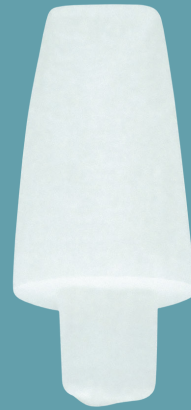


Patent ➤

The Patent™ Dental Implant System:

A Comprehensive Guide



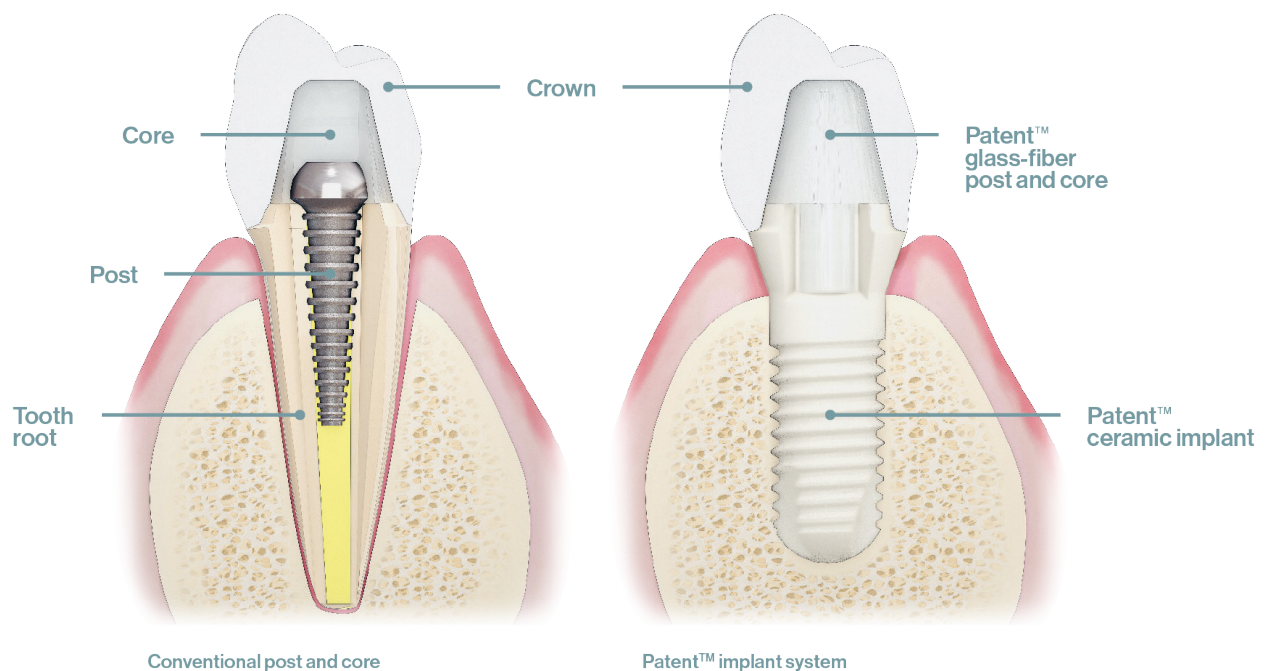
The Patent™ Implant System: A Comprehensive Guide

Patent™ is the world's first and only two-piece ceramic implant system backed by long-term clinical evidence.

Today you can find zirconia implants from several dental implant manufacturers globally. However, Patent™ is the only commercially available two-piece ceramic implant system backed by extensive long-term clinical evidence, all of them reporting a high survival rate on par with titanium implants.

Backed by clinical research, the Patent™ Dental Implant System is now geared to evolve the dental implants industry, becoming the new standard in dental implantology. If you're reading this guide, you're probably considering adding the Patent™ Dental Implant System to your suite of dental services. You may also have several questions about our ceramic implant system.

This exhaustive FAQ guide answers any questions you may have about the Patent™ Dental Implant System — if you still have questions left unanswered by this guide, please reach out to our sales representatives individually.



