

The Pure Switch concept



About Us

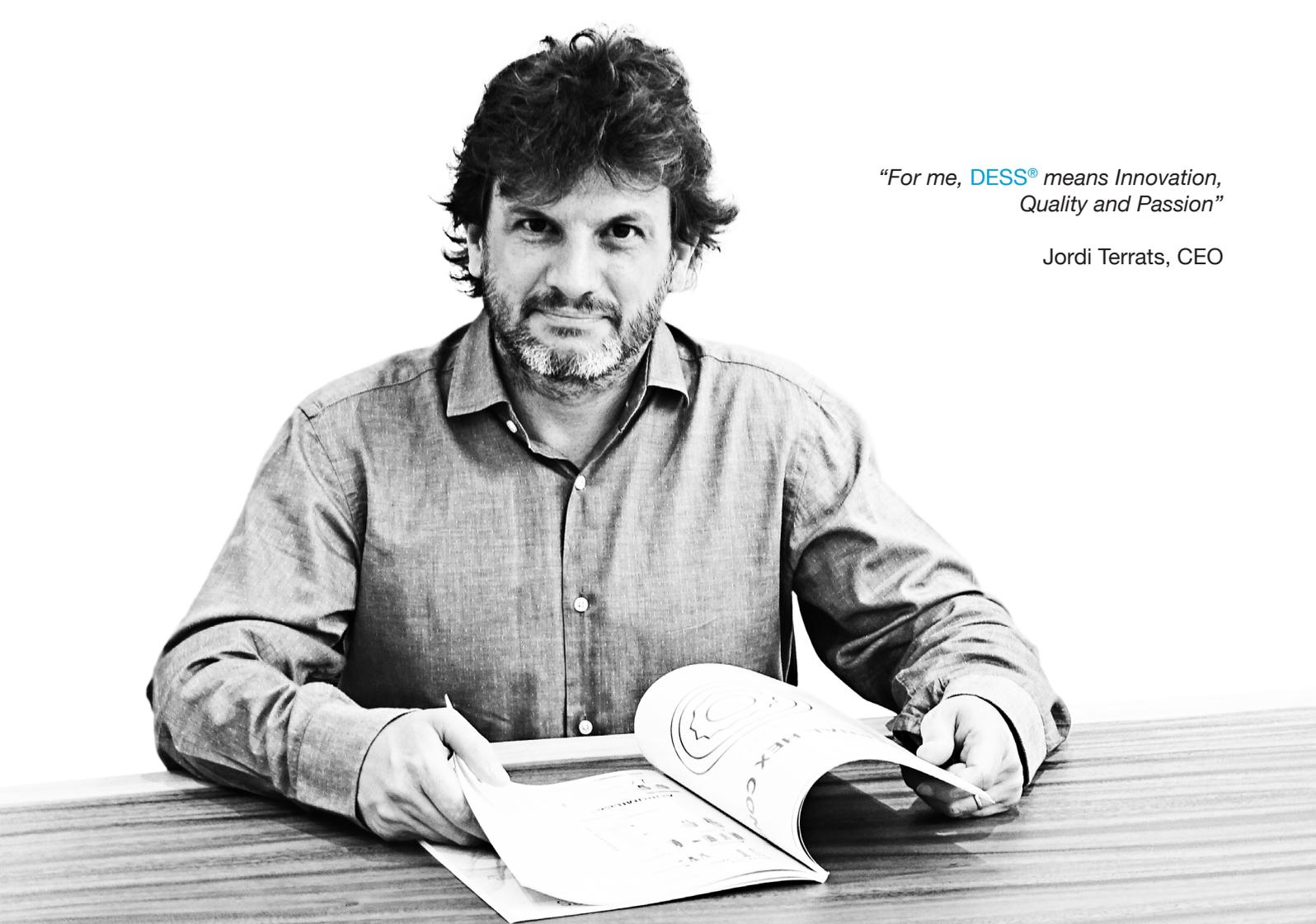
We are Terrats Medical, a family company that was born in Barcelona in 1947, in a little workshop located in the Poblenou area. Our path in the manufacture of precision mechanical components has grown at a frenetic pace in the last decades and is today led by the third generation of the family.

