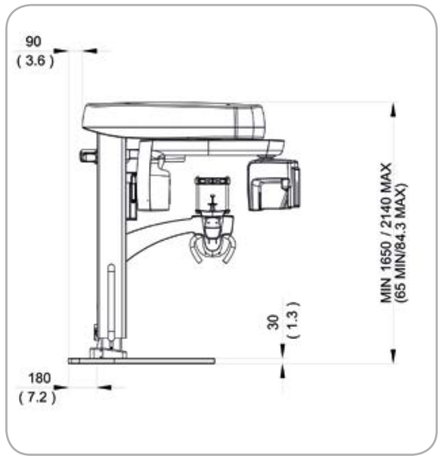
Dimensions in millimeters (dimensions in inches)





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