

GUIDED **SURGERY** • complete solutions for oral surgery



the new generation digital platform

iRES® SmartGuide® is the innovative and personalized solution for the entire clinical team-- dentistry that maintains strong ties with the dentistry of the future. iRES® offers dentists a valid system that meets all the patient's requirements through adequate and personalized solutions planned and achieved using the vast, modern range of Cad Cam technologies with certified materials and executed with absolute excellence. The iRES® system guarantees the right solution for every need, from computer-assisted surgery with all the necessary required computer tools to all components for individual prostheses with 5 axes machine tools that carry out complex, individualized geometries with perfect results--and all through only one source

The dentist uses **iRES® SmartGuide®** software and with a few simple steps develops his or her own simple treatment plan, if necessary by combining his or her own requisites with our Tutor to achieve personalized assistance







SmartGuide®: This is user-friendly software, a cost-contained, state-ofthe-art system for quick, smooth operating results-swift and non-traumatic surgery. **iRES®** offers a new surgery system using **SmartGuide®**. **iRES®** aims at furnishing the professional with an easy and intuitive system that provides both greater accuracy in positioning implants and substantially reduced operating time, thus at once rendering the surgery as un-traumatic as possible.

Costs are truly contained. **iRES**® delivers an overall system that includes: diagnostic software and surgical/prosthetic planning, creation of the surgical mask, and the surgical kit including all drills calibrated by diameter for all lengths. The system uses a single sleeve for all diameters. The software is user friendly. After loading the CAT and completion of the surgical and prosthetic planning phase, the file and the patient's impressions are sent to our drilling centre which, in 72 hours (not including delivery time), supplies a surgical mask and upon request the plastic model with the analogs already inserted, on which the prosthesis can be constructed.





user friendly and **costcontained**



multiple advantages **for the doctor**

The advantages of guided surgery are above all operative. The combined study of the data obtained from the CAT scan and from the impression of the patient's mouth allows the surgeon to virtually plan the operation pre-operatively. The decision concerning the positioning of the implants (where, with what inclination and depth) is thus assisted by the analysis of the digital model, with obvious advantages in terms of precision. The total time of the operation itself is also beneficial: the dentist operates using the guide as backup and with the support of specific surgical tools, as well as a sequence of actions defined by procedure. Guided surgery also allows the surgeon to reduce the invasiveness of the procedure and consequently to increase the success of the operation. In fact, certainty regarding the site and depth of the implant allows the surgeon to avoid dangerous complications such as possible infection of the para nasal sinuses and injury to the mandible nerve. These operative advantages for the dentist also mean better communication with the patient, who can be involved in the planning process. Patient involvement means resolution of many doubts as to the progress of the procedure as well as a reduction in patient fear and anxiety.









Screenshot TAC SmartGuide®



multiple advantages **for the patient**

Thanks to guided surgery, trauma resulting from the incision of the gingival flap can be contained, with consequent reduction of pain and healing time. Nor should the economic benefits of this procedure be underestimated. Optimization of operating times and a more efficient use of resources allow the various operators in the production chain to increase the number of operations.

multiple advantages of **Smartguide**®

SmartGuide[®] Software provides the best way to determine a safe and exact position for implants in the dental arches starting from a CAT joined to the optical scans of the patient's prosthetic data. Thus a thorough and accurate image of the patient's anatomy can be obtained and used for planning and treatment thanks to a simple, intuitive and interactive virtual environment. Simulations of any type of plan for skeletal, mucosal, dental or post-extraction procedures can be carried out.





Surgical masks are created by completely automatic processes using data export and modern, rapid prototype technology 3D printers, including the production of work models complete with copies of the implants inserted. These are indispensible for the creation of immediately usable prostheses. The surgical masks are heat sterilized thanks to the material with which they are constructed which withstands temperatures above 150° C.

The specifically milled **surgical kit was especially** designed to allow the surgeon to insert the implants into the correct space and on the correct directional axis as projected through planning with the Smartguide[®] software.



The ready-to-wear prosthesis is made at the **iRES**® Center Cad Cam and delivered directly in its packing which includes the content complete with a copy of the doctor's order. iRES® scrupulously observes specific, time-tested production protocols. The material used is 'chew-proof' and coated in the most up-to-date aesthetic finishings, certified and guaranteeing no micro movements of the prosthesis, its maintenance over time, and its aesthetic aspect.