At Terrats Medical we have developed our own brand of dental abutments: **DESS®**. Thanks to this brand, today we are privileged to be a benchmark in prosthetic solutions for dental implants.

This journey to success has been possible thanks to not losing focus on the mission of our company since its beginning:

- Offering customers innovative solutions.
- To guarantee the best quality of products.
- To ensure optimal customer service before, during and after the purchase process.

DESS® Dental Smart Solutions is nowadays a brand of dental abutments internationally recognized with presence in more than 50 countries. All this would not have been possible without the team that makes up Terrats Medical and that guarantees the highest precision and quality in everything we do.



*“For me, **DESS**® means Innovation,
Quality and Passion”*

Jordi Terrats, CEO

Lifetime Warranty

Due to our high quality standards, we trust in everything we manufacture. For this reason, we have a full warranty on our products, both single and in combination with third party implants.

DESS® offers a lifetime replacement warranty on all abutments, even those used with any claimed compatible dental implant, also covering immediate prosthetics with All-on-4 treatment or other cases with Multi-unit.



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Technology

We have a huge expertise on turning and milling activities that started back in 1947, and today we focus all that knowledge on our dental implant parts production.

We rely almost all of our production on Swiss machinery since 1994. Today we have a wide machine park of Swiss Tornos and some Okuma CNC and Citizen turning machines that increase every year thanks to our permanent growing production.

All machines are optimised for medical production and enjoy a sublime care from our staff to keep their accuracy and precision along all its lifetime.



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Our Philosophy

DESS® philosophy can be summarized in three principles:

-  **Be resolute**
-  **Be creative**
-  **Be precise and accurate**

From the beginning, quality has been one of the core values of Terrats Medical's philosophy and is reflected in each of the products we manufacture. We apply the highest quality controls under the framework of ISO 9001 and ISO 13485, FDA and Canada Health.

Thanks to our expertise on dental implant products manufacturing we know very well where to focus and apply the maximum attention and quality requirements.

Another important point in our philosophy is to be innovative and creative with everything we do. We are always trying to improve our products so that they can be better adapted to the needs of the users. To achieve this, we modify some of the features of the original abutments to make them easier to use without losing their quality and functionality.

Some examples:

Our Multi-unit has been designed with a full shaped connection and a straight screw channel to improve screw stability without losing the original implant connection;

The Intraoral Scanning Abutment has been manufactured in Titanium Grade V ELI for better X-ray visibility;

Our angled channel solution, ANGLEBase®, offers the possibility to insert the screw even in the most unfavourable situations. This esthetic improvement allows us an angulation of up to 25° and a 360° rotation on its axis to achieve the perfect angle;

The DESS® Ti-Bases are provided with the SelectGrip® rough surface for better retention of the final crown eliminating the need to do an in-lab sand blasting.

The difference is in small details and, for this reason, at DESS® we are committed to innovation, keeping above our quality.



