CASE STUDIES

Classroom Practice

Technologists' Practice

Hard Materials

- A new Carter
- Iconic Te Rewa Rewa
- Coolest wind farm
- Custom classroom furniture
- Living on the Edge
- Shapeshifting – The Art of Hand-making Surfboards
- Mesh Protection
- Pulling all the Right Strings
- Adept – Design that Matters
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- Licence to Chill
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Food and Bio-related

TECHNOLOGISTS' PRACTICE | 2006 / AUGUST 2010

CONSTRUCTION TECHNOLOGY / RESISTANT MATERIALS / DESIGN / ENTERPRISE | YEARS 7-13

KITCHEN CONTOURS

Kitchen Contours is a Wanganui-based kitchen design, manufacture and installation business operating successfully in the Wellington and Lower North Island region. This case study details the way in which the industry has evolved since the company's inception in the early 1980s and examines developments which have taken place in design and manufacturing technology, material selection and the skill requirements in the workforce.

FOCUS POINTS INCLUDE:

Characteristics of Technological Outcomes

- Collaborative, interdisciplinary practice

Technological Modelling

- How evidence and reasoning supports decision making

Technological Products

- Material use; product life cycles

Technological Knowledge and skills

- Concepts used to construct with resistant materials
- Designing for manufacture

ADDITIONAL MATERIAL:

Company website: www.kitchencontours.co.nz

New Zealand Building Industry Federation: www.bif.org.nz

Industry training organisation for the joinery, glass and glazing and kitchen design industries: www.jito.org.nz

Techlink Enterprise Links case study with Wanganui Girls' College www.techlink.org.nz/Case-studies/enterprise/wanganui-girls/index.htm

YouTube video: 2020 kitchen design

TEACHING ACTIVITIES:

Discussion starters (Years 11-13):

- Describe how modeling techniques have evolved and explain how these have influenced the process of minimising the risk of producing a kitchen that does not meet customer requirements.
- Explain the following terminology as related to the kitchen design, manufacture and installation process:
- 'Big box' giants
- Customisation
- Material evaluation
- On-time delivery
- Efficiency

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Kitchen Contours

Kitchens are big business, and getting bigger. Demographics, economics and the great Kiwi mania for home ownership and re-modelling are seeing to that.
While every new house built in the current building boom obviously needs a new kitchen, continually changing fashions, improving lifestyles and the advent of new technologies has meant the total remodelling of kitchens throughout New Zealand has been the norm in recent years. These trends show no signs of slowing down.

Kitchen Contours site

It should be the best of times for kitchen joiners, but in recent years competition within the industry has turned savage. Once the preserve of small joinery companies building kitchens to order, the market has recently been flooded by big, cut-price operators offering a limited choice of standard designs at bargain prices.

To compete with these "Big Box" giants, smaller companies have been forced to work with higher levels of efficiency and to trade on their ability to offer superior service and customised products. Kitchen Contours in Wanganui is good example. Kitchen Contours managing director David Mackay started the company in 1985. The company employs 16 people and produces over 300 kitchen units a year, supplying clients from Wanganui down to Wellington.

The key to Kitchen Contours' survival and success has depended on applying the highest level of excellence in technological practice. David says this boils down to excellence, efficiency and customisation, with a high quality outcome as the immoveable bottom line. He likens buying a new kitchens to buying a new car: "You'd never accept one with a scratch on the door, it's got to be perfect."

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Kitchen Contours

Client consultation and developing the brief

The first step in any design/manufacturing process is client interaction

When a potential customer first visits Kitchen Contours with a query, he or she will sit down and talk through their ideas with a staff member. "Working well with clients comes with experience. It comes with years of practice and dealing with a range of people and the problems they've got."

"A lot of people have got no idea about what they want – they just say 'I want a new kitchen'. We'll hand-sketch a basic plan or they will bring in a plan and we'll make adjustments to it. Then we'll go away and draw it up."

The client will come back and view the designer's work on-screen. Several rounds of adjustments and changes may be made. Using design software allows numerous iterations of a design to be easily created, if need be, to ensure the client is getting what they want, as far as is practically possible. Sometimes this process can stretch out over a period of weeks.

"Selling a kitchen to a client is just the first part of the process ... it's making the design work that can be the tricky thing; a lot of people have no idea of how it all goes together and that's where cabinet-making experience comes into play.

"It all boils down to a few basic things. Firstly, you have to be practical. We are designing *for* manufacture. You can have real design flair, but sometimes you have to reel that in and say we've just got to be practical here and get the job. Once you've got the job you can sometimes upsell, but you don't want to be going the other way."

"Sometimes we get flash designers sending us plans they've sold to their client that will never work. So we have to fix them up so the kitchen can actually be manufactured.

"Secondly, the design has to be within the budget of the client. You can come up with a great design, but if it doesn't fit in with the budget of the client then you're dead and buried. Its no good trying sell a flash $30,000 kitchen if they've only got $10,000 to spend.

Keeping abreast of design trends is important. David travels regularly to kitchen shows, both within New Zealand and overseas. David aims to be a leader rather than a follower in the local market, but sometimes finds it's hard selling concepts picked up offshore.

"When I first went to Europe I came back with these great ideas, but nobody wanted them because it was too soon. Even though people travel more these days, we're still a couple of years behind Europe I think."

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Creating the final outcome

Once the design is resolved and accepted by a client, it is booked into the system. Depending on workload, the product will be delivered and installed in about four weeks.

"We try to deliver the day we've put on the calendar – always! We try to deliver on the day we say so; that's all part of the service expectations."

