



## PHYSICAL ARCHITECTURAL MODELS CREATED AUTOMATICALLY INSTANTLY CONVEY EVEN THE MOST FUTURISTIC CONCEPTS



Matias del Campo and Sandra Manninger founded SPAN Architecture and Design in 2003 to gain the creative freedom to incorporate their futuristic concepts into their architectural designs. The list of designs include projects related to the arts, Matias del Campo, principal at SPAN Architecture and Design based in Vienna, Austria, explains why they are intrigued by this area of architecture. "The arts, and particularly performing arts, represent an exciting challenge with respect to how the architectural space relates to its environment, to the art that the space hosts, and how visitors live the artistic experience within that space," says Matias.

### **Automatically creating physical models of any architectural form**

The futuristic shapes and forms that SPAN uses made them the ideal candidate to test the automatic, model-making capabilities of the HP Designjet Color 3D Printer. "The computer is our main design tool, but a 2D rendering, virtual 3D or video, are not adequate to convey the architectural spaces we create. Our architectural designs typically feature curvilinear forms, inspired by organic systems. The scale models that we automatically create on the HP Designjet 3D Printer instantly convey our design concepts to potential customers, and they can really understand the architectural space," claims Matias.

### **Gaining precious time to design**

Matias explains the principal advantage of being able to create physical models using HP's tabletop 3D printer in their offices. "Our main gain is time, both in the design process but also on avoiding costly surprises on the construction site. Within a working day you can eliminate the risk of error by checking the validity of your scale model. A handmade model

the size of a shoebox can take four days to a week to make, depending on the detail you want. It's time-consuming and costly and you have to freeze the design process two weeks before your deadline to make sure the model-maker understands all the drawings and details, and allow time for changes due to errors. The HP Designjet Color 3D Printer allows us to react instantly. We can continue to design right up to our deadline and automatically create the model in a single day."

### **Complex volumes and structures created with simple clarity**

A high-rise, twin tower design that SPAN has created for a project in China includes a mesh-structured tower with a shell-shaped sky lobby that was printed in yellow to distinguish it from the main structure printed in white. Matias describes the models created for the project. "We actually printed two versions of the models. One version was basically the 1:500 scale, urban model that we can place in the big environmental model they have in China. The other one is a 1:200 model that shows more detail in terms of the façade, the plates on the building, the floors, elevators, the lobby, and the area in front of the building. The customer was able to immediately identify the sky lobby because it was printed in yellow. The façade of the building is very intricate and all the details are very elegant. It's very refined," Matias says.

For the same project SPAN is preparing a 1:25 detailed model of the façade to show his clients a small section so they can see how all the elements are connected, where the glass panes are placed, the location of the ventilation system, and so on. Matias describes the flexibility HP's 3D printing technology has added to the design process. "If the customer



PROGRESSIVE  
PROFITABLE  
PRINTING



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**Matias del Campo, principal,  
SPAN Architecture and Design**

decides that they need more elevators or more levels, we have the flexibility to react, because the model is made in parts, and we can simply print the replacement part in hours,” explains Matias.

#### **Broadening the scope of a 3D-design workflow with 3D printing**

HP’s 3D printing technology in SPAN’s offices represented a natural extension of its 3D-design workflow, in a similar way to how traditional printers can produce executive drawings and plans on paper from CAD applications. “Model-making has always been a natural part of our design process. Now the models we create on computer can be simply printed on HP’s 3D Printer, often without having to change anything,” Matias states.

“HP is one of the world leaders in printing technology and its new 3D printer is another great tool that satisfies the demands of our design processes,” says Matias. The durability and impact-resistance of the models printed in HP Designjet 3D ABS Material makes for worry-free handling and shipping for customer presentations. “The models in ABS, are basically like plastic toys. The other day I dropped one and it was undamaged,” Matias claims.

SPAN find the HP Designjet Color 3D Printer convenient to run and operate in their office environment. “HP’s 3D printer is small enough for the office but the build size is good for making any size model. You can make a couple of prints, instead of just one for a model, and then put them together to make a bigger model. The whole process is clean and it’s very simple to use and it is really very intuitive.”

#### **The business of winning architectural competitions**

Participating in competitions is an essential activity to win projects and potential customers are engaged to a greater degree with a 3D-model that they can touch and hold. “We have considerable experience in building solid 3D-models using a variety of methods and technologies and we would send out files to service companies to print the models. I would spend a minimum of 1,000 Euros per model and we take part in numerous competitions every year, the HP Designjet Color 3D Printer certainly pays itself off.”

Transforming an architectural concept into a design that engages customers and convinces them to choose your project over the competition is crucial, and Matias believes the HP Designjet Color 3D Printer is having an impact. “The models are great for customers. They are really surprised to see a very detailed and sophisticated model of what they are going to get when they build it. They find it very satisfying,” Matias concludes.

#### **AT A GLANCE**

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Architecture, Engineering & GIS

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#### **CHALLENGE**

- Automatically print physical models in the office, including curvilinear forms that are hard to make by hand and/or time-consuming and costly.
- In-house physical models free up design time and financial resources to participate in more architectural competitions.
- Eliminate two-week design freeze date required for long manual or outsourced model-building processes.
- Ability to build new models in response to design changes and customer requests.

#### **SOLUTIONS**

- HP Designjet Color 3D printer
- HP Designjet 3D ABS Material
- HP Designjet 3D Removal System

#### **RESULTS**

- Easy to use, HP Designjet Color 3D Printers automatically print physical models of nearly any shape and size if designs are printed in sections.
- Greater engagement of customers with robust solid 3D-models in ABS, that can be conveniently shipped and confidently handled at presentations.
- Gain up to two weeks design time, right up to deadlines, and comfortably deliver a complex physical model printed at a click.
- Achieve the freedom and flexibility to print updated models in response to design changes and customer requests.

To learn more, visit [www.hp.com/go/graphicarts](http://www.hp.com/go/graphicarts)



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