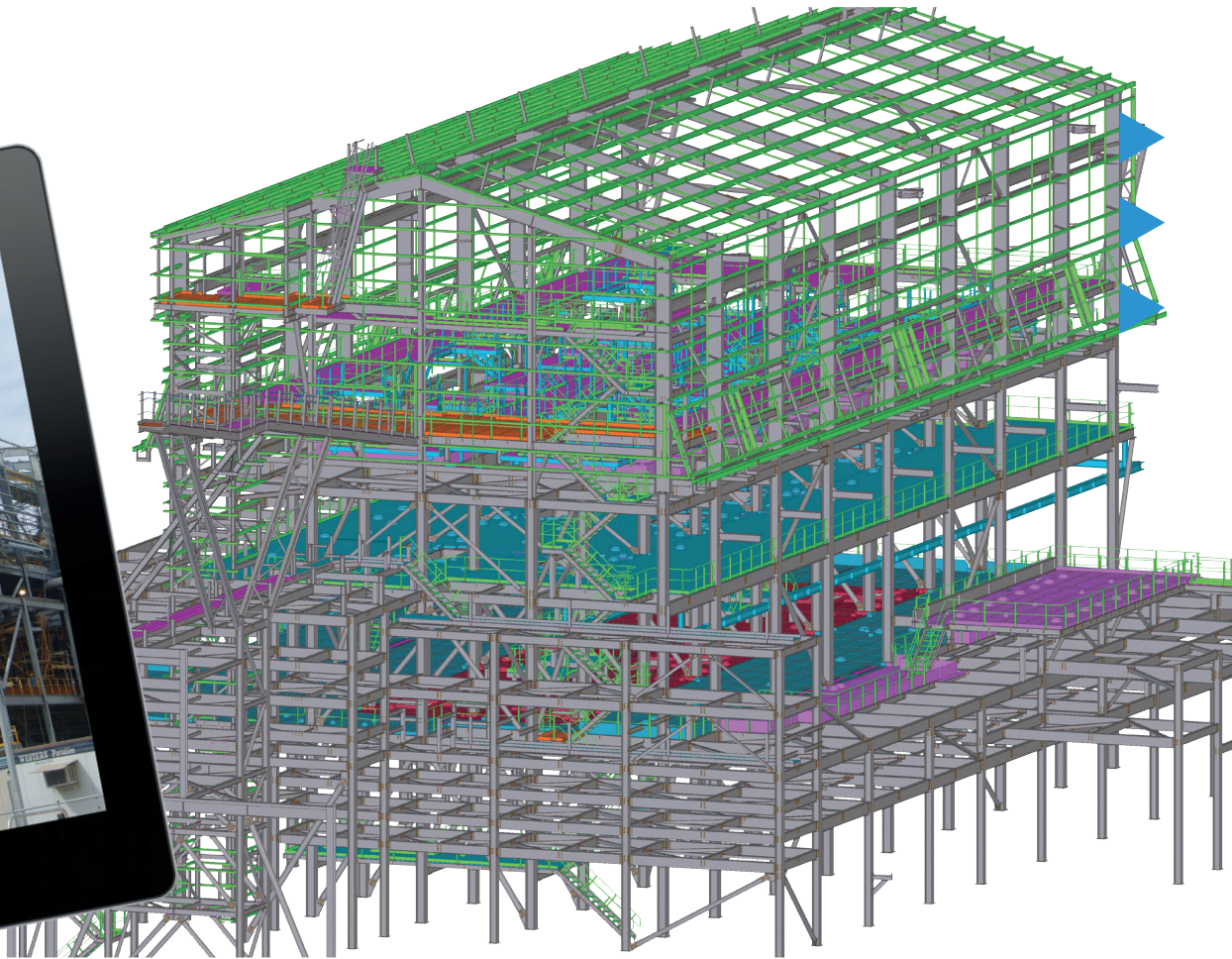




# Delivered on time THANKS TO BIM



## UNIVERSAL DRAFTING Australia

“Tekla’s BIM Software tracked revisions to the client’s model during the SDNF interfacing and worked seamlessly back and forth, not only with the designer’s software but also the fabricator’s CNC machinery.”

- Geoff Osborne, Director, Universal Drafting

### Solutions



► Tekla Structures

# Pinjarra Efficiency Upgrade

Faced with a tight deadline, Universal Drafting was able to use the BIM process and Tekla's BIM Software to work together quickly and accurately to get the job done on time.



The Pinjarra Refinery is an alumina refinery plant located near the town of Pinjarra, Western Australia. The refinery has a capacity of 4.2 million tonnes per year, making it one of the world's largest plants for the refining of alumina, used in the production of aluminium.