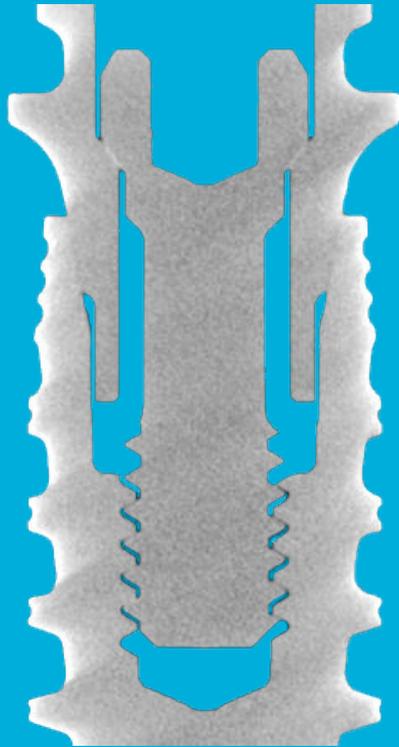
DESS
SCIENTIA SMART

Quality is guaranteed

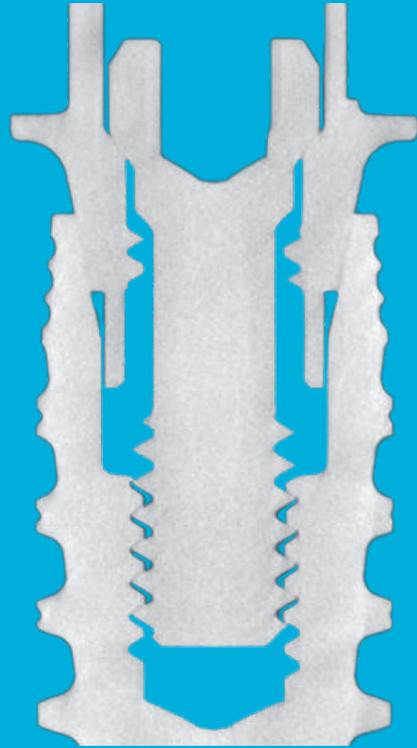
At DESS® we believe no detail is too small to be ignored. That is why our exhaustive controls in each part of the manufacturing process ensure that the quality in all our products is guaranteed.

Terrats Medical has been ISO 9001 certified since 1998 and ISO 13485 certified since 2010, as well as CE validation since 2010.

In addition, we are FDA 510K certified on a large majority of products and Health Canada certified.



OEM



DESS

Product development



PURE SWITCH *by* DESS®

“simple switch, perfect connection”



How do we do it?

The conception of our abutments is based on the “Pure Switch” concept, which means they can seamlessly be used to replace the originals. This concept gives the customer a great deal of flexibility, as they can use both the original product and the DESS® product without losing any of its features.

Following this idea, we guarantee that everything we manufacture will always be 100% compatible with the original implant. Moreover, our screws are identical to the originals and they are perfectly interchangeable.

The “Pure Switch” responds to the need to create a prosthetic solution that can fully replace original without compromising the quality or strength of the product. All our abutments are tested to guarantee their correct functioning.

The production process, a real case: BLX implant

At DESS®, quality and precision are present in everything we do. Therefore, when manufacturing a product, we thoroughly analyze the connection to be replicated in order to guarantee the proper fulfillment of our “Pure Switch” concept.

The process of manufacturing a new connection, the Straumann® Group BLX implant, through the application of reverse engineering, is explained in detail in the following pages.

In order to recreate the implant connection, we acquired the original BLX implant and its respective abutments on various platforms. This allowed us to work with reverse engineering to be able to reproduce the original implant connection on our products.

All our abutments are designed to be perfectly interchangeable with the original products of the connection we are reproducing. This ensures 100% the compatibility of the implant that the dental professional is working with.



DESS
> DENTAL SMART PEOPLE

Product measurement

The first step in creating the BLX connection is to measure the implant and its abutments. We use reverse engineering by applying different measurement techniques to achieve the most realistic result possible:

Three-dimensional machine, Hexagon DEA: with it we detect the points of the piece through a probe. We will then create, through the points in the three-dimensional space, a vision of the dimensions of the connection with micrometric precision.

Microscope

Vision machine

Profile projector: the connection of the part is filled with silicone, which we then extract a positive and measure in an enlarged form thanks to the profile projector.

All our products are subjected to metrological verification checks to ensure that they match the original measurements and the connection we are replicating. We do this by combining even the extreme variations of tolerances.¹

All products have a certain tolerance. To check this flexibility in the original products, we will always measure the original abutments from different lots. In this way, we can extract the tolerances - which vary in hundredths and even microns - and add them to our layout.

