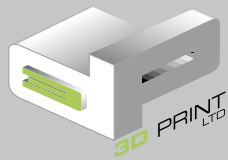


guide
TO 3d
print
TECHNOLOGY



Case Studies

April '07 1st Edition

4 Compelling Case Studies

- Architecture
- Corporate Training
- Marketing
- Packaging

Winner of a Gold Medal for Innovation in Printing at Pride in Print 2007



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Introducing 3D Print Ltd

Three partners with wide experience and complementing skill sets have come together to form New Zealand's first rapid prototyping and modelling bureau utilising the benefits of 3D printing technology.

Never before has it been so convenient and so cost effective for the likes of inventors, manufacturers, packaging companies, product designers and architects to obtain a prototype or a model of their new designs.

3D Print partners with their clients to provide expert consultancy support, 3D design and conversion services and solid model and prototype building.

All of this is available in a fraction of the time and significantly cheaper than previously thought possible.

Welcome to our first edition case study book. It is a supplementary publication to our e-book. We sincerely hope you find it useful.

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About 3D Print Case Studies

We have assembled in this first edition of our booklet a range of case studies covering some of the sectors we are currently operating in. As time goes on and our experience increases we are amazed at the variety of applications that the new 3D printing technology is suitable for. In this first edition we demonstrate how we have:

- Helped an architect communicate his design to his client
- Designed and built a 3D model of a major Auckland train station to be used for corporate safety in training purposes.
- Used scale models of sewer componentry to help a manufacturer sell their products to councils and developers.
- Been producing bottle prototypes for a major plastics company who in turn use them for designs, tooling and marketing purposes.

Architecture

Pete Bossley Architects

Situation

Pete Bossley architects had a client whose multi level house complete with canter-levered swimming pool is to sit perched cliff top above some of New Zealand's most stunning coastline. Artists impressions and computer generated graphics have been a great help for clients with their interpretations but there has still been a gap between what the architect has been able to show them and the clients interpretation of what their house will look like when built.

Solution

3D Print Ltd was engaged to advise Pete Bossley Architects on 3D file preparation, take the file and extrude the house onto a contoured base and then build the model using 3D Printing technology. The turnaround time from completed file was 48 hours.

Scenario

When the model was delivered to the client they could see very clearly for the first time exactly what their new home was going to look like.

Benefits

No longer does 3D modeling have to be a long and expensive process. The architect and client can now both see in detail exactly what together they have conceived. They both benefit from the overall ease of design presentation and the time saving over trying to communicate with conventional 2D methods. 3D Print has revolutionised this process saving the architect and the client both time and money.



ARTNL

(Auckland Regional Transport Network Limited)
Britomart Tunnel

Situation

The ARTNL had requirements to train their staff in Evacuation Procedures should any event occur inside the Britomart tunnel, ranging from a breakdown to a fire.

Problem

To train a number of staff at once requires work parties to descend into the tunnel, after cessation of train journeys late in the evening.

Solution

3D Print Limited was provided with a set of plans for the tunnel. We then walked through the tunnel after hours taking photographs of all the relevant data required for training. Our in-house designers then designed a 3D model utilising the 2D plans and the photographs for reference. This file was then used to build a physical colour model utilising 3D print technology. The model of the tunnel measured 1.25m long and was to scale of 1:400.

Benefits

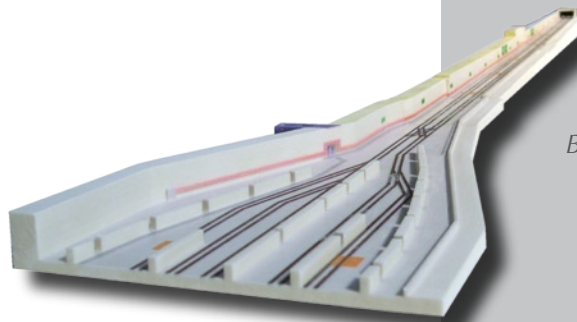
The model had the roof removed so visually, people had both overhead and side views of the tunnel. The tunnel model could now be displayed on a table in the board or training room. A group of ten or more employees could stand around the model looking into the wall and ground level of the tunnel.

“The 3D Print model has been extremely useful as a tool to aide simulation.

It has allowed us to complement our on-site training in a convenient environment. This has allowed our training to be more productive and efficient, rather than by only having the option of taking staff and wider groups into a fully committed operational environment.”

Ray Steele
Manager

Britomart and Stations



Marketing

Wormall NZ Ltd

Manufacturers of Polyethylene Sewer products for Civil Infrastructure

Situation

Introducing a range of products as new and innovative as the Wormall Smart Sewer System is a difficult proposition. Although the majority of councils throughout New Zealand are experiencing problems of ground water ingress and root intrusion, they are resistant to change, as there has been no viable alternative to what is currently used. As can be imagined, they want to see what is on offer.

Problem

There are 51 District and City Councils throughout the North Island alone. Every one of them has their own Infrastructure Design Standard and Code of Practice.

The logistics of taking a sample range of products to each location was proving a very costly exercise. It required a large 4-wheel drive utility towing a 2.7 metre by 1.5 metre trailer. This proved to be very time consuming not only because of the 80 kmh speed limit for the vehicle, but also finding parking in most areas. It also required starting meetings in the "office" and finishing them in the car park.

Parts

- 1050mm diameter manholes for depths up to 3.6 metres
- 600mm diameter maintenance shafts
- 250mm x 1.2m rodding eyes
- 600mm diameter mini manholes for depths to 1.5 metre



Scenario

An agent in Wellington had a contractor who was keen to try Wormalls products and asked to meet with the Porirua City Council to demonstrate. This involved a 3 day round trip; 2 nights accommodation, 1800km road user charges, 3 tanks of fuel, meals etc, and another day in Auckland trying to arrange some other meetings to make the trip worthwhile.

