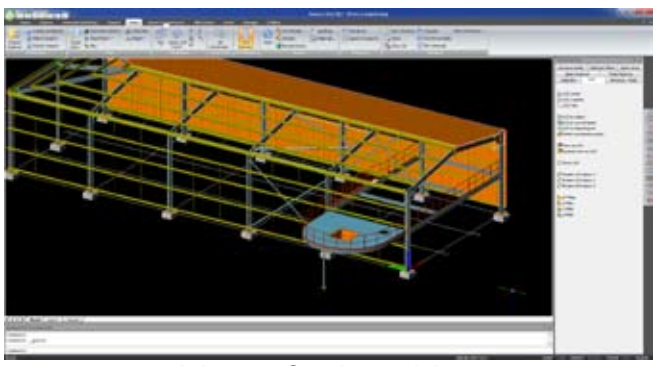
Graitec Advance Steel 2012

Starting out life as a modelling tool for structural engineers, Advance Steel has evolved into a highly capable steel detailing solution. The AutoCAD-based software offers advanced modelling, connection design and a managed environment for the production of drawings, bills of materials and Numeric Control code. Now for the 2012 release the software is also being made available as a standalone DWG-native application, meaning users do not have to invest in a costly AutoCAD license.

With over 40,000 users worldwide, Graitec is one of the largest structural software developers in the world, but the company remains relatively unknown in Asia-Pacific. This has started to change through the launching of its subsidiary in Singapore early 2011 and the building of its network of 15 Value Added Reseller (VAR) across the Asia-Pacific region. There are three products in the Advance BIM family. Advance Design for the finite element analysis (FEA) and design of reinforced concrete and steel structures, Advance Concrete for reinforced concrete detailing inside AutoCAD, and Advance Steel for steel fabrication detailing and general arrangement drawing production inside AutoCAD.

Advance Steel is a 3D product and provides a range of tools to model steel structures in 3D, from beams, columns, and connections, right down to the individual nuts and bolts. From this master model, the software can automatically create general arrangement and detail drawings, cutting lists/bills of materials and NC (Numeric Control) files for automated workshop machinery. Then, should the model change in any way, all of this can be automatically updated. One of the most important selling points of Advance Steel is that it works directly inside AutoCAD.

AutoCAD vs. Standalone



Advance Steel standalone

Advance Steel can still run inside of AutoCAD, but Graitec has also developed a standalone version with a DWG-based CAD engine that uses technology from the Open Design Alliance (ODA). This shaves around 30% off the overall system cost, which will not go unnoticed in an increasingly competitive market.

Advance Steel 2012 comes on a single DVD. During setup it checks to see if there is a copy of AutoCAD installed and then gives you the choice to run the software standalone or within the AutoCAD environment. On a base level there is little difference between the two versions. Both feature the now ubiquitous 'Ribbon' interface for model 'creation'.

A common toolbar for model 'manipulation' runs down the right hand side of both versions. Command line input is still there for advanced users. In terms of display modes, the standalone version features basic wireframe and flat shaded, while AutoCAD users are treated to more advanced real time visualisation modes, such as the popular x-ray.

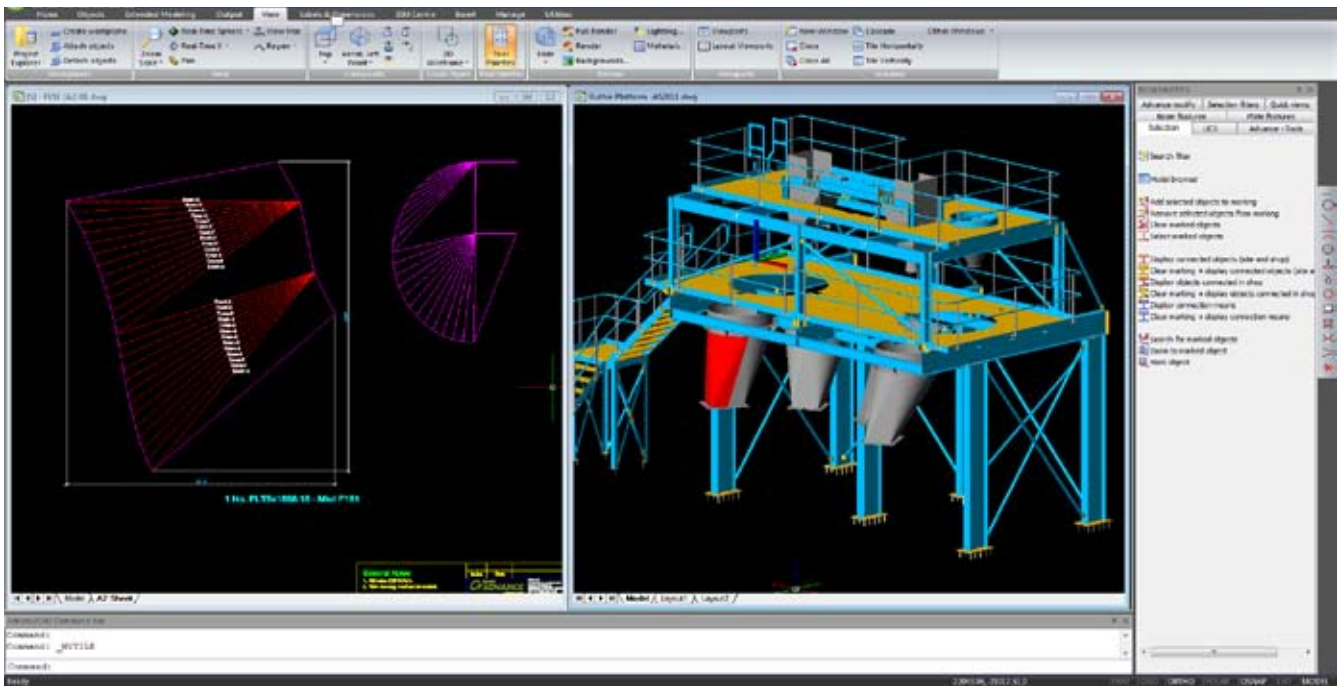
AutoCAD users will also benefit from rendering with mental ray as well as the ability to quickly model particularly complex curves. While it is possible to do advanced compound geometry in the standalone version, it will be much quicker to do this in the full AutoCAD.