Patent™ Background	1
Where are Patent™ implants produced?	2
How long has the Patent™ Dental Implant System been on the market?	2
How many Patent™ implants have been placed so far?	2
How many Patent™ users are there so far?	2
Are there any clinical studies about Patent™ implants?	3
Is the Patent™ Dental Implant System certified?	3
Can I advise my patients to have ceramic implants, or are they still too risky?	3
 Patent™ Product Details	 4
What's the difference between Patent™ implants and other ceramic implant systems?	5
What are Patent™ implants made of?	5
In which sizes (diameter/length) are Patent™ implant bodies available?	5
Why is the Patent™ post in glass fiber reinforced resin and not in ceramic, like the implant?	5
Why is the post not screwed in?	6
Is the Patent™ glass fiber post visible through the restoration?	6
Is the entire Patent™ implant surface rough all along the implant?	6
What are the advantages of a hydrophilic surface?	7
Why is the surface so rough?	7
What are the problems with bone level implants? How are transgingival better?	7
What advantages does sandblasting in a pre-sintered state have over other surface treatments?	7
What is the exact depth of the 3C connection in mm?	8
Are there any fractures with zirconia implants?	8
How is the risk of dental implant fractures minimized?	8
 Patent™ Applications	 9
Is it possible to make bridges with the Patent™ implants system?	10
Is the Patent™ Dental Implant System suitable for fully edentulous cases?	10
When are shorter implants recommended?	10
What is the minimum distance between two Patent™ implants and between the implant and a natural tooth?	10
What is the maximum insertion torque?	10

Patent™ Procedure	11
How do I place implants with Patent™?	12
How shall the Patent™ glass-fiber post be prepared?	12
How to cement a Patent™ glass-fiber post (GFP)?	12
How do you protect the connection during healing?	12
Can I prep/grind on the implant?	12
How to take an impression of Patent™ implants?	13
Is it possible to perform immediate placement/loading with Patent™ implants?	13
How to remove a cemented Patent™ GFP?	13
Is it possible to rework Patent™ implants?	13
 Patent™ Healing Phase	 14
Do Patent™ implants need to be protected during the healing phase, like most ceramic implants?	15
Are cover caps and/or healing abutments available?	15
How does the Patent™ implant integrate into the bone?	15
How long does it take for Patent™ implants to osseointegrate?	15
How does the keratinized tissue react to the implants?	15
Is there a long-term change in the mucosal level?	15
 Get Started with Patent™	 16
I already have experience in implantology; why do I need specific training?	17
How can I participate in a course?	17
What investments do I have to make in terms of training and equipment?	17
How much does a Patent™ implant cost?	17
What's the delivery time for standard implants and individual implants?	18
How long does the Patent™ implant packaging remain sterile?	18
What if a patient discontinues the treatment? What happens with the Patent™ individual implants?	18
What securities do I have? Are there any guarantees?	18
What is the company policy if a Patent™ implant loosens during the healing phase?	18
Does insurance cover Patent™ implants?	18
 About Us:	 19

Part 1:

Patent™ Background



Where are Patent™ implants produced?

The Patent™ Dental Implant System is produced in **Wolfratshausen, Germany**.

How long has the Patent™ Dental Implant System been on the market?

The Patent™ one-piece implant system has been on the market since 2006, and the Patent™ two-piece implant system has been on the market **since 2009**.

How many Patent™ implants have been placed so far?

As of mid-2020, approximately **10,000 Patent™ implants** have been placed successfully.

How many Patent™ users are there so far?

As of mid-2020, the Patent™ Dental Implant System is used by over **100 dental professionals**.

Are there any clinical studies about Patent™ implants?

Yes. The Patent™ Dental Implant System is backed by two long-term clinical studies — Brüll 2014 and Becker 2017.

The retrospective study (Brüll 2014) examined the clinical performance of Patent™ implants on 74 consecutively treated patients with 121 implants over 3 years. The following are the key takeaways from the study:

- 96.5% implant survival rate, comparable with titanium.
- Implants were placed immediately in extraction sockets and in healed sites.
- Stable or increased marginal bone levels.
- Bleeding on probing (BOP) less around implants than other teeth.
- Probing pocket depth (PPD) less around implants than other teeth.
- Soft tissue conditions were better than around titanium implants.
- Only one reported implant fracture.
- No fractures of the glass fiber posts.

The prospective study (Becker 2017) examined the clinical performance of Patent™ implants on 52 patients with single tooth gaps in the posterior maxilla over 2 years. The following are the key takeaways from the study:

- No implant fractures.
- 95.8% implant survival rate, comparable with titanium.
- Simultaneous bone augmentations and/or sinus lifts did not impact survival rates
- The volume of keratinized gingiva increased over time.
- One crown and glass fiber post fracture reported, i.e., a prosthetic complication rate of 2.1%.