The 'ready to wear' prosthesis combined with the complete surgical procedure provides a valid alternative to traditional surgery, less invasive and more conducive to the insertion of implants and the application of the prosthesis in a onestep process. For the patient this means a completely pain-free procedure and delivery of an aesthetic denture in just one sitting. Upon doctor's request, **iRES**® can furnish the physician with the production of prosthetic components in diverse ranges of materials, thus offering a full service range of materials.

preliminary phase, **partially** edentulous



impressions for registrations

- arch impression for surgery using precision materials (polyvinyl – silicone)
- opposite arch impression (silicone alginate)
- intermaxillary impression (silicone wax)
- 1. An extended impression with no functionality or tissue compression is required.
- 2. It is important to achieve impressions of both arches in the precise position specified by the surgeon at the time of the procedure.

evobite preparation

- The 3D marker is placed on the bite and set carefully with iRES® cyanoacrylate as shown below.
- Adjust the bite to the dimensions of the arch and then if needed reduce it in the retro-molar area to avoid contact or excessive interference during the closed mouth phase.
- Set the evolite on the model using transparent resin on the edentulous areas as well, placing the 3D marker as close as possible between the 2 center incisors.
- Remove excess material and insert evobite on the model or in the patient's mouth to evaluate exact placement and stability.

articulator models

- gluing models with Precision Chalk
- setting work Models in Articulator with centric registration

application on the patient

- Set the piece correctly beforehand in the proper arch and check to be sure there are no micro movements.
- Apply silicone to the opposite side of the evobite and set the impression using the opposite arch.
- Hold the piece still and stable between the arches until the material hardens.
- Using a scalpel, remove excess material from the lower part of the piece and reposition it in the oral cavity, checking to ensure stability between the arches.
- After verifying the correct positioning of the radiological guide (evobite), the patient should be sent to the Radiology Center for tomography.

it is important that the patient receive proper training in advance for correct positioning of the radiological guide so that the patient can independently insert and remove the piece on the day of the procedure.

preliminary phase, total toothlessness

protocol for total prosthesis

- 1. Preliminary extensive impression of the arch designated for surgery (alginate)
- 2. Impression of opposite arch (Alginate)
- 3. Larger intermaxillar registration (silicone-wax)
- 4. Development of models in exact plaster

5. Construction of a wax registry base with resin plaque

6. Insert the implant into the patient's mouth and measure D.V. and R.C.

7. Apply adhesive and lower the plaque using lowering material with patient closing in the same position as earlier.

8. Develop directly using precision plaster in the plaque and creating a working model.

9. Set the model on the articulator with its counterpart

10. Mount the teeth and model of the gingival flanges11. Evaluate aesthetics and functionality with the patient.

12. Create a duplicate model of the wax prosthesis in transparent resin.

copy of the prosthesis

In treatments for patients using mobile prostheses with functional corrected aesthetic characteristics, carry out phases 7, 8 and 9 and go directly to 12 (the duplicate in transparent resin). It is important to take impressions of both arches in their exact placements which the surgeon will use later during surgery.



evobite preparation

- The 3D marker should be placed on the bite and carefully set with cyanoacrylate as shown below.
- Adjust the bite to the transparent prosthesis and then fit it in the retro-molar areas to avoid excessive contact or distortion when the mouth is closed.
- Set the evolite with transparent silicone on the prosthesis teeth, placing the 3D marker at the center between the 2 central incisors.

application on the patient

- Set the transparent prosthesis to fit the evobite and check its stability.
- Apply silicone on the counterpart of the evobite and place the implant, closing the opposite arch.
- Hold the transparent prosthesis firmly in place between the arches until the silicone hardens.
- After correct positioning of the prosthesis with the radiological guide (evobite) and its opposite are completed, the patient should be sent to Radiology for tomography.

work flow for the **digital print**



Procedure for partially edentulous implants

registration prints

- · Arch: object of the surgery
- Arch: the antagonist model
- Vestibular section (3/4 teeth) with centric arches
- · Vestibular with evobite device inserted
- 1. A wide intraoral scan should be done
- 2. It is important to take intraoral scans of both arches in exact position and have these ready for the surgeon's use during the procedure.

