



PROJECT : **Cayo**

TITLE : Product Development

CLIENT : Coast New Zealand

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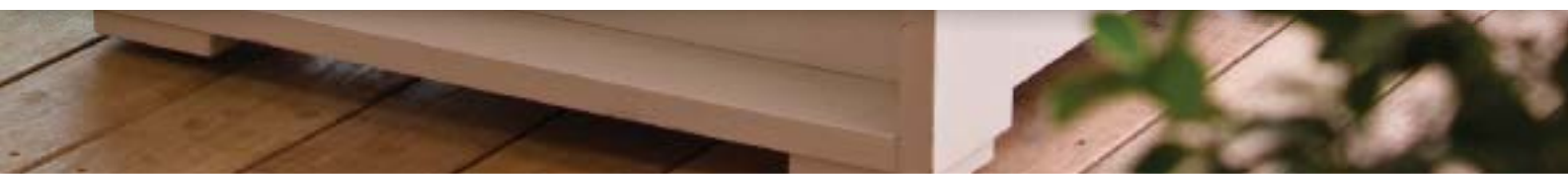
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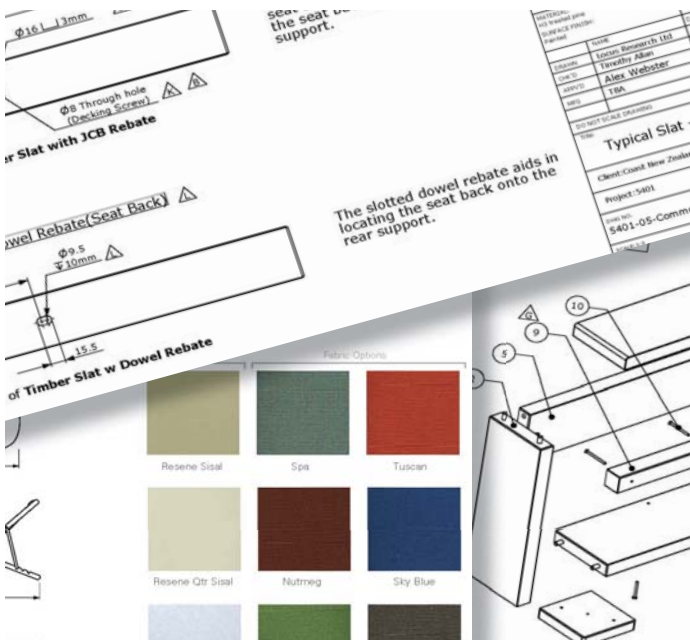
Cayo Collection

Coast New Zealand (Coast) is based in Auckland, New Zealand; specialists in their field, they produce a variety of furniture, furnishings and luggage designed to reside and endure in the outdoors. Locus Research was approached by company director, Alex Webster, at the beginning of 2008 to discuss options for the revamp of the Cayo Collection, a range of solid timber outdoor furniture.

The Project Context

The initial design of the Cayo furniture was found to be unsuitable during prolonged use in the outdoor context for which it was originally intended. Unfortunately, the use of Tasmanian oak throughout the range was established as inappropriate in the harsh NZ coