

Biotech Dental

Check of original new dental implants

Thanks to its partnership with Cetim, Biotech Dental was able to carry out galvanic corrosion tests and thus experimentally validate its choice of a new alloy for dental implant abutments. A major first for Cetim's experts!



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OUR CUSTOMER

Corporate name
Biotech Dental

Activity
Biotech Dental is a French company established in 1987 which designs, manufactures and distributes dental surgery equipment: dental implants, dental prostheses, intraoral scanners and biomaterials. It also provides a comprehensive range of dental cosmetic medical products and techniques featuring transparent mouthguards, dental facets, filling gel, smile analysis software, etc., and is one of the leaders in the dental implantology market.

Turnover
38 million euros

Workforce
265 persons

A dental implant is a screw, made of pure titanium or of titanium alloy, which is implanted in the maxillary bone or in the jawbone to replace the root of a lost or missing tooth. The implant supports a titanium or titanium alloy abutment screwed into it. The top part is then covered with a crown, i.e. a ceramic cosmetic prosthesis.

As Catherine Priou, head of the design office, explains, "when we started to design a new range of implants, we wanted to satisfy a market demand, namely an abutment made of a metallic material which dental technicians are used to work

with. We had to make sure that there was no galvanic coupling between the metals present in the mouth". As a matter of fact, a galvanic reaction in the mouth is likely to generate corrosion problems and even to create a metallic taste and, therefore, cause discomfort to the patient.

A tailor-made test bench

"In order to make an electrochemical test bench with characteristics similar to those of the oral environment, the contact surfaces within the mouth and the pH value, we used standard NF EN ISO 10271 relating to corrosion test methods for metallic materials in dentistry.

This was a major first for Cetim, which designed methodological developments to comply with the standard," says Lucie Douhard, special processes qualification and validation manager. "Cetim carried out a first static immersion test of the two materials with a solution representative of the oral environment. The objective of this one-week test was to assess the likelihood of release of metallic elements in the mouth. Then a second test allowed us to study the galvanic coupling current between the two materials used." These tests made it possible to determine the intensity of the electrochemical currents, ensure that there was no significant corrosion of the implant and, finally, validate the choice of the new material.

Cetim's asset

To validate the quality of multi material assemblies, Cetim's experts rely on high skill levels in electrochemistry and chemical analyses. For that purpose, they have an essential instrument at their disposal, namely a plasma emission



spectrometer, which allows them to determine the quantities of metallic elements released in the immersion solution.