

Hatch Utilizes EDI Technologies for Paperless Project Delivery – by Gabriel Coleman

International EPC firm Hatch has made a big splash in the world of CIS/2 data transfer. Called upon to expand and develop a 5,000 ton plant for Alcoa World Alumina, Hatch turned to electronic data interchange (EDI) to save time, money and get steel onsite sooner. In fact, Hatch has embraced computer technologies to the extent that paper drawings were removed from the design and detailing process.

“Because Hatch conducts our detailing in house, we saw a real opportunity to improve our efficiencies by eliminating paper completely,” explained Detailing Manager Ivan Jivkov. “Normally, design engineers work off of a physical model and transpose that information to 2D drawings. We felt that we could save a lot of work hours by removing this step.”

Bentley’s Structural Tri-Forma (STF) software provided the engineers an integrated environment in which to design the Alcoa plant. Pipe, architectural, electrical, and mechanical systems are designed simultaneously, which helps to accurately plot out the structural steel frame. Upon completing the structural design, Hatch engineers, based in Pittsburgh, PA, handed off the design model to their detailing counterparts in Montreal.

“By cutting out 2D engineering drawings, we eliminated 20% of the conceptual work,” states Timothy Kaiser, PE, Senior Engineer for Hatch.

Upon receiving the STF files from the engineers, Hatch detailers used CIS/2 data transfer to export the model into Design Data’s SDS/2 detailing package. Jivkov estimates that SDS/2 automated 80% of the steel connections, leaving 20% for detailers to connect manually.

“Our time was spent on perfecting the model and checking accuracy. CIS/2 not only makes our jobs easier by eliminating the drafting process, it helps make the steel design process faster and error-free,” explains Jivkov.

Once the physical model was completed in SDS/2 it was transferred back into Structural Tri-Forma using CIS/2. The engineers then tested it for interferences against plant mechanicals and made necessary adjustments.

Normally at this phase in the design of a steel structure, detailers produce paper-based shop drawings to be reviewed by the structural engineer and the fabricator. Hatch embraced Virtual Reality Modeling Language (VRML) technologies developed by the National Institute of Standards and Technology (NIST) to facilitate a paper-free process. Bob Lipman, who heads NIST’s CIS/2 to VRML mapping initiative explains. “VRML provides a 3D visual representation of a CIS/2 file. It allows users to visually verify a steel structure down to the bolts and welds to see what works and what doesn’t. In this case, we linked electronic versions (PDF) of the shop drawings to the appropriate steel members. And because VRML is viewable through web browsers, all parties were able

to view the 3D model and the shop drawings simultaneously, without the need for commercial software licenses.”

Hatch engineers used Adobe Acrobat to read and make edits to the shop drawing PDFs, maintaining the electronic exchange. Fabricator Manufab, Inc. of New Orleans, LA, also appreciated the use of digital technologies. “This worked so much easier and faster than the snail mail lag associated with paper drawings,” noted Project Manager Michael Hebert. “Shop drawings were electronically transmitted in batches, saving us 3-5 days per transmission.”

Overall, Hatch aims to reduce the project schedule by 4-8 weeks. Reduced lead-time is another major advantage of CIS/2-enabled steel construction – only if the GC is ready for it. “I guess we must be ahead of the game,” joked Jivkov. “When the first few shipments of steel arrived at the Jamaica plant there was no concrete foundation in place to receive it.”