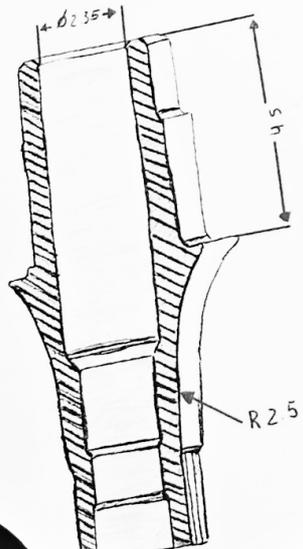
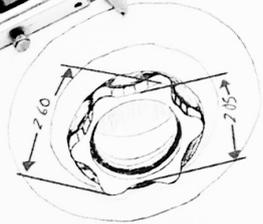
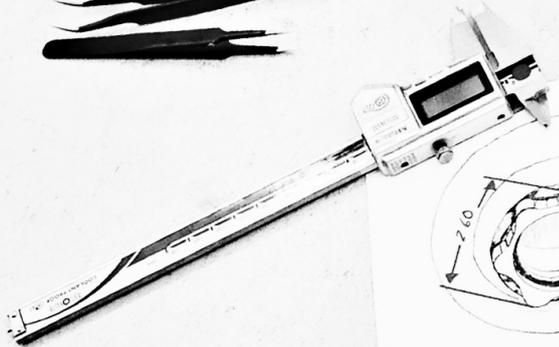
Bearing in mind that this small variation can exist, we will be able to recreate with the greatest precision a reproduction of the original implant connection.

¹ Tolerances are little variations in the production of any product. These variations are controlled within very tight parameters.



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Design: Sketch, 3D y 2D

With the measures we have taken from the original products, we begin to create the 3D and then 2D of our abutments. The first of these shall be a handmade sketch indicating the measurements for each part of the piece.

We proceed, then, to make the 3D design of the abutment. In this way we can adjust the measurements and create the piece in a space three-dimensional. From this 3D design, we will create the 2D drawing, which is the one that we will then send to the factory planning manager to its production and also another copy to the metrology department for proper verification.

The task of the metrology department is very important when verifying that products we are manufacturing comply with the measures we have established to ensure compatibility with the original connection. Therefore, as the parts are produced, they are referred to the verification area.

The 3D design is the one we use to create libraries for our customers and product renders, which are used as sales tools for marketing campaigns.

PLANIFICACIÓ PRODUCCIÓ

MATÍ

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PREPARA	-	KYM	-	-	-	-	-	-	-	MIGUEL	-	-	FRAN	-	MIGUEL	-	-	-	-	-	-
REFINIDA	-	TRIBUNALS	-	-	-	-	-	-	-	OMELSON TA	-	-	PRIZW-S	-	SAZOS-S	-	-	-	-	-	SABIDOBS

NOTES

CARLOS = limpar màquines a les 6:00 i a les 12:00. Marcar lliar.
MARY = dimensionals i preparar lliar.
GOU = dimensionals.
KYM = cogger piazos para control visual volante (6:00).

NOTES

PERSONAL PER POSAR EN MARXA MÀQUINES (6:30)
KYM
FRAN
SONIA
WILSON
MARC

PRIDORITATS GRANALLADORA

PROGRAMES PER FER

NOTES

KYM = encargado materia prima
Controltemos el consumo del cromo cobalto Ø14, por favor.



Production

A 2D drawing is given to the person responsible for production planning. Thus, the person in charge assigns the machines and the necessary times for the manufacture of the pieces. Also within this process, we will separate those products that should receive special treatment (anodized and coatings).

First of all, a reduced set of parts is manufactured, those which have that anodizing and other coatings are sent to it, and finally we carry out appropriate tests to ensure that they fulfill their function in a proper manner. In the following section we will go into more detail in the performance of these tests.

Once the products have passed the tests, they are sent to be manufactured according to the quantities agreed by the person responsible of production. Tests and trials are repeated every X time to maintain the highest quality standards in our products.



DPS

> DENTAL PART SOLUTIONS

Station 1

Station 2

Station 3

DCRA 14801

DCRA 14801

DCRA 14801

Tests

The tests we carry out at our facilities allow us to ensure that all products manufactured fulfill expectations. There are different types of tests which our abutments are submitted to. All the tests we perform are developed under the strictest quality controls established by ISO, CE, FDA and Canada Health.



