Skidtek

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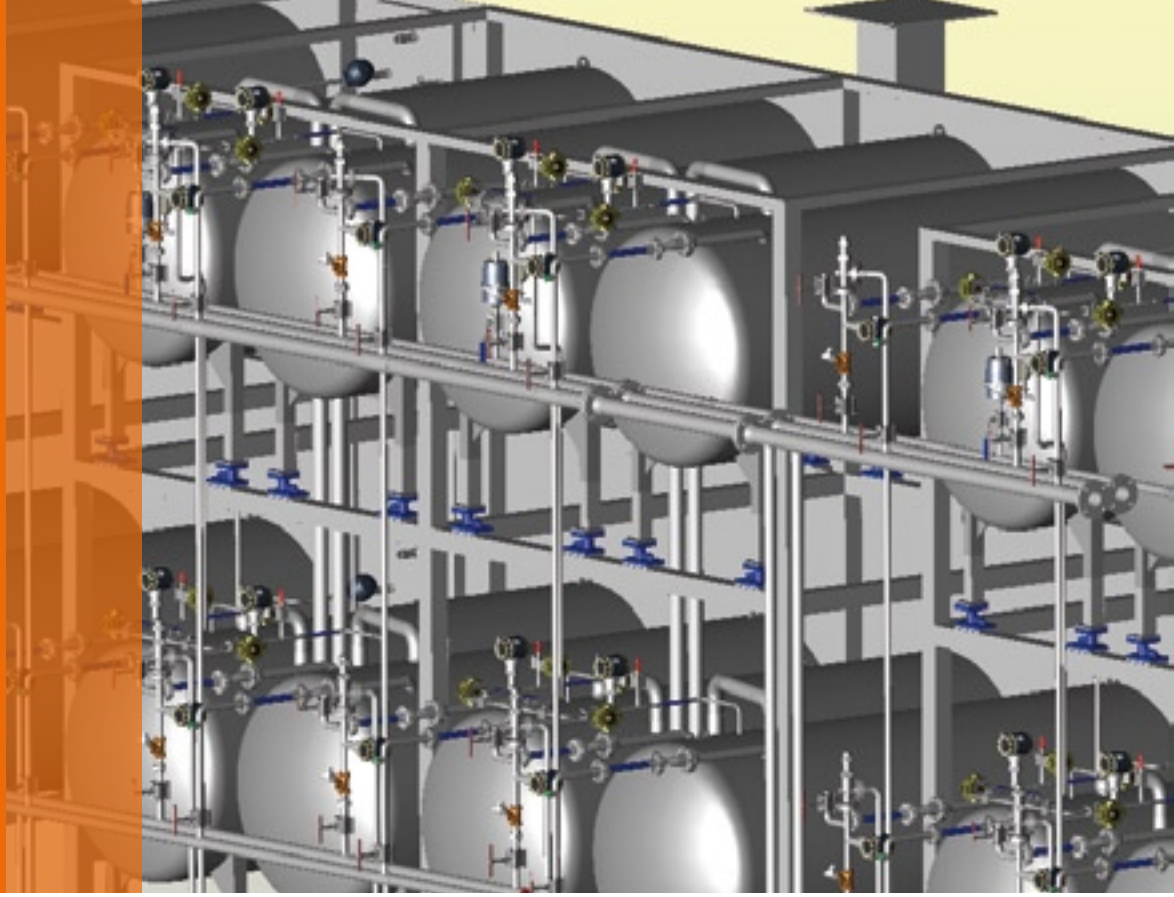

Skid Design

The design and installation of three skids for a new pharmaceutical plant in Cork is the latest in a series of multi-million euro projects for Charleville-based Skidtek Engineering. The project, which was carried out between November 2005 and August 2006, included the delivery of a Buffer Preparation skid, a Media Preparation system and a Media Harvest storage system.

"It is important that our customers know that we are at the cutting edge of design and that we are using the best technology. By showing them our design portfolio, we can demonstrate the role Inventor plays in realising clients' ideas and dreams together with our ability to deliver the optimum design solution. This gives them the confidence to place their trust with us, knowing that we'll succeed and that they will get the result they want."

Adrian Murphy
Mechanical Design Engineer, Skidtek

Autodesk® Inventor® was used throughout the project and proved particularly useful for the design and construction of the Media Harvest storage system, which comprises a total of twenty-four 2400 litre vessels and was the largest and most complex of the three skids. The system includes media storage vessels, which feed cell culture growth media to three 1000 litre perfusion bioreactors on a continuous basis. The media is supplied to the storage vessels from the Media Preparation skid via transfer lines. The system also comprises harvest storage vessels which house cell-free, product-rich harvest material for product capture and recovery.

According to Adrian Murphy, mechanical design engineer at Skidtek, the use of Inventor on the project helped to reduce the overall design time by at least 40% and to significantly speed up the actual assembly. Other advantages included the ability to produce a lifelike representation of the skid assembly, which could be viewed by the client, and the facility to assess the viability of designs on an ongoing basis and to apply changes where necessary.

Given the scale of the system, a critical element of the project was the design of the support structure to withstand the loads imposed by the vessels. "The ability of Inventor to perform stress analysis on parts meant we could be confident that the designs conformed to the specified standards and would withstand the specified loads," says Murphy. "Graphical and tabular results were obtained from the program and these were included as part of the mechanical handover package to the client. As well as giving us full confidence in our design, it also had a huge cost saving benefit."