Factory staff visit the job site, take measurements and note the position of doors, windows and establish how best the cabinetry should fit together. David always visits the site himself to confirm measurements.

Once the measurements are confirmed, they are fed in to the high-end design package used to map out client ideas, that then automatically calculates the number of sheets of MDF required for the job, and generates a cutting list for the project showing the best way to cut components from the sheets with the minimum of waste, detailed assembly instructions that explain how each unit is to be put together, and labels for all of the individual parts.

Typically, the factory has about 20 jobs on the go at a time. Each job has an information sheet, showing client name, job number, and all the rest of the information about that job, including a floor plan of what the kitchen is going to look like, including elevations and perspectives. A big job may use 45 sheets of MDF, with each panel yielding 10 to 15 parts, so a simple but effective tracking system is essential to keep track of things.

It takes around three hours to cut the material for a "typical" kitchen.
All the pieces leave the cutting area labelled, and the complete job, along with its documentation, is loaded onto a trolley (or two).

It takes one person about a day to assemble all the cabinet carcasses in a standard kitchen. In theory, the factory could be run with three people in the machine shop: one cutter, one assembler, and a person laminating, but typically Kitchen Contours has seven or eight people in the assembly parts of the factory at a time, where to mix things up a little they work on a variety of different jobs during the day.

Maintaining smooth workflow and achieving on-time delivery requires careful planning. Besides meeting promises to customers, workflow must be organised to suit the availability of outside contractors such as painters and cartage operators.

Kitchen Contours sticks with an established group of suppliers: "If things go wrong, they're much more likely to help you out, if you use them all the time."

The company manages all of its own installations but will call in specialist builders or plumbers if need be.

In the past, kitchens were built out of a fairly limited range of materials, but in recent years, the range has widened and now includes a lot more glass and aluminium. This has challenged factories and in some cases required them to invest in new machines capable of handling these new materials.

"Often we'll get asked to do something that we've never done before and you just try different techniques and work out the best way of doing it. There can be pitfalls in

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using new products that you haven't fully tested. Sometimes what the client has asked for just won't work and we have to come up with other options that will work."

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Keeping competitive by improving efficiency

Computerised board cutting

In any given month the Kitchen Contours may have around 100 designs in progress. To create their kitchens, each year the company uses around 50,000 sheets of medium density fibreboard (MDF). With volumes like these, efficiency counts for a lot. The company is constantly looking to make incremental gains, cutting processing time and waste to the bare minimum.

"Once we're processing a job, we're looking at shaving seconds, not hours, off the time it takes. If you're doing a regular job like drilling a single hole and you can do that two seconds faster, then you are going to save a lot of time because we drill millions of holes a year."

Many of the efficiencies – reduction of waste, increased processing speed and improved inventory control – have been driven by the application of computers.

"By using the design software to tell us the most efficient ways of cutting sheets, we've reduced our waste by probably a half and are cutting 50% faster than we did in the past."

Taking a delivery of boards

Even something as simple as the automatic generation of labels is a time-saver, David says. "The mere fact that we're putting a sticker on every part with all the information on it, probably saves us an hour per job – because we used to have to hand write all of this on a bit of masking tape and stick that on to do the job."

The need to increase speed and efficiency has seen the machines become larger and more complicated. Computers have had a big impact. One of the advantages of computer-driven machinery, David says, is the ease with which they can be turned to new tasks.

"The operators don't have to get in behind and alter things as they used to. Now you just press a button and all the settings are changed; that takes away a lot of the possibilities for error."

But the downside of the new technology is its complexity.

Wanganui Girls College students visiting Kitchen Contours

"If machines break down we're in trouble big time, because we rely so much on them. In the past, if a saw broke-down you could change the blade or get an electrician in to fix it, they were relatively easy to maintain. Now with these new computer-controlled machines, if something goes wrong you have to ring a technician in Auckland. If he can't work it out with you over the phone he has to fly down and that is always expensive and could mean a two or three day delay. That sort of downtime costs big dollars. Added to that we don't have much lead time built into our jobs any more. We might be cutting a kitchen that's due to be installed three days down the track, so if you have a machine out of action for three days, you're well behind and you have to deal with angry customers.

"You can't plan for breakdowns. So for most of my machines I try to have one person on that machine, and I'm very conscious of guys being careful with them. You can't muck about with them."

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The pathway to work as a cabinet-maker joiner

Ideally, the company would employ qualified cabinet-makers and joiners, if it could get them, David says. David himself did an apprenticeship as a cabinet maker/shop fitter and has taken on "at least 15" apprentices over the years, but he can't seem to find what he's looking for these days.

"We used to get our apprentices from woodwork classes in schools, but you don't get that any more. I've put emails through all the schools in Wanganui to encourage people to apply for jobs and you just get nothing. A lot of them seem to be interested in the big dollars and getting to the top as quick as they can. Attitude is the main thing: if you've got the right sort of attitude you can pretty much do anything. It's a case of being willing and able to learn on the job – listening and being able to take instructions without being a know-it-all. "

Part of the problem, David suggests, is that times have changed in the industry and some teachers don't know it.

"Some of the old woodwork teachers, who are still showing kids to do a hand dovetail, come in here and are blown away with the computerisation. And we point out the other skills they need now apart from the old cabinet-making skills."

Traditionally, joinery and cabinet-making have been careers for boys, but this is changing as well, with increasing numbers of girls now looking to move into kitchen design and manufacturing.

Wanganui Girls College students visiting Kitchen Contours

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