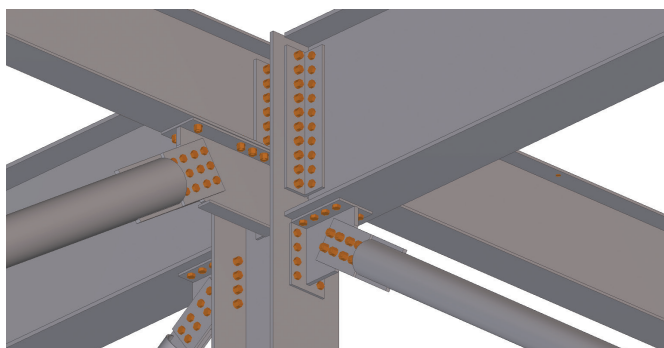
The refinery owner's planned an efficiency upgrade: to improve to best-practice technology, install new environmental technologies, and to increase production. To get the upgrade finished as soon as possible, time saving procedures were put in place, including eliminating 2D drawings where possible, and reducing welding in the structure.

The Pinjarra Efficiency Upgrade, named Filter Building 44, consisted of approximately 1,100 tonnes of steelwork with the top section clad using purlins and girts and metal cladding. Universal Drafting was awarded the detailing of the project and, being Tekla users since 2001, they used Tekla Structures for the project.



As deadlines were important for this job, the entire Universal Drafting staff of eight, at the time, worked on the project together. Geoff Osborne, Director of Universal Drafting, led the project from start to finish, and says "Tekla's BIM Software was the ideal software for this project because it enabled our entire office to work on the one model simultaneously using the multi-user functionality."

Accuracy and uniformity were maintained through the project by using Tekla's BIM Software's connection library. Universal quickly built a comprehensive range of connections for every connection type, which ensured consistency no matter which draftsman modelled the connections.







To accomplish minimal welding in the structure, clip angle connections were used instead of end plates on beams. In place of welding bracing cleats to beams and columns, they were fabricated separately and bolted in place. This allowed almost the entire structure to be fabricated using beam line machinery, eliminating many man hours of welding, as well as possible human error in fabrication.

“And because the beams were essentially just long beams with lots of holes drilled in them, the detailing portion of the work went very quickly.”

When it came to assembling the top section of the structure, nicknamed by the construction team as “The Lid”, it was bolted together on the ground in portal pairs. These portal pairs contained all the bracing and tie beams in position and were hoisted into position as an assembly in one big lift.

## ABOUT UNIVERSAL DRAFTING

Universal Drafting was established by Geoff Osborne in 1996. Universal Drafting detail all types of structures, from simple warehouses, complicated architectural buildings, to mining platforms, conveyors, bins, chutes and also concrete panels.