evobite preparation

- The 3D marker is placed on the bite and carefully set with cyanacrylic as shown below.
- Adjust the bite to the sizes of the arch; if needed, reduce size in the retro-molar area to avoid contact or excessive unevenness when the mouth is closed.
- Set the evobite in the patient's mouth initially using transparent silicone on an arch, compensating for possibly edentulous areas, placing the 3D marker as centrally as possible between the two central incisors, and keeping the bite on a horizontal plane.
- Smooth rough areas and insert the evolite into the patient's mouth, positioning it precisely and firmly on the raised arch.

no evobite

In cases of partial edentuality, the examination should be carried out without evobite, using the patient's own teeth as reference.

application on the patient

- Fit the piece carefully to the already prepared arch and check to be sure there are no micro movements.
- Apply silicone to the antagonist part of the evobite and set the registration, applying the patient's antagonist arch and stabilizing the two arches to each other.
- Hold the model still and firmly set between the arches until the material hardens.
- If necessary, remove excess material from the piece with a scalpel and replace the piece in the patient's mouth for a final check.
- Once the precise positioning of the radiological guide (evobite) has been verified, the patient should be sent to Radiology for tomography.

it is important that the patient receive proper training for the correct positioning of the radiological guide so that the patient may independently insert and remove the implant at the time of the procedure.

scan tac

recommended settings

- Field of Vision (FOV): sections should have the same FOV which comprises all relevant areas including the geometrically complete 3D MARKER.
- Acquisition of all sections of the examination in the same direction, maintaining constant direction for the intersections (less or equal thickness of the single section).
- Take one single acquisition scan of the patient, with the evobite in place but not necessarily aligning with it.

exporting the images

- Acquisition matrix 512 x 512 for each image (recommended)
- Images should be as thin as possible, preferably less than 1 mm. thick.
- Reconstruction algorithm should have highest resolution available (bone or high resolution)
- Export the format for axial images in FORMAT DICOM 3 (standard) not compressed.
- Exporting the entire series of files is recommended (do not compress into one single file)

The RADIOLOGY PROTOCOL form can be downloaded from the www.iRES®.dental site and attached to the examination request which the patient delivers to the radiologist.

for the **radiologist**

positioning the patient

- Remove extraneous objects which could interfere with the images (piercings, jewelry)
- Make sure that the patient is wearing the radiology guide piece correctly • Position the patient properly within the acquisition fields of the x-ray machine and caution him or her to remain as motionless as possible during the examination.
- Make sure that the 3D MARKERS are COMPLETELY INCLUDED within the volume of the acquisition (see graphic)



virtual projection **overlapping** data

optical scan of the models

The optical scan of the models can be achieved directly by the doctor's preferred laboratory with any scanner that allows for file download in STL format.





optical scanning can also be done at the physician's or dental technician's request at our cad cam center.

cad cam **center**

procession technologies

iRES® dentures can be produced with various technologies using CAD (Computer-Aided Drafting, that is, computer assisted technical design), CAM (Computer-Aided Manufacturing, which means computer assisted manufacturing), selective fusion laser (laser sintering or laser melting), removal of dust or bits (using rotating milling cutters??) or hybrid (laser and milling tool).

STL FILES (Standard Triangulation Language files)ARE USUALLY USED IN DENTISTRY: These files, used by the most common scanners on the market, can be received and processed by our production centers to produce completely accurate prostheses.

selective laser fusion

This additive manufacturing technique rapidly produces complex geometrical objects. Each layer of metallic material is applied by a coater in a predefined thickness determined by the 3D file and applied as a separate coat. Each successive layer, therefore, gives shape to the object whose dimensions and features exactly mirror those called for by the three-dimensional modeling. This technique can be used to produce polymeric or metallic components.

removal of excess

The processes of excess removal allow for obtaining a threedimensional shape using utensils that remove such excess material. The machines used to produce complex shapes can operate on five moving axes at once. The process lends itself well to the production of special products in polymer, metal or ceramic.



overlapping and matching stl files with dicom tests

matching stl files to dicom tests can be carried out only and exclusively in our Cad Cam center

Based on STL data, DICOM exam files are downloaded and overlapped by Smart Guide® software according to the following acquisition protocols:

standard matching procedure (recommended)

Matching STL files to CT/ CBCT test using 3D Marker as reference.





direct matching **procedure** (with reference to teeth and anatomy)

Matching STL files to CT/ CBCT test using 3D Marker as reference.

double scan matching procedure

Matching STL files to CT / CBCT using landmarks inserted into the duplicate of the prosthesis as reference.



cad cam **center**

virtual waxing

Virtual wax up for each individual tooth as patient has defined its position in the order form so that implant planning with SmartGuide® software is accomplished within a proper prosthetic relationship. This service may be requested by the physician when the work order is placed. Alternatively analogic waxing can be done by the client's dental office of choice.







CAD CAM Center Send file to insert in the SmartGuide® (*automatic*) software Planning with SmartGuide®; project implant sent to iRES® center Cad Cam

Once the phase of virtual matching is completed, the data is sent to the physician for virtual placement of the implants; once the project and final diagnosis are accomplished, the physician will communicate these to us.

cad model and data conversion

The data file for an implant project sent by the doctor is used as the reference for the production of the surgical mask and as the working model, with laboratory duplicates inserted along with virtual earlier Wax Up as reference for implant planning. If requested, it can be converted to a temporary plate and used immediately.

cad cam production center

All CAD CAM center products are produced using 5 axes milling tools or 3D Markers for high definition according to the work requested.

Stereolithography:

Starting from the 3D file, the mask is constructed layer by layer using an addition technique in a container of liquid resin epoxy which solidifies when targeted by laser.

surgical mask

- Made using a high definition 3D Marker
- Certified 1st Class bio-compatible material
- Sleeve in Peek
- Heat sterilization





work **model**

- Constructed with 3D high definition Marker
- High superficial quality
- The size of the implant is indicated inside the implant itself
- Container to hold implant duplicates

immediately usable prosthesis

- Constructed in Multi-layered PMMA
- Internal support structure in Cr-Co
- · Available for cemented or screwed-on implants



cad cam prodution center: implants made to order



The arrival of **Cad Cam technology** in the dental sector has led to an absolute digital revolution in operative sequences and in the use of new biomaterials that would not have been possible with traditional techniques. When different professional figures within the Cad Cam dental and industrial sectors joined forces, the iRES® project was born, serving clients for the production of the **highest quality dental restorations** that integrate the best hardware and software techniques for the digitalization and planning of CAD and industrial CNS milling, carried out in all phases of the digital process from scanning to implant, to the projection and execution and through the last of these stages, the checks on final quality.







milling center

The iRES® million center offers a range of solutions for screw-on or cemented implants in all clinical situations, from single or multiple crowns on natural teeth at the abutment level or directly on the implant. The pieces can be produced in *titanium, chrome cobalt, zirconium for structures and anatomical monolithic zirconium, lithium disilcate and pmma.*

stl files

For clients working in digital scanning systems, iRES® accepts files in STL format for production of the work requested. Bridges, abutments, screwed-on structures, bars and attachments of all sorts are available using multiple materials currently available on the market.







virtual model **planning**

iRES® also produces models for rapid reproduction of prototype of acquired files with intra-oral scans, providing an advanced consulting service for planning virtual models starting from the intra-oral scans done in the dental office. It is an accessible solution for the new needs of the dental office which is increasingly oriented toward digitalization.



intraoral scan abutment

The line of localizers for the entire iRES® line of implants is specific to applications linked to intraoral scanning. Thanks to the new generation iRES® can visualize and computerize files downloaded by all intraoral scanners currently in use in the marketplace today.



fine structures 14 elements

- Screwed on rods
- Abutment
- Bridges and crowns on natural teeth
- Bridges and screws on implants
- Rapid 3D Prototyping











materials **available**

- Zircon
- Biomedical titanium Grade 5
- Biomedical chrome cobalt
- Pmma
- Lithium disilicate
- Microfilled resin
- Hybrid composite
- Feldspar porcelain
- Glass ceramic

guided surgery kit

The purpose of surgical trays is to keep the instruments used for inserting dental implants. The trays thus assembled can be carried,

CLEANING

1] Dismantle all the compound parts. 2] Rinse abundantly in cold or lukewarm water for 2-5 minutes. 3] Leave the instruments for 10 minutes in an ultrasonic cleaner with a neutral pH enzymatic detergent diluted in water according to the product instructions. 4] Wash the instruments with water for 3 minutes. sterilised and kept in a horizontal position with the lid closed. All the instruments must be cleaned and sterilised before the first use. The kit

and the contained instruments are delivered not sterile.