While designing the skid, termination points for the various site utilities were issued between the main contractor and Skidtek. This allowed pipe-work to proceed on site before putting the skid in place. The 3D designers at Skidtek were then able to work with these fixed datum points which acted as a reference for the start of pipe-runs. It also ensured that both parties were working with the same slope. "This is very important because you don't want to be straining pipe-work to get end connections to meet," explains Murphy. "When the skid arrived to site, it was just a matter of connecting all site pipe-work to the termination points on the skid."

Murphy also points out that Inventor made it easy to duplicate the many similar parts in the system, which meant that more time and effort could be spent on the actual design of the skid rather than on modeling.

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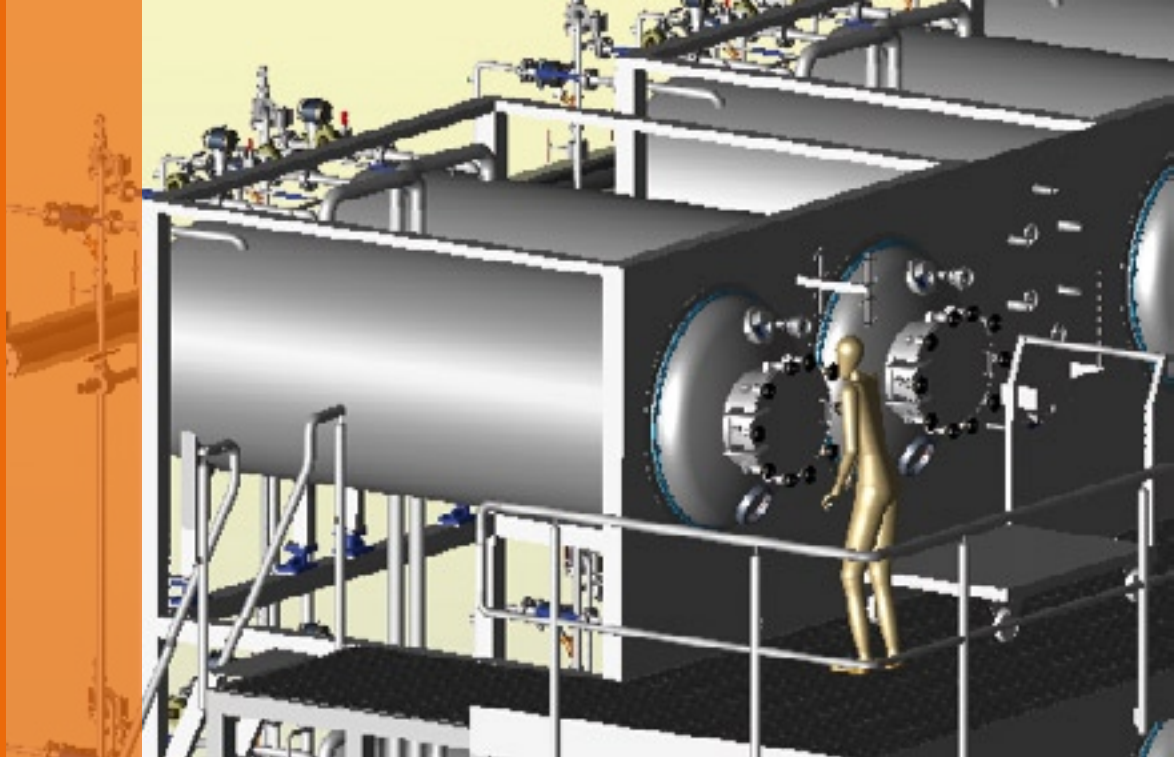

"It also reduced the time that it took to get drawings to the shop floor which was critical as the project was on a tight schedule," he says.

Skidtek carried out design reviews with the client as the design process reached 30%, 60% and 90% completion in order to assess the viability of the designs in relation to mechanical layout, ergonomics, construction, cleaning, maintenance and health and safety standards. Murphy points out that these reviews were made more meaningful by the fact that the Inventor 3D drawings allowed stakeholders without a mechanical background to visualize the final system. Although the team did not have Autodesk® Design Review during this project, Murphy says the company intends to use it for design reviews such as these in the future.

Murphy believes that Skidtek will get even more out of Inventor as the company's design team becomes increasingly familiar with its features in the future. He also believes that the system has an important part to play in showcasing the company's skills and capabilities going forward. "It is important that our customers know that we are at the cutting edge of design and that we are using the best technology," he says. "By showing them our design portfolio, we can demonstrate the role Inventor plays in realising clients' ideas and dreams together with our ability to deliver the optimum design solution. This gives them the confidence to place their trust with us, knowing that we'll succeed and that they will get the result they want."

Skid systems

A skid is a process system which contains a frame or structure containing vessels, pumps, valves, instrumentation, and so on. These structures can vary in size from 1m x 1m footprint right up to 30m x 5m depending on the process. Skidtek builds each skid on its own premises, where it is then tested in the presence of the client. The fully functional skid is then delivered to the site, thus reducing the amount of site work required.

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