LEIPZIG: In May, the Sweden-based company Astra Tech held a major CE course on implantology in Frankfurt/Main, Germany. We had the opportunity to meet product developer Stig Hansson to talk about his work and the latest revelations on implant surfaces.

Daniel Zimmermann: Mr Hansson, you must be a busy man. What are you working on at the moment?
Stig Hansson: My current work focuses on improvements of the geometry and surface of the Astra Tech implant. With these new calculations we hope to further accelerate the compound between the implant surface and the human bone.

How long does it usually take before new calculations find their way into the final product?
This depends on how certain we are about the calculations. Just a slight modification of the surface on a microscopic level can take some time depending on the risks. For instance, it must be proved whether a minor change in the implant surface has any effect on the surrounding tissue in some way. These things we investigate of course very thoroughly before we go about the production phase.

What were the main challenges in the development process of the Astra Tech implant?
I found that the effects of mechanical forces are very important. I have a mathematical and engineering background and I see the human body primarily as a perfect engineering structure, and therefore have a deep knowledge and understanding about the interplay between the connective tissue, bones and surfaces. One of the things I learned over the years is that nature itself does everything in the most efficient way, and that we must adapt our concepts to this natural law in the development process.

There is a lot of speculation about the ideal implant surface. In your lecture you said that there is still a lot of potential for optimisation. What’s the problem?
Indeed, a lot of potential lies in the topography of implant surfaces. What makes precise engineering calculations in surface development complicated is the partially diverging study data that we have. In many cases, it was found that bone very close to the implant surface has no collagen. In others, there seems to be a reduction of collagen and minerals to certain amounts. Once we gain more knowledge about these processes, we will be able to optimise the surface of the implants even further.

Thank you very much.

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