STERILISATION

The guidelines for sterilisation are listed below.

Type of cycle	Temperature (°C/F)	Exposure	Drying time
Pre-vacuum	132 / 270	3 minute	30 minute
Pre-vacuum	134 / 273	18 minute	30 minute
Gravity	121 / 250	80 minute	30 minute

If these sterilisation parameters are exceeded the plastic components can deteriorate



kit composition

Code	Description
BP	Bone profile for guided surgery
CS	Tissue punch for guided surgey
FR15L	Drill Ø 1.5
GD202406	Drill Ø 2.0/2.4 x h 6 mm
GD202408	Drill Ø 2.0/2.4 x h 8 mm
GD202410	Drill Ø 2.0/2.4 x h 10 mm
GD202411	Drill Ø 2.0/2.4 x h 11.5 mm
GD202413	Drill Ø 2.0/2.4 x h 13 mm
GD202416	Drill Ø 2.0/2.4 x h 16 mm
GD242806	Drill Ø 2.4/2.8 x h 6 mm
GD242808	Drill Ø 2.4/2.8 x h 8 mm
GD242810	Drill Ø 2.4/2.8 x h 10 mm
GD242811	Drill Ø 2.4/2.8 x h 11.5 mm
GD242813	Drill Ø 2.4/2.8 x h 13 mm
GD242816	Drill Ø 2.4/2.8 x h 16 mm
GD283306	Drill Ø 2.8/3.3 x h 6 mm
GD283308	Drill Ø 2.8/3.3 x h 8 mm
GD283310	Drill Ø 2.8/3.3 x h 10 mm
GD283311	Drill Ø 2.8/3.3 x h 11.5 mm
GD283313	Drill Ø 2.8/3.3 x h 13 mm
GD283316	Drill Ø 2.8/3.3 x h 16 mm
GD333806	Drill Ø 3.3/3.8 x h 6 mm
GD333808	Drill Ø 3.3/3.8 x h 8 mm
GD333810	Drill Ø 3.3/3.8 x h 10 mm
GD333811	Drill Ø 3.3/3.8 x h 11.5 mm
GD333813	Drill Ø 3.3/3.8 x h 13 mm

Code	Description
GD333816	Drill Ø 3.3/3.8 x h 16 mm
GD384406	Drill Ø 3.8/4.4 x h 6 mm
GD384408	Drill Ø 3.8/4.4 x h 8 mm
GD384410	Drill Ø 3.8/4.4 x h 10 mm
GD384411	Drill Ø 3.8/4.4 x h 11.5 mm
GD384413	Drill Ø 3.8/4.4 x h 13 mm
GD384416	Drill Ø 3.8/4.4 x h 16 mm
GD444806	Drill Ø 4.4/4.8 x h 6 mm
GD444808	Drill Ø 4.4/4.8 x h 8 mm
GDCSD33	Countersink Ø 3.3
GDCSD37	Countersink Ø 3.7
GDCSD41	Countersink Ø 4.1
GDCSD47	Countersink Ø 4.7
GDCSD52	Countersink Ø 5.2
GDTAPIMAX33	Tap iMAX Ø 3.3
GDTAPIMAX37	Tap iMAX Ø 3.7
GDTAPIMAX41	Tap iMAX Ø 4.1
GDTAPIMAX52	Tap iMAX Ø 5.2
GDTAPS1B37	Tap S1B Ø 3.7
GDTAPS1B41	Tap S1B Ø 4.1
GDTAPS1B47	Tap S1B Ø 4.7
HDH25S	Short implant driver hex 2.5
MDL	Long screwdriver Ø 1,25
PING15	Pin for guided surgery Ø 1.5
R2	Fixed torque with reverse
TW2	Torque wrench
WH2	Torque adaptor

