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It has become common practice in industry to use 3D CAD/CAM technology for product design and to simulate the manufacturing process(es) needed to create the finished product. Although businesses have benefited from being able to present their designs realistically on screen and share technical design information with other members of the supply chain, it has often been a difficult and costly exercise because of CAD software constraints. Not everyone can operate CAD software or afford the kind of specialized tools required to view and manipulate CAD files.

All this has changed. Finally the technology is here - not only to create 3D designs, but also to communicate them quickly to anywhere in the world. Take the case of Turnkey Engineering Solutions (TES), a Pretoria-based company that provides a range of industries with robotic welding stations, tooling and steel construction. After considerable searching, TES has discovered the ideal way in which this can be accomplished.

TES has been providing turnkey engineering solutions to the industry for the past 7 years. Recently it selected CATIA V5 engineering solutions from CDC (CNC Design Consultants) and IBM as its core CAD/CAM solution.

TES pre-designs a number of generic Robotic cells, equipped with stationary, turntable, or ferris-wheel systems. Each cell has different settings and various Fanuc robots which are suitable for different tooling purposes. TES's design engineers simply save these CATIA designs as 3D XML files and email them through to the company's marketing department.

TES uses CATIA's 3D XML viewer to offer its customers a 3D virtual presentation of the proposed design solution right from the beginning of the project bidding phase. This has proven to be an excellent marketing tool, not only by providing clarity on project specifications, but also by considerably speeding up the bidding phase.

Altus Mostert, director of 'Robotic Innovations', a division of TES, says that before they implemented CATIA and its 3D XML viewer, the process of providing an accurate quotation to clients was a time-consuming and costly exercise that would sometimes take them up to 3 months to accomplish. He explains: "The first visit would usually involve going to our client to gather design requirements. During the second visit, we would attempt to visually represent what we understood the final product should look like, by manually sketching it on a whiteboard in our client's boardroom. It was very difficult to describe all the fine details in this way. Only after numerous visits to our client's site would we have a common understanding of what was required so that we could finally prepare a quotation."

With CATIA, a completely new scenario emerges. Thanks to CATIA, TES is able to combine the presentation and quotation into one visit. Altus explains: "Using 3D XML is fantastic. It's now much easier to show clients not only what their end product will look like, but also explain exactly how it will function. With 3D XML viewer you can zoom in, isolate a part, attach a price list and a complete bill of materials. The client will have a clear picture of exactly what he will be getting, as if it were the real thing." As a result, the whole bidding process is much quicker, ultimately speeding up the product development considerably and bringing products to market faster.

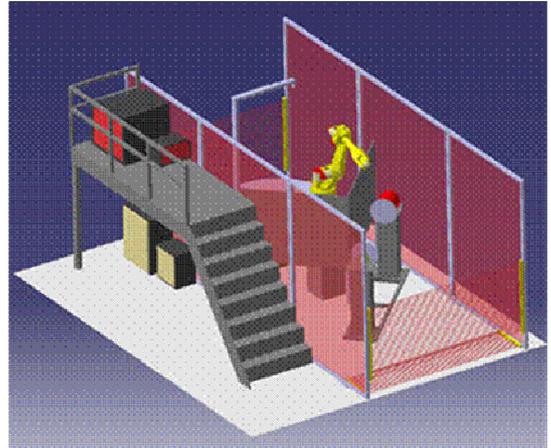
With CATIA's 3D XML viewer, 3D manufacturing data is not restricted to the engineering department that has CATIA software installed on its workstations. CATIA data can be sent via email, saved into office applications and technical manuals, or posted on a website. Best of all there's no cost involved and it's available to everyone. Altus commented: "We've had some great reviews - our clients have been very impressed with our new approach which allows us to demonstrate our knowledge and capabilities in a very professional and efficient way."

CATIA's Product Knowledge Template solution enables users to reuse existing designs by capturing engineering know-how and methodology into highly efficient templates. TES is generally able to match its client's requirements by selecting the most suitable pre-designed template in the library of pre-designed robotic cells. If modifications are required, TES is able to apply these changes quickly and accurately with the help of CATIA's parametric design functionality. "With CATIA, we are able to modify a design in a matter of minutes, not hours, simply by copying and pasting pre-designed parts from one location to another."

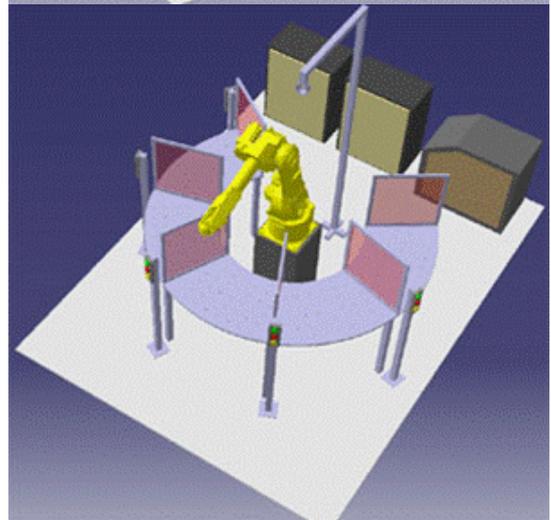
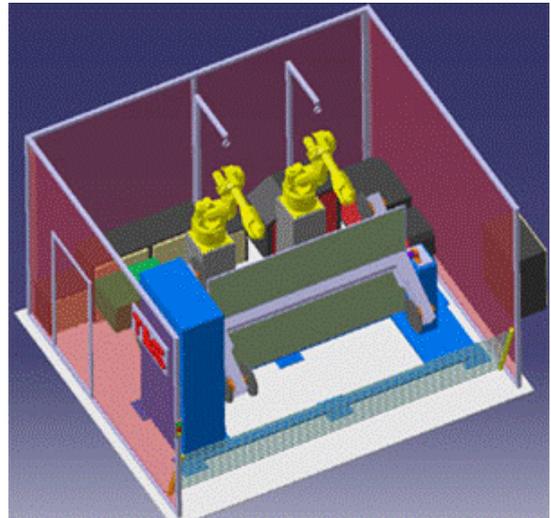
Industry nowadays functions in an age of communication where enormous technology is readily and routinely available. The challenge is to use that technology in the most efficient manner. Altus firmly believes that the robotics industry in South Africa needs to learn how to do things right first time to improve the automation process.

TES, which has a wide customer base - including some well-known names in the automotive industry such as Transwerk, BMW, Comau, PPC, Venture, August Laepple, SA Die and Pattern, ISE, and Shatterprufe - is confident that with the 'virtual' marketing facilities which CATIA makes available, the company has markedly increased its ability to win bids for large projects that were previously out of its reach. In the future, TES aims to acquire DELMIA, for realistic robotic simulations which will enable it to digitally define, control and monitor its automated systems entirely in a 3D virtual environment.

Below: TES uses CATIA V5's 3D XML viewer to share CATIA data with their clients.



Below: Robotic Cells designed by TES using CATIA V5.



CATIA V5 offers manufacturers, large and small, tools to help them gain productivity and increase competitiveness. A free downloadable version of the CATIA V5 3D XML Viewer can be found at <http://www.3ds.com/3dxml/>. Go there, retrieve the software, see for yourself what TES is experiencing, and find out how it can help YOU join the ranks of the leaders and winners.