Is the Patent™ Dental Implant System certified?

The Patent™ Dental Implant System has been CE-certified for the 1-piece and 2-piece implants since 2006 and 2009, respectively.

Can I advise my patients to have ceramic implants, or are they still too risky?

Patent™ is the only commercially available two-piece implant system with extensive long-term clinical documentation. Both studies have shown that Patent™ implants have a survival rate on par with titanium implants, today's standard of care. Based on this, you can confidently advise your patients to get Patent™ ceramic implants.

Part 2:

Patent™ Product Details

Patent 

What's the difference between Patent™ implants and other ceramic implant systems?

Most of the 2-piece ceramic implant systems on the market have screw-retained connections between the abutment and implant. The Patent™ 2-piece implant system has an integrated abutment with a cemented fiberglass post, eliminating the risks of loose screws and bacterial colonization in the micro-gaps at the implant-abutment interface. Furthermore, unlike other cemented connections, the fiberglass post is easily extracted due to its soft surface.

What are Patent™ implants made of?

Patent™ implants are made of yttria-stabilized zirconia (Y-TZP).

In which sizes (diameter/length) are Patent™ implant bodies available?

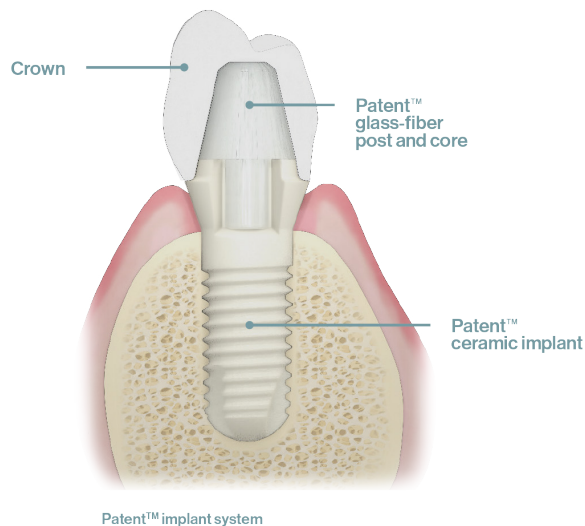
Patent™ is currently available in three diameters (4.1mm, 4.5mm, and 5.0mm) and four lengths (7mm, 9mm, 11mm, and 13mm).



Why is the Patent™ post in glass fiber reinforced resin and not in ceramic, like the implant?

Patent™ implants use a glass fiber reinforced post. First of all, a glass fiber post is extremely easy to prepare, making it very convenient. Second, it has a modulus of elasticity similar to dentine and creates a good combination with the stiff implant to distribute the load from the bite forces. Finally, glass fiber is a soft material, making it easy to remove despite cementation. If there's a problem, the glass fiber post can be retrieved with a rotating instrument under irrigation. Furthermore, the glass fiber post also exhibits better load distribution within the implant, and it doesn't shimmer through the restorative work because it's light-colored.

Why is the post not screwed in?



Most other two-piece dental implants maintain a screw-retained connection between the implant and the abutment. There are several disadvantages with that:

- Metallic screws, like titanium and gold alloys, prevent the implant system from being 100% metal-free.
- In screwed connections, the micro-gaps between the implant and abutment surface are vulnerable to wear and bacterial infiltration.
- All screw-retained systems, metallic and non-metallic, carry a prevalent risk of the screw loosening or breaking.

Patent™ implants overcome these challenges by establishing a cemented connection between the implant and the glass fiber post. Cementation eliminates micro-gaps between the components, negating the risk of bacterial colonization. The lack of screws negates the risk of the screws loosening or coming undone. And it's also easier to handle — no screws, no screwdrivers, only conventional prosthetic work.

Is the Patent™ glass fiber post visible through the restoration?

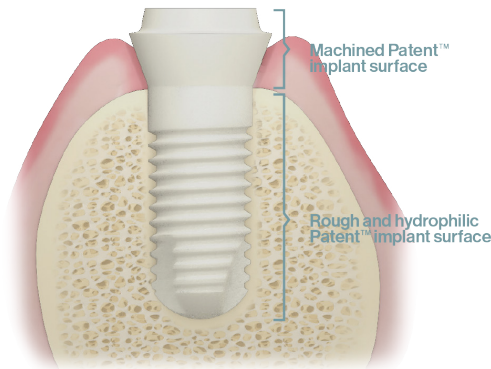
The glass fiber post doesn't shimmer through the restoration because it's light-colored. However, in some cases, it may be coated in composite resin to blend even better with the surroundings.

Is the entire Patent™ implant surface rough all along the implant?

No. Only the part in contact with the bone is roughened to enlarge the surface in contact with the bone and to achieve optimal hydrophilic behavior. The transgingival surface is machined to support soft-tissue adhesion, striking the perfect balance between smooth and rough.

What are the advantages of a hydrophilic surface?

Hydrophilic surfaces attract blood, facilitating smoother and faster bone formation for optimal osseointegration.



Why is the surface so rough?

A rough surface provides a larger surface for the bone cells to attach. Patent™ implants have a unique manufacturing process wherein the implants are sandblasted in a pre-sintered state to provide a roughened surface with a 5x larger surface area than a machined surface, without jeopardizing the implant's strength. As such, they exhibit optimal hydrophilic behavior with a nearly perfect osseointegration rate, as reported in the clinical studies.

What are the problems with bone level implants? How are transgingival better?

Bone-level implants necessitate using a transgingival component, which means there will be a microscopic gap between the subgingival and transgingival components close to the bone crest. The micro-movements between the components aren't conducive to tissue healing, and the micro-gaps may also lead to bacterial colonization, increasing the risk of infections. This is avoided with a transgingival implant since there is no micro-gap close to the bone crest.

What advantages does sandblasting in a pre-sintered state have over other surface treatments?

Sandblasting before sintering allows us to achieve a much rougher surface than sandblasting after sintering. If you want a rough surface after sintering, you need to exert a lot of pressure, which leads to micro-cracks in the material, weakening the implant system. However, if the surface is roughened before sintering, you need less power during the sintering phase, minimizing the risk of potential micro-cracks. In the subsequent sintering process any micro-cracks will be closed due to the shrinkage. Thanks to this manufacturing method, Patent™ implants have a roughened surface with a 5x larger surface area than a machined surface, without jeopardizing the implant's strength.

What is the exact depth of the 3C connection in mm?



The precise depth of the 3C connection is 3.3 mm.

Are there any fractures with zirconia implants?

Just like titanium implants, zirconia implants also carry a small risk of fractures. The implant's design and manufacturing process have a big impact on fracture rates — most companies don't have clinical studies reporting on their fractures. However, the Patent™ Dental Implant System has studies confirming a fracture rate of below 1%.

How is the risk of dental implant fractures minimized?

- Optimal material combination zirconia and glass fiber.
- Optimal macro geometry, strong connection and strong implant body.
- Optimal manufacturing process, obtain surface roughness in pre-sintered stage.
- Optimal implant placement, to maximize occlusal load in the axis of the implant.
- Optimal load distribution, avoid extended restorations to minimize levers.

Part 3:

Patent™ Applications



Patent 



Is it possible to make bridges with the Patent™ implants system?

It is possible to make bridges with the Patent™ Dental Implant System. However, we recommend smaller 3-unit bridge constructions.

Is the Patent™ Dental Implant System suitable for fully edentulous cases?

Yes, the Patent™ Dental Implant System is suitable for fully and partially edentulous cases.

When are shorter implants recommended?

Shorter implants are recommended when the patient doesn't have sufficient bone for longer implants.

What is the minimum distance between two Patent™ implants and between the implant and a natural tooth?

The distance (the intraosseous part) is 3mm between implants and 1.5mm between a tooth and an implant.

What is the maximum insertion torque?

The maximum insertion torque is 32 Ncm.

Part 4:

Patent™ Procedure

How do I place implants with Patent™?

The following is a brief overview of the steps involved in the Patent™ implant procedure:

1. Create a general plan for implant placement using basic implantology principles.
2. After analyzing the x-rays and intraoral conditions, you determine the necessary length and diameter of the implant.
3. The implant placement can be a flapless procedure with a soft-tissue punch. After preparing the osteotomy, you place the implant into the bone, with the transmucosal part resting on the crest of the bone.
4. Cement the glass fiber post into the implant's integrated abutment, and prepare the core with high-speed cutting tools and water cooling.
5. Take an impression of the preparation.
6. Cement the final dental crown on the glass fiber post.

How shall the Patent™ glass-fiber post be prepared?

The Patent™ glass-fiber post must be prepared with a diamond bur at high speed and water cooling.