At the core of the product though there is little difference between the two versions. Both can happily work side by side in a multi-user environment.

Layers, XREFs and other AutoCAD features are all supported in the standalone version and the workflow inside the products is virtually identical.

Complex modelling

Modelling inside Advance Steel can be as easy as drawing an AutoCAD line, then using standard AutoCAD commands to copy and array elements to build up a frame. Additionally lines can be automatically changed into intelligent structural members, with the user having full control over orientation, section size, centre of gravity and numbering/classification. The product comes with a comprehensive library of hot and cold rolled sections. Structural elements can be intelligently cut, notched, drilled or welded and any number of openings created for doors windows or ducting. Should the position of any of these changes the structural element will automatically heal. Advance Steel supports linear and curved grids, and also includes a number of import/export options to help make the most of upstream and downstream data. The product comes with a vast library of parametric connections and these can be used to automatically connect structural members to each other, creating endplates, bolts, welds and shortening or extending members. Connections can be validated against the AISC and EC3 codes with the system providing a full report if a connection fails. The Connection Vault now includes over 150 dynamic connections, which have been nicely categorised in the 2012 version making them easier to find. To verify the model the system can carry out clash detection between all structural elements; right down to individual bolts. Potential clashes are presented in a list.



Advance Steel prides itself on its ability to model complex 3D sheet metal work for hoppers or ducting and automatically unfold into CNC ready 2D data

Curved beams

Advance Steel prides itself on its ability to work with curved beams. When it comes to connections it is not really any different to working with straight beams. Beams do not need to be broken down into nodes — go into the connection vault, pick a connection and then select the relevant beams. The connection will then automatically put bolts and plates in place, add notching, and shorten or extend the beam as necessary. This is great for handling complex roof structures.

Project Explorer

One of the most important enhancements, and one that was introduced in Advance Steel 2011, is the Project Explorer. This is specifically designed to help users work more effectively with large models by making it easy to control which parts of a model are displayed on screen at any given time. Project Explorer is broken down into three sections.

Model views are used to isolate a section of a model that is currently being worked on, not only to improve visibility, but for display performance as well.

Queries enable users to search on the various properties held within structural members.

Groups enable users to assign any objects to a specific group.

Interoperability

With AutoCAD as its foundation product, Advance Steel already has good interoperability with other AEC products through DWG, DXF, DGN and other formats. For more intelligent exchange of data it offers import and export for the object orientated file format, IFC2x3, plus a direct two-way link to Revit Structure. For links to other structural engineering software it supports CIS/2, the CIMsteel Integration Standard, and is able to import and export fabrication and analysis model types. This means it can accept data from CIS/2 compliant analysis applications and use this data as the foundation for its fabrication model. It also supports SDNF (Steel Detailing Neutral File), which includes definitions for straight and curved beams, plates and cuts on elements. Interoperability with other Graitec software is managed through the GTC (Graitec Transfer Centre), which offers 'intelligent' model transfer between all Graitec products. Finally, for those involved in plant design it has a bi-directional link between Advance Steel and PDMS from Aveva.

Conclusion

With its roots stemming back to the 1990s, Advance Steel has matured into a highly capable 3D steel detailing solution. The release of a standalone version of Advance Steel 2012 is big news. Those that want to can still benefit from the advanced features of AutoCAD, but shaving $4,000 off the overall cost of the solution by using Advance Steel standalone will be hard to ignore. It boasts a shallow learning curve for existing AutoCAD users, its native file DWG file format and import/export options means good interoperability, it has built-in rendering tools, good 3D navigation tools, and DWF is readily available for design/review and sharing data over the web. For those with existing AutoCAD seats it also compares favourably on price to competitive products. Advance Steel's ability to make light work of complex detailing tasks such as stairs and railings, means there is much potential for Advance Steel. With Graitec now placing a big emphasis on the Asia-Pacific market, 2012 is going to be a critical year for the AutoCAD-based product. The timing of this new release coincides with some major changes in the steel fabrication software market, which has not gone unnoticed at Graitec. Graitec is hoping to turn the heads of competitive software's users by offering some very competitive upgrades.

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*Extracts of review by AECMAGAZINE http://aecmag.com/index.php?option=content&task=view&id=488

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