

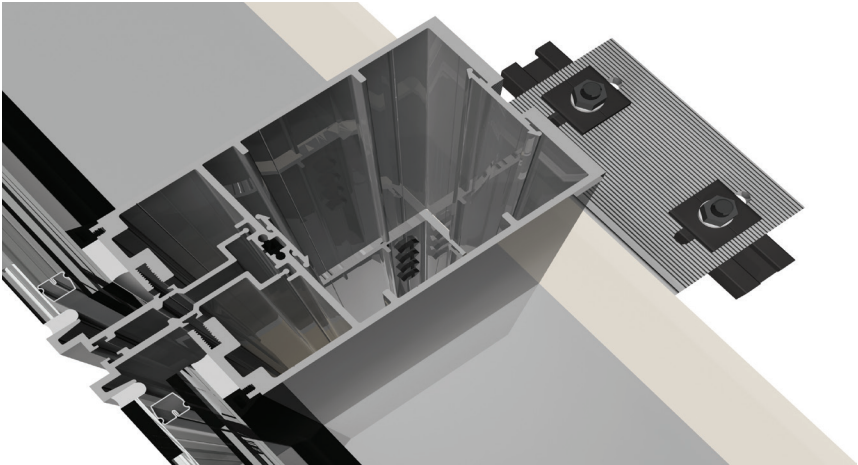
## The Third Dimension

'The Third Dimension' (aka '3D') is becoming standard in our everyday activities here at Enclos Corp. We are using 3D graphics in a variety of ways to improve communication and convey our message through these images. We have already seen the impact of the three-dimensional tools we are utilizing in the areas listed below:

- Design
- Analysis Tools
- Shop and Field Use
- Sales



The Third Dimension



DESIGN

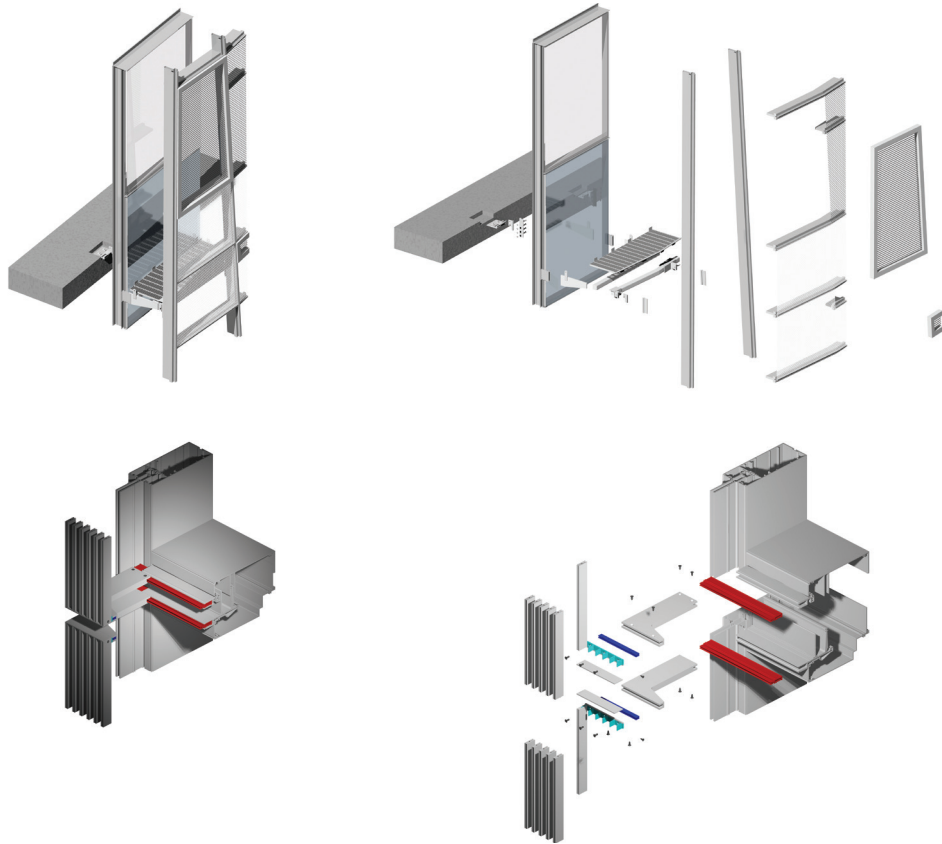
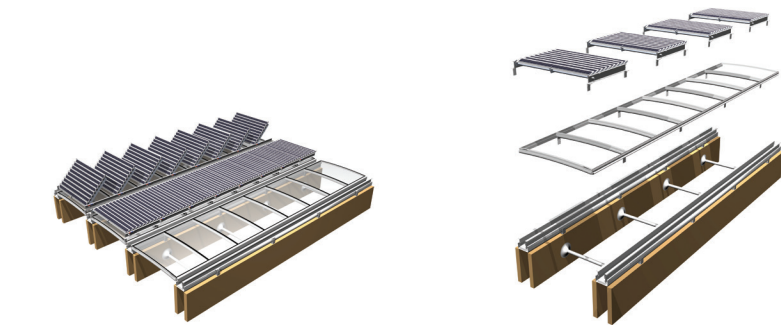
The design process is being changed by the third dimension. When design is done in two dimensions the design still remains an abstraction. 3D modeling allows designers to see and understand a design before it is built. Details, errors, collisions and gaps are found and repaired faster. This is possible because a 3D model is more cohesive. When a design is drawn in two dimensions each view is detached from each other. When a design is built as a 3D model, each view is of the same model. Instead of producing many 2D drawings of one design; many 2D drawings are extracted from one 3D design. There is a greater range of uses from a 3D model. The same model that produces shop and fabrication drawings can produce visuals for sales or marketing. The design process has now been flipped. Instead of a literal 3D model as the final product, a virtual 3D model is the first tool towards the final product.