How to cement a Patent™ glass-fiber post (GFP)?

You may cement the post as you would do with any glass-fiber post. For cementation, we recommend using an MDP-type cement (internal testing has shown that RelyX™ Unicem 2 Automix from 3M™ ESPE provides the best results). Ensure no air bubbles get trapped, hold the post in place under axial pressure, let it harden, and remove the excess cement. For patients sensitive to the type of cement recommended above, glass ionomer cement may also be used.

How do you protect the connection during healing?

You may protect the implant-post connection with a silicone or a temp acrylic that's easily removable at the time of cementation of the post.

Can I prep/grind on the implant?

Yes. You may prepare or grind the implant carefully with a fresh diamond under copious irrigation, without excessive external pressure.



How to take an impression of Patent™ implants?

You don't need impression posts to take an impression of the 3C™ connection. You just insert the light body impression material into the 3C™ connection or around the already-cemented post and take a conventional full arch impression, as you would do for any restoration. A full arch digital scan can be made on implant level, without scan post, or after the post has been cemented and prepared, as you would do for any restoration.

Is it possible to perform immediate placement/loading with Patent™ implants?

Yes, immediate placement/loading with Patent™ implants is possible if the surgeon determines sufficient primary stability. The retrospective study (Brüll 2014), conducted on implants placed immediately in extraction sockets and in healed sites, found high survival rates in both situations.

How to remove a cemented Patent™ GFP?

To remove a cemented Patent™ glass-fiber post, you must first remove the restoration. Next, cut off the core portion of the GFP from the implant head using a 1.0 mm diameter diamond bur. Use the same bur to clean out each of the three channels of the 3C™ implant connection. See video at www.zircon-medical.com.

Is it possible to rework Patent™ implants?

It is absolutely not possible to rework Patent™ implants.

Part 5:

Patent™ Healing Phase

Do Patent™ implants need to be protected during the healing phase, like most ceramic implants?

Patent™ implants don't need to be protected during the healing phase. However, it's important to clean the implant with a soft, non-electric toothbrush and avoid high pressure and chewing forces on the implant during the healing phase.

Are cover caps and/or healing abutments available?

With the Patent™ Dental Implant System, healing components are unnecessary. We recommend using a temporary acrylic mono-phase obturation cement to protect the implant connection during the healing phase.

How does the Patent™ implant integrate into the bone?

The Patent™ implants integrate into the surrounding bone through the process of osseointegration. The Patent™ implants have a roughened and hydrophilic surface because of a unique manufacturing process, i.e., the implants are sandblasted in the pre-sintered state. Patent™ implants exhibit optimal hydrophilic behavior with a nearly perfect osseointegration rate.

How long does it take for Patent™ implants to osseointegrate?

Depending on the bone quality, Patent™ implants osseointegrate in 8 to 12 weeks. You can take impressions after 8 weeks, and the implant can be loaded after 10 to 12 weeks.

How does the keratinized tissue react to the implants?

The study from Becker et al. reported an increased level of keratinized mucosa after 24 months.

Is there a long-term change in the mucosal level?

The two clinical studies found extremely stable soft tissue levels.

Part 6:

Get Started with Patent™

Patent 

I already have experience in implantology; why do I need specific training?

Using the Patent™ Dental Implant System requires a strong understanding of the unique specificities of the system and the properties of the material. Therefore, a course on the Patent™ Dental Implant System is strongly recommended. In the future, the new European Medical Device Directive, which is a precursor to the new Medical Device Regulations, will require all manufacturers to provide user training. However, the Patent™ Dental Implant System follows most of the principles of basic implantology, so a one-day course should be sufficient.

How can I participate in a course?

You can register for a course online through our Patent™ Training.

What investments do I have to make in terms of training and equipment?

The investments to start with Patent™ implants are limited. You need to buy a surgical kit and attend a one-day training — that's all. There are no prosthetic preparations or investments necessary — no prosthetic kit or training.

The Patent™ Dental Implant System follows most of the same principles as basic dental implantology, using the same series of surgical tools. As such, there's nothing to set up in your practice other than the basic implant kit. The only area you'll have to consider is how to market zirconia implants to your patients.

How much does a Patent™ implant cost?

Please contact your Patent™ representative for more information on the cost.

What's the delivery time for standard implants and individual implants?