Functionality test

Its mission is to check the pieces at their tolerance limit. To do this, we will put the products through their worst conditions and check if they still work properly in the original implant.

This test is very necessary to verify that all our products fit perfectly in the original implant system, making them easily interchangeable with the original connection abutments.

Fatigue test

This type of mechanical test is the best that can be done, as it allows us to see how our products react in performance. The fatigue test is carried out in accordance with ISO 14801.

The fatigue test consists in checking the resistance of the implant-prosthesis assembly in the worst conditions. Unlike the functionality test, the fatigue test is performed by submitting the products to a combined compression-flexion movement, such as the one that would be generated in the mouth, to ensure that they do not suffer any damage.

Following the ISO 14801 we have established these parameters:

- Implant-prosthesis combinations mounted in 30° off-axis orientation
- Cyclic force applied (frequency 14Hz)
- 5 million cycle duration

The fatigue strength results for **DESS®** Abutments in combination with original NobelActive® implants are presented in the next page.

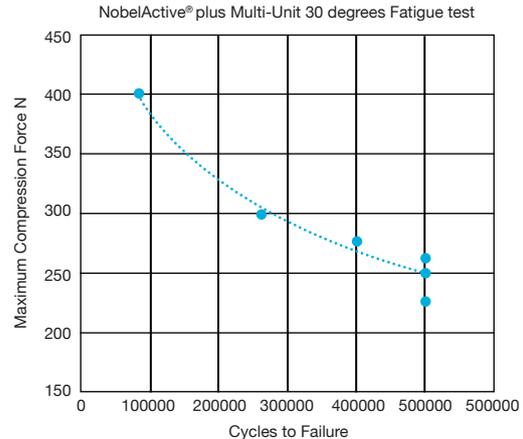
Fatigue Test results

We do many tests on our products. Here you will find the results of one of the comparative tests we have recently done. With this type of test we want to compare both original and **DESS**[®] Abutments to see if the resistance is the same. The results have been satisfactory in both cases resulting in the same load level:

NobelActive[®] original MUA 3.5 RP version + original NobelActive[®] implant at 225N of applied load at 14Hz. 5 million cycles.

DESS[®] MUA version for original NobelActive[®] 3.5 RP + NobelActive[®] implant at 225N of load applied at 14Hz. 5 million cycles.

As shown, both results were equivalent. All our abutments are submitted to continuous tests to ensure its resistance.





Wet fatigue test

With the wet fatigue test we try to simulate conditions in mouth. To do this, the piece is immersed in liquid at a temperature relatively similar to that of saliva and some friction is exerted on it to simulate movement in the mouth.

There is also the possibility of colouring the liquid to check the watertightness of the prosthetic connections. With this we will verify if the biological seal of the implant-prosthesis connection works correctly. If the biological seal fails, the internal connection will be painted.

Digital Dentistry

In recent years, digital dentistry has become a must for any professional in the industry. This technology makes possible to improve diagnoses, facilitate the work of specialists and achieve a more personalized treatment for patients.

The digital workflow has three phases:

1. Digitalization of the patient's mouth
2. Processing of information through CAD design
3. Manufacture (CAM)

It covers everything from intraoral impression taking and radiographs and/or digital photography to treatment planning, design and fabrication of dental prostheses.

CAD/CAM Libraries

All our products are available in the main dental CAD design software on the market. They are also integrated into the most known CAM softwares like hyperDENT, iCAM V4.7, worknc or vhf, among others.

Our libraries, which can be downloaded for free from our website, are constantly updated to guarantee the smooth running of them to our customers. It is very important to have the latest version of the libraries downloaded to avoid any potential issue in the design of the pieces.



Welcome to the future: DIY

With our in-house milling set the professional can take control of his projects designing bars, bridges and multiples with the highest precision.

To make this possible, at **DESS®** we have conceived the milling tool, which can be used to create straight or angled channels of up to 25°. Together with our blocks, allow the professional to create unique restorations.

This new conception of autonomous work is linked to the recent need of professionals in the field to be able to take control of their work and create their projects with maximum precision.



www.pure-switch.com