ANALYSIS TOOLS

The 3D models for both simple and complex geometres are used in structural analysis and thermal analysis programs. By using 3D models for analysis, we are able to get more accurate results than the original 2D analysis programs. This is allowing us to reduce extra components that we do not need and decrease material thickness resulting in significant cost savings. The 3D models let us orbit around problem areas allowing us to inspect them more carefully.

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Figure 1 and 2 (top): Project-specific stack joint and anchoring assembly at floor slab.



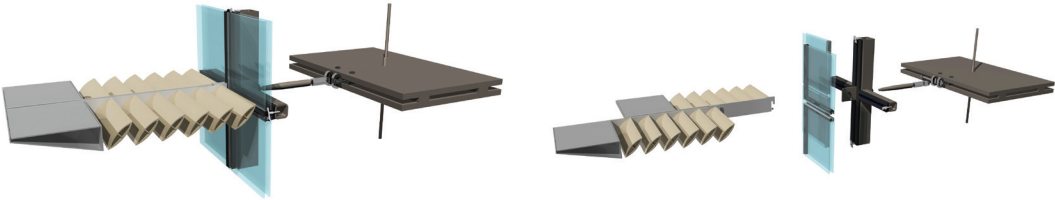
Opposite Page:

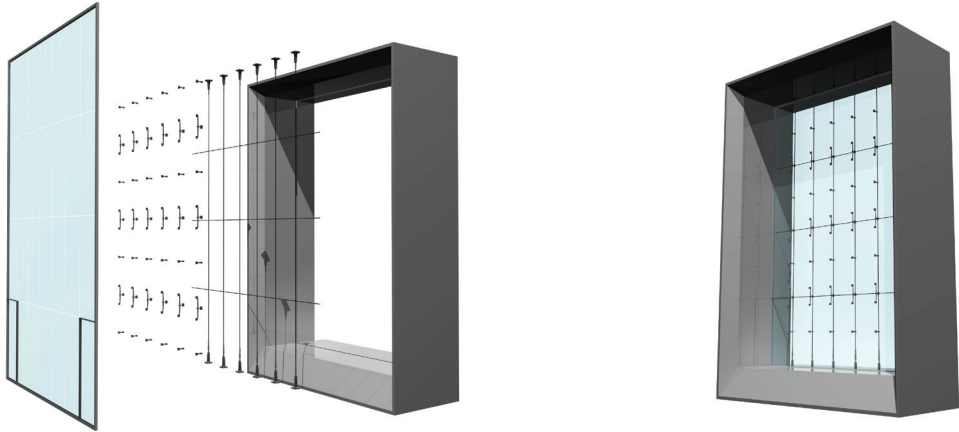
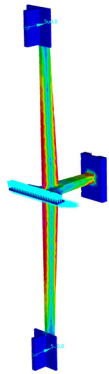
Figure 3 and 4 (top): Gazed skylight with PV louvered frames.

Figure 5 and 6: Layered curtain wall with exterior glass sunshade.

Figure 7 and 8: Project-specific unit with exterior sunshade blade.

Figure 9 and 10 (bottom): Project-specific wall assembly with exterior sunshade.





SHOP AND FIELD USE

As we begin to see the complexity of buildings increase, the ability to read two-dimensional drawings is becoming more difficult. The use of three dimensional renderings benefits both the shop and the field. The shop is able to better understand what is necessary for the fabrication of complex components, resulting in more accurate parts and less waste. Three dimensional diagrams showing all the components and their relationship to other parts give workers a better idea of what a unit is supposed to look like before they begin assembly. This information gives them a better understanding on how to layout all the components necessary to build the unit. For the field workers, we can give them three dimensional diagrams of difficult transitions and also how components are supposed to tie into each other. These 3D renderings save time in collaborating, allowing jobs to be executed quickly and efficiently.

SALES

We have seen the importance of 3D models here at ATS especially in our sales presentations and portfolios. Photo realistic renderings and three dimensional diagrams communicate our designs quicker and more effectively than 2D CAD drawings. This means that a broader range of cliental can understand our designs, not just individuals whom can read architectural drawings. We use 3D models to render animations of installation sequences we intend to use on job sites. With our 3D printer we have the ability to print 3D models of design details. The ability to physically hand components to customers is a powerful tool and a very effective form of communication. We better communicate information from our structural and thermal analysis by combining it with our three dimensional rendering and diagrams. Beyond communicating our design solutions, our presentations display our capabilities, knowledge, and genuine care that we put into each project here at Enclos Corp.

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Figure 11 (left): Project-specific cable wall fitting - finite element analysis under structural wind loading.

Figure 12 (right): Two-way point-supported cable wall fitting - exploded perspective view. - showing cable clamp and custom stainless steel armature assembly.

Opposite Page:

Figure 13 (top left): Cable wall layers - exploded.

Figure 14 (top right): Cable wall - assembled.

Figure 15 (bottom): Cable wall bottom connection detail at perimeter finished floor and boundary structure.