The standard Patent™ implants will be delivered in 48 hours, depending on the location. The individual Patent™ implants will be delivered within 7 working days.

How long does the Patent™ implant packaging remain sterile?

The Patent™ implant packaging is guaranteed to remain sterile for at least 4 years after the date of manufacturing.

What if a patient discontinues the treatment? What happens with the Patent™ individual implants?

We cannot accept returns once an implant has been ordered and individually manufactured.



What securities do I have? Are there any guarantees?

Patent™ offers a lifetime guarantee for fractures.

What is the company policy if a Patent™ implant loosens during the healing phase?

Non-osseointegrated implants are not included in the scope of the Patent™ lifetime guarantee.

Does insurance cover Patent™ implants?

The insurance coverage for Patent™ implants is the same as other dental implants and will follow the rules in each country.

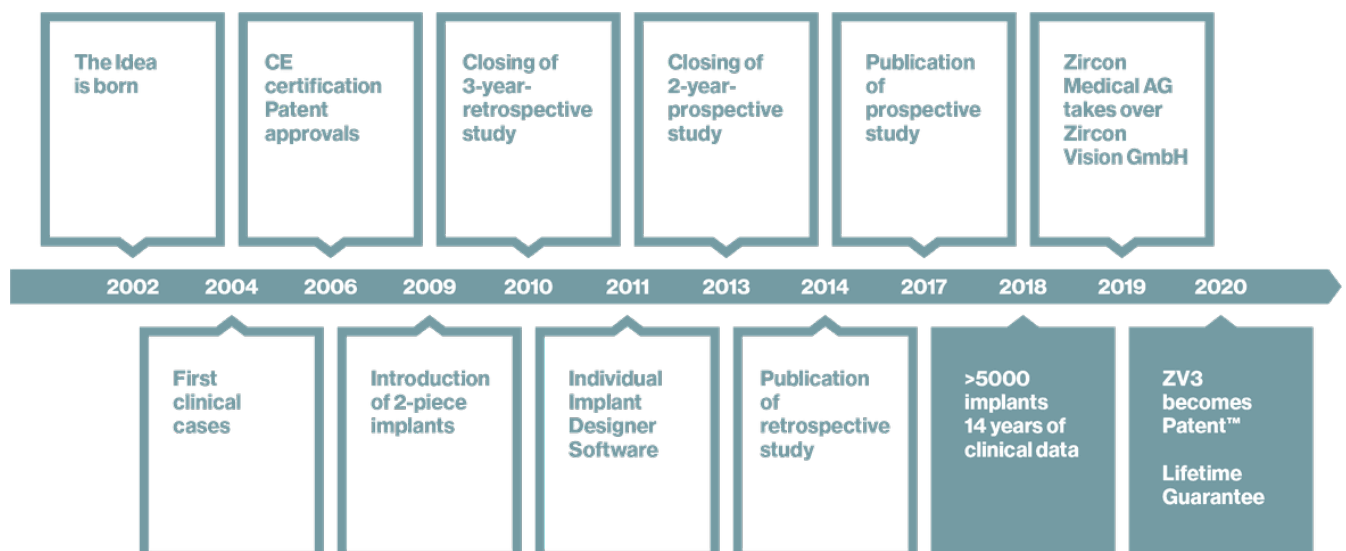
We are Pioneers.

About Us:

We at Zircon Medical Management are a young team of passionate professionals from various industries. Our team has made it its goal to improve the quality of life of all people through transformative dental prosthesis solutions, which are aimed at increasing well-being and reducing complexity. We have pooled our expertise to create a company that responds to patient needs and is able to create strong bonds between patients and dentists. We are the ideal mix of German manufacturing expertise, Swiss engineering and international commercialization, guided by our cornerstones such as sustainable oral health, reduced treatment complexity, biologically natural aesthetics - tailored to the needs of our patients. We encourage all dentists and dental technicians to rethink, according to the motto 'Re-Think Dental Implants'.

Our History

In 2004 a small technology company was founded in Bavaria with the aim of further improving the long-term effectiveness of dental implantology using newer and more biologically more solid materials and techniques. Using a proprietary manufacturing process combined with a biomimetic design, the unique patent™ dental implant system was developed. In 2019, Zircon Medical Management AG acquired the Patent™ technology. Inspired by the successful 10-year proof-of-concept and an already loyal customer base of highly satisfied clinicians, a new era of patient-centered, innovative dental implant products began.



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