AVEVA™ E3D Structural Design

Streamlined design, fabrication and construction process for structural steel

AVEVA E3D Structural Design provides increased productivity in structural steel for the process plant, marine, mining and power industries. Enabling consistently rapid, high-quality design, fabrication and construction, for on-time, on-budget delivery of complex projects.

With an unrivalled track record, AVEVA E3D Structural Design delivers value as a stand-alone structural steel design solution while retaining seamless compatibility with other AVEVA solutions including AVEVA™ Unified Engineering.
With delivery and financial pressure higher than ever, why are 70% of capital projects over-time, and 60% over-budget?

- Increased project complexity makes delivering a successful project incredibly challenging.
- Structural steel needs to be designed alongside all other disciplines in an ever-evolving, iterative design cycle.
- An ever-more globalized workforce and worldwide supply chains makes collaboration and effective data sharing difficult.

As the detailed structural model is created, it needs to be shared across disciplines and across contractual boundaries to make sure the project stays on track.

This process is not linear; design information does not simply pass to the next team until it is completed. The information iterates between numerous teams, affecting each aspect of the project on each iteration.

If this data is not shared effectively, an early error or supplier issue can propagate to the finished asset, leading to costly fixes, wasted materials, and project overruns.

The detailed structural model is highly important as it determines which steel materials must be procured and ensures that parts fit in construction, both of which affect the entire downstream process.

"When designers are using disconnected solutions, there is no real control of change management, nor control of who owns the latest information. It is very easy to get out-of-step, which leads to inconsistent, mismatching information."

"Structural steel is a major part of all EPC projects. It accounts for up to 30% of total project costs."
Deliver highly constructible structural steel models

Integrating the structural information allows collaborative working throughout an entire design, procurement and construction project, helping reduce project cost, risk and delivery time.

Seamlessly working with other AVEVA Engineering tools, AVEVA E3D Structural Design takes over the layout design from our powerful multi-discipline solution AVEVA™ E3D Design and allows you to build a highly detailed structural steel model linked to the layout model. All changes are visible at all times to all stakeholders in the supply chain increasing on design efficiency with time savings of up to 30%.

Equally effective in 3D modeling and fully detailed connections, AVEVA E3D Structural Design removes design limitations, enables flexible and collaborative workflows for project optimization, and ensures right-first-time steel fabrication and construction in multiple industry sectors.

AVEVA E3D Structural Design fully integrates with a range of AVEVA products, providing high visibility and management of change. This creates a scalable, multi-user environment where hundreds of users can simultaneously work on the same project data controlled by our system of claiming and access control.

AVEVA E3D Structural Design is deployed using the same project data as AVEVA E3D Design. Seamless integration allows for visibility across both platforms on the creation and updating of the detailed model; delivering a true multi-discipline environment with common administration, report generation, and data management capabilities to work more efficiently.

AVEVA E3D Structural Design also interacts with AVEVA™ E3D Fabrication Management to provide stakeholders in the energy and marine industries with a collaborative approach to plan and track the fabrication works whether in-house or subcontracted.

### Integrated structural steel workflow: conceptual design ↔ detailed design ↔ fabrication

- **Conceptual Design, Multi Discipline Lay-out Model**
- **Detailed Structural Design Model, Fabrication Model**
- **Multi Discipline Drawings**
- **Detailed Structural Drawings, Fabrication Drawings**
- **Push Fabrication Job Request to AVEVA E3D Fabrication Management**
- **Sub-Work Packages, Job Progress, Production Update**
- **Pull Status from AVEVA E3D Fabrication Management**
- **Accept Fabrication Job Request**
- **Create Work Packages**
- **Status Control**

- **AVEVA E3D Design**
- **AVEVA E3D Structural Design**
- **AVEVA E3D Fabrication Management**
AVEVA combines the latest 3D graphics and user interface technologies with state-of-the-art data management to deliver the most comprehensive, productive, and tightly integrated multi-discipline 3D design solution available today.

- Full visibility across teams ensures problems are be solved earlier, avoiding costly on-site issues, expensive rework, and fewer materials wasted.
- Trusted living laser point cloud to ensure data reliability, accessibility and intelligence for both brownfields and as-built data.
- Multi-discipline deliverables stored in the database, so they are always up-to-date and accessible from one place.
- All changes visible at all times, to all the stakeholders in the supply chain from engineering to procurement, fabrication and construction.
- Global, multi-user teams working on the same project data means improved decision-making, and fewer requests for information, revisions and errors discovered too late.
- Easy status management, with meaningful colour coding, makes it easy for everyone to stay focused and on track.
- Visualize, inspect, comment and approve messaging to communicate effectively.
- Virtual, augmented, and mixed reality allows users to freely and intuitively move around the digital model, viewing assets from any perspective.

With one, unified, real-time 3D model, teams are always up-to-date, making collaboration simple
Create consistent, rapid, and accurate detailed design and fabrication deliverables

- 3D modeling of any type of structure, no matter its complexity.
- Parametric templates enable commonly used designs to be stored and reused.
- Full modeling control and clash-checking capabilities.
- Quick and easy creation of structural general arrangement and details drawings.
- Automated parts, bolts and welds marking, generation of bill of materials, shop-ready fabrication deliverables including parts, assembly and install marking plans drawings.
- In-built material nesting optimizer and reporting for more accurate estimating and earlier procurement.
- Digital welds with steel preparation and reporting for Welding Inspection (NDT).
- Built-in links for CNC fabrication machinery, welding robots.
- Revision control, change highlighting and audit trail.
- Unique real-time association between 2D deliverables and 3D model.
- Interoperability with Stress Analysis, architectural/plant/marine design, with AVEVA™ Enterprise Resource Management, and with Fabrication Management Systems.
- .NET API enabling building of your own software applications and interactions with 3rd party software.
Communication is needed in order to collaborate effectively. AVEVA E3D Structural Design allows designers to:

- Produce a fully detailed 3D model (Digital Twin) towards Digital Transformation
- Identify, control, and communicate change as early as possible (avoiding costly problems on site, and reducing wasted materials)
- Initiate detailed structural steel design at an early stage to leverage downstream knowledge and optimize Lean Construction principles
- Take back control with effective collaboration for on time, on plan, and on budget capital projects.

To find out more about AVEVA E3D Structural Design please visit: aveva.com/en/products/e3d-structural-design
Related solutions

Leverage collaboration with your 3D model on the cloud to track shop floor tasks more efficiently.

AVEVA™ E3D Fabrication Management is a web-based native cloud application that allows project teams in diverse locations to visualize, communicate and share information related to the structural steelworks for efficient collaboration. The ability to quickly make decisions in real-time allows for a more efficient workflow to deliver large projects on-time and on-budget.

The seamless integration with AVEVA E3D Structural Design ensures any changes made during projects are checked and validated in real-time between design and fabrication to avoid costly rework during the construction phase.

Please visit www.aveva.com/en/products/aveva-e3d-fabrication-management for further information