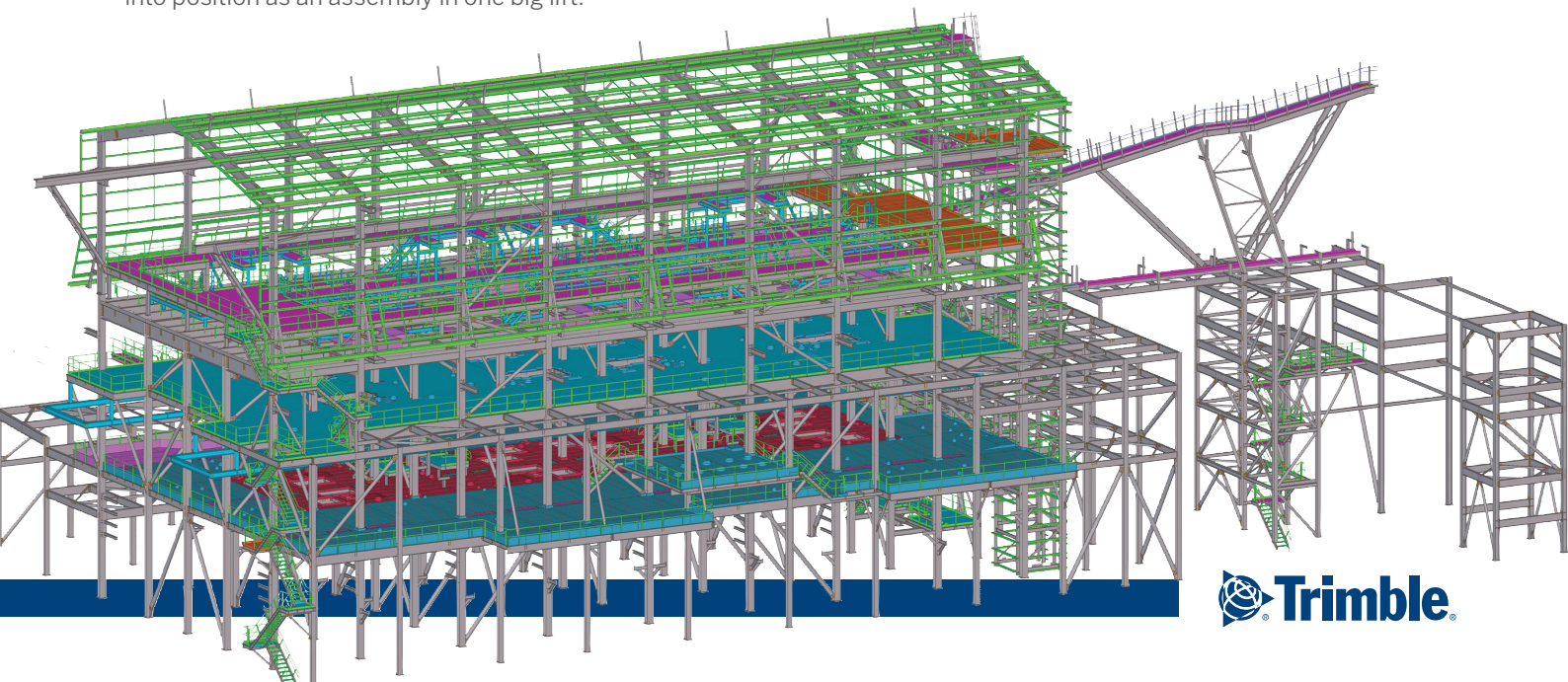
[www.universaldrafting.com.au](http://www.universaldrafting.com.au)

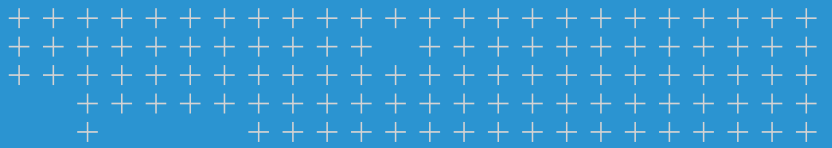
Universal was not given official 2D design drawings from the engineer. Instead they received a model, a set of standard drawings and some hand drawn engineering sketches for non-standard details, conforming to the openBIM principles. To resolve any queries, Universal attended fortnightly meetings with the engineer to go over the model.

The engineering model was supplied in a .SDNF file format and Universal imported it to Tekla's BIM Software to detail it. After importing the model, they broke it up into phases taking into account site erection, the needs of the fabricator and also design holds. Once phasing had been approved, they began connecting the building. Once each phase was completed, Universal sent it to the engineers in PML format for clash checking with the other structures and services.

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- - Geoff Osborne, Director, Universal Drafting





# Together we are shaping a smarter future for construction

## TEKLA SOFTWARE BY TRIMBLE

Trimble is a technology company with a vision of transforming the way the world works. Trimble's construction offering ranges from total stations to advanced software, giving the industry tools to transform planning, design, construction and operation of buildings. The company also has products for trades like logistics and agriculture.

## TRIMBLE BUILDINGS

In addition to Tekla, Trimble Buildings brands include names like SketchUp and Manhattan Software, targeting architects, engineers, fabricators, MEP contractors, general contractors and construction managers, and building owners. The software solutions promote constructible models and collaboration. Trimble Buildings offering blend groundbreaking innovations and practical features, helping the industry achieve transformative results.



## TEKLA SOLUTIONS

Tekla software is at the heart of the design and construction workflow, building on the free flow of information, constructible models and collaboration. It is the people who make the difference, while Tekla gives tools for realising projects around the world from housing and bridges to factories and skyscrapers. Good communication and elimination of waste make the industry more sustainable and cost effective, improve your projects and in the end your customers' happiness.

- ▶ **Tekla Structures** is the most developed Building Information Modelling software on the market. It makes accurate, constructible modelling of any structure possible.
- ▶ **Tekla Structural Designer** gives engineers the power to analyse and design buildings efficiently and profitably.
- ▶ **Tekla Tedds** automates repetitive structural calculations.
- ▶ **Tekla BIMsight** is a free professional tool for construction project collaboration allowing anyone combine models, check for clashes and share information.
- ▶ **Tekla Field3D** is an easy-to-use 3D tool for utilising Building Information Models on mobile devices.



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