Solution

A full set of 3D Print models of parts was produced and packaged in a briefcase. A plane flight was now the best transport option. The models could be assembled to exactly replicate what would happen with the actual product.

Benefits

- Thousands of dollars of travel expenses savings
- Two days of time savings
- Very cost effective to make changes to the design to satisfy council and resubmit

“The use of 3D Print’s colour scale models, has not only been extremely beneficial in development of new product by saving time and money in the design process, but also has enormous ongoing benefits for our sales and marketing team.

Brian Meedham

*Sales and Marketing Manager
Smartstream Technology*

Alto Packaging Ltd

Bottle Designs

Background

With 8 specialist plants in New Zealand and over 800 employees in Australia and New Zealand, Alto Packaging is New Zealand's largest rigid plastic moulding company. Alto considers design to be second only to hygiene, safety and security in terms of importance.

Scenario

Tooling manufacture for bottle production is a very expensive process and errors made inevitably mean expensive fixes or even starting again. Alto was able to see that a prototype printed using 3D Print technology was a low cost check that the files used for later tooling manufacturing were accurate and free from complication. In other words the prototypes are a test that form and fit are accurate.

By utilising 3D Print technology Alto has been able to gain further benefits from their prototypes. The new designs can be printed in colour with labels included as part of the build process. This has meant the marketing department has had the opportunity to show the clients the finished look before tools are even built.

Benefits

Alto has gained 2 key benefits:

- A low cost check that the final product built from files is free from errors.
- Each time a 3D Print prototype has been used Alto has in turn managed to secure the order.



Here are the reasons for using a 3D Print

Three key reasons...

- Your design engineer is reassured that the tooling will be correct, which means costly mistakes can be avoided early on.
- Your marketing/graphic design team are assured the labelling and shape will appeal to the target market, which means sales should flow quicker from a proven design.
- Your client is able to see exactly what their house or design will look like at scale size, thereby speeding up the design and acceptance process saving costs for everyone.

Physical models are much easier to understand than trying to visualise or interpret concepts from drawings.

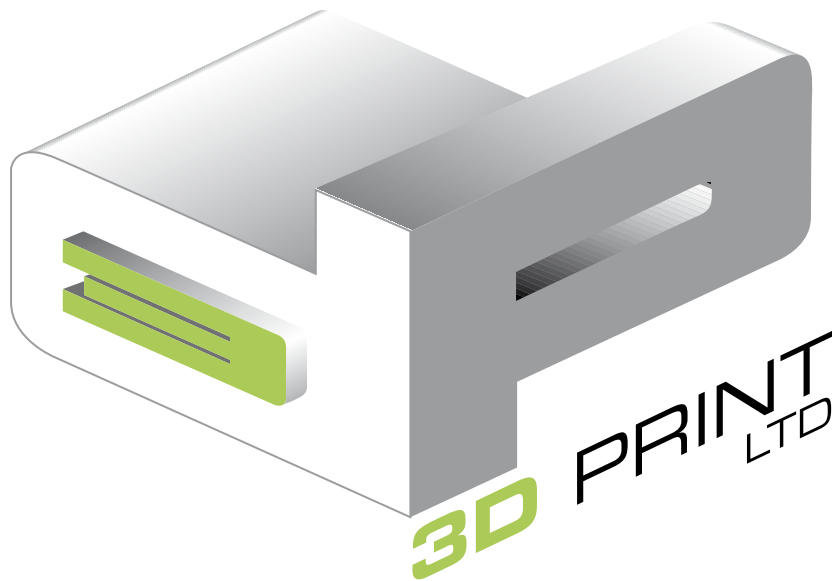
For prototyping the ability to combine form or shape, and colour ie. labels /brand is a big advantage. Suddenly your investment in prototyping is even more justified.

***Remember:* All this within 48 hours of producing a 3D drawing.**

Further benefits of a 3D Print

- Design decisions can make a great difference to the appeal to a consumer so an **early visualisation** of the finished shape and look will transform into successful designs reaching the market quicker.
- A 3D Print prototype is produced **faster and cheaper** than traditional methods, which helps more prototyping to be undertaken than previously thought affordable, avoiding costly mistakes in tooling.
- A 3D Print is used to help **refine the look, feel and fit** throughout the design process thereby speeding up the completion of the project.
- A 3D Print will help to **save time, reduce costs and avoid errors** prior to finalising design, ultimately helping the profitability of both designer and client.
- The more complex the design the **greater the time savings** that are achieved using a 3D Print compared with other methods.
- Casting patterns made with 3D Print technology will result in **production time being greatly reduced** compared to conventional methods.

- 3D Prints give your sales force something **concrete and convincing** to show major customers before the product comes to market confirming its appeal and generating interest and pre-sales.
- 3D prototypes enhance the visualisation for customers over traditional 2D sketches and renders thereby **speeding up the sales process**.
- Innumerable iterations and variations can be produced cost effectively so designers and marketers can be sure the product is exactly what the people on the street are demanding and therefore **eliminating costly product developments** that the market did not want.
- 3D print models are used for cost effective early concept models creating compressed design cycles, enhanced product aesthetics, ergonomics and improved resource utilisation. All of these lead to a **saving of time and money**.
- Accuracy to scale is 0.089 of a millimetre ensuring prototypes can be checked for fit of assembly parts **avoiding expensive errors** with tooling design.



How we can help you...

Pick up the phone and dial us for a free
consultation...

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