FR15L

Drill Ø 1.5 mm *Price: XX.*⁰⁰ €

guided surgery **instruments**

DRILLS Ø 2.0/2.4 GD202406 GD202408 GD202410 GD202411 GD202413 GD202416 H 8 H11.5 H13 H16 Drill Drill Drill Drill Drill Drill Ø 2.0 | 2.4 mm h 6 mm h 8 mm h 10 mm h 11.5 mm h 13 mm h 16 mm Price: XX.00 € Price: XX.00 € Price: XX.00 € Price: XX.00 € Price: XX.ºº € Price: XX.00 € **DRILLS Ø 2.4/2.8** GD242806 GD242808 GD242810 GD242811 GD242813 GD242816 H 8 . H10 . H16 H11.5 H13 Drill Drill Drill Drill Drill Drill Ø 2.4 | 2.8 mm h 6 mm h 8 mm h 10 mm h 11.5 mm h 13 mm h 16 mm Price: XX.00 € Price: XX.00 € Price: XX.⁰⁰ € Price: XX.00 € Price: XX.00 € Price: XX.00 € DRILLS Ø 2.8/3.3 GD283306 GD283308 GD283310 GD283311 GD283313 GD283316 H 6 H10 H11.5. H13 H16 Drill Drill Drill Drill Drill Drill Ø 2.8 | 3.3 mm h 11.5 mm h 10 mm h 16 mm h 6 mm h 8 mm h 13 mm Price: XX.00 € Price: XX.00 €



TAP S1B			PIN
GDTAPS1B37	GDTAPS1B41	GDTAPS1B47	PING15
Ø 3.7 Price: XX.ºº €	Ø 4.1 Price: XX.ºº €	Ø 4.7 Price: XX.ºº €	Pin Ø 1.5 <i>Price: XX.</i> [∞] €
BONE PROFILE		TISSUE PUNCH	SCREWDRIVER
BP		CS	MDL
		H	
Bone profile for guided surgery <i>Price: XX.ºº</i> €		Tissue punch for guided surgey <i>Price: XX.⁰⁰ €</i>	hex. 1.25 mm h 29 mm <i>Price: XX.ºº €</i>
RATCHET			IMPLANT DRIVER
R2	WH2	TW2	HDH25S
*	ιψ.	/RES	S SZHOH
Fixed torque with reverse <i>Price: 90.ºº</i> €	Torque adaptor Price: 50.ºº €	Torque wrench Price: 140.ºº €	hex. 2.5 mm h 25 mm <i>Price: XX.ºº €</i>



courses & assistence

The iRES® package includes doctor training, a requisite for the use of any iRES® trademark product. The dentist, with the help of our tutor, is guided through the use of the software and acquires the necessary know-how to treat patients who are candidates for the guided surgery. Along with the above-referenced package, a training course at the advanced level is also included. During this course, the dentist achieves a high level of specialization in the hands-on performance of surgical and implant procedures according to the iRES® protocol. This added preparation allows the dentist to act as a reference to other dentists who will begin to utilize the iRES® procedure on their territory. The iRES® platform offers a help connection which can be directly administered by the software itself, offering remote or telephonic support through a dedicated line.

system requirements

WINDOWS OPERATING SYSTEM: Intel I5 or 17 Processor for notebooks, suggested Quad Core for workstations. RAM: minimum 4 GB, for wide field DICOM installation of 8 GB is recommended. Hard disk: 300 – 500 GB (to save projects, the software alone takes up circa 200 MB, the complete library of implants roughly 7 GB). Video card: series Nvidia Geforce with 1 GB RAM (notebooks) or Nvidia Quadro (workstations). Screen resolution: from 1600 x 900 and up; recommended use of higher resolutions (full HD: 1920 x 1080) for optimal projection. O/S: Windows 7 (64 bit), Windows 8 (64 bit), Windows 10. Starting with version 4.2 a 64 bit operating system is required for 3D software libraries.

MACINTOSH: Macbook PRO (product line) or iMac to superimpose on Windows as described above. O/S: OS X Mountain Lion, Mavericks, Yosemite/El Capitan (required to activate hardware rendering).







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