

## OVERVIEW

Because 3D printing architectural models offers time savings in the design phase, its niche group of users is growing. Therefore, it's important to know the strengths and limitations of both inkjet-based technology and FDM Technology™ for this distinct application.

3D printing architectural models provides the opportunity to reduce the number of steps, improving design time, while retaining fine details of the final architecture plan.

Computer simulations have been used in engineering and architecture for a long time. However, visualization of buildings was traditionally done using scale models made of wood or foam board. This let architects see how the building would stand in physical space and whether any problems could be rectified. Now, 3D printing combines the precision of computer simulations with the tangibility of scale models.

This application requires understanding the concept and process of architectural design, and notions of scale, proportion, space, form and structure.

## APPLICATION OUTLINE — INKJET AND FDM

Inkjet and FDM produce high-quality, detailed architectural models. Their ease of use lets designers produce low-cost models for all design phases. The materials offered by both technologies allow for easy post processing to further enhance model quality. The 3D-printed model can easily incorporate interlocking sections to allow internal visualization. Large models can also be sectioned into smaller pieces, either for demonstration purposes or to accommodate a model too large for the 3D printer's build envelope. These models can later be bonded together with a wide range of epoxies or solvents so the completed model looks as if it were printed as one piece.

The fine feature detail available allows for scale models to be created with architectural components such as texture and railings.

## CUSTOMER STORY — FDM

California-based 3D Reprographics makes architectural models for its clients. Clients must see the model floor by floor, so they need a design that is separate but stackable. While the models are for display only, many of them have thin walls, so durability is always an issue. Traditional modeling requires skill and expertise to bond each wall and part in its place. Additionally, traditional models tend to distort over time. Stratasys offered 3D Reprographics a benchmark test to see how FDM differed from

### APPLICATION CHECKLIST

#### 3D PRINTING WITH INKJET OR FDM IS A BEST FIT FOR ARCHITECTURAL MODELS WHEN:

- ✓ Challenging characteristics include thin walls and internal cavities
- ✓ Design changes are likely

#### INKJET AND FDM OFFER THESE BENEFITS TO ARCHITECTS:

- ✓ Lead times reduced by 50 to 80%
- ✓ Cost reduced 40 to 75%
- ✓ Model stability over time, eliminating distortion



Above: detailed inkjet models  
 Below: FDM model interior and exterior



its current modeling. 3D Reprographics built walls as thin as 0.04 in. and found that a 0.08-in. wall gave them the strength and features they required.

3D Reprographics found FDM a great fit for making a strong, accurate presentation model. In addition to increasing durability with thin walls, 3D Reprographic's FDM system can build each model in one job, eliminating the need for skilled bonding. The FDM models are easy to paint and do not warp over time.



*Inkjet model*

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