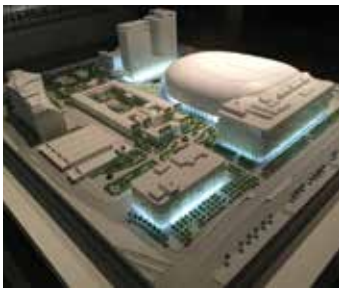
Model Art

3D PRINTING HELPS TAIWANESE MODEL SHOP PASS ARCHITECTURAL DESIGN TESTS

"The Fortus 3D Production System has expanded our possibilities and fostered creativity in our team."

– Huang-Ren Li, Transference

CASE STUDY



Professional model producer Transference improved its delivery speed of high-end models like this one by incorporating 3D printing into its design process.

Transference is a professional model production house that specializes in creating architectural and display models for architectural design and construction companies. Since its establishment in 1986, Transference has created many remarkable models and replicas, including some of Taiwan's notable high-rise buildings, infrastructures, exhibition displays and historical sites. The team has grown steadily, forging an outstanding reputation in part due to its belief in the artistic value in every model, such as a beehive-shaped concert theater design in Kaohsiung (a Southern city in Taiwan) that signifies the busy and modern feeling of local pop music.

While Transference is known for its accurate and high-quality models, its team wanted to improve its delivery speed and maintain competitiveness by bringing more innovative technologies in-house. In 2010, Transference's CEO, Huang-Ren Li, added a Fortus® 3D Production System to the company's workshop with the goal of growing business by offering a wider variety of model designs and production methods to business partners and clients.

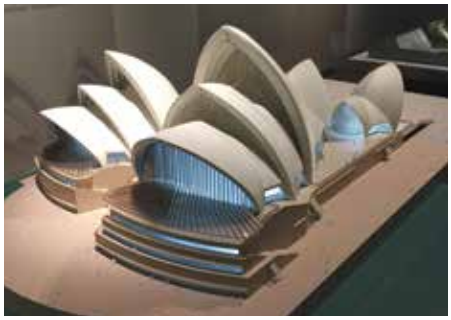
Accelerating Architectural Model Creation

Traditionally, Transference used corrugated fiberboards and acrylic sheets to build its architectural models, which is both time-consuming and labor-intensive – the models had to be created in separate pieces and occasionally by hand. The Fortus 3D Production System changed all that by digitizing the production process. Model creation – everything from converting 3D CAD designs into compatible files to 3D printing the models – can now be completed within a few days instead of what used to take a few weeks.

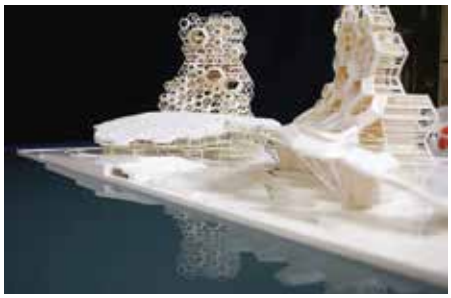
After the models are created and support material is removed, Transference polishes, paints or electroplates the parts to create the necessary look and feel. This post-processing helps increase the models' durability to withstand more form, fit and functional testing.

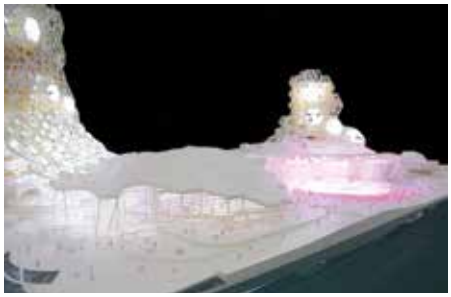
Producing components with complicated designs and irregular shapes is simpler as well. Li said that Transference previously used laser-cutting technology to create models with more complex geometries. While the result was satisfactory, the process was still difficult since it required the team to glue multiple components together.

"3D printing has saved us this trouble as we can produce complicated models in one print," said Li, "which not only saves time but also simplifies our process."



Transference's model of the Sydney Opera House





3D printed concert theater model in Kaohsiung

Testing Building Structures With FDM Models

Transference is now better equipped to take on clients' requests for complex models with strict specifications, such as modeling a building's structure to undergo wind tunnel testing.

Wind tunnel testing is used to understand the impact of wind on a building, such as pressure distribution, aerodynamic force balance and the effect of hurricanes and typhoons. It is common practice for architectural firms in Taiwan to create models of architectural designs – especially of high-rise buildings or buildings with irregular shapes and cable-suspended bridges – to help architects validate their designs before construction, particularly in Taiwan, as the island is often hit by typhoons and occasional earthquakes. In Taiwan, architectural firms are highly advised to pass this assessment to prove that the buildings are sound before any construction work commences, explained Li. "Therefore our clients demand very precise models to prepare for the assessment, and we cannot let them down."

With traditional methods, creating a model for wind tunnel testing would have required at least five staff members. With the Fortus 3D Production System, it takes only two staff members to work on the project, with costs and lead times reduced as well.

Since incorporating 3D printing into its design process, Transference has increased productivity. It has also participated in many local and overseas architectural model design competitions, gaining the reputation as a leader in Taiwan's architectural modeling industry. "The Fortus 3D Production System has expanded our possibilities and fostered creativity in our team. We believe that 3D printing will radically change this industry in Taiwan, and I'm glad that we have made the decision early," concluded Li.

Transference polishes, paints or electroplates models to create the necessary look and feel, like the weathered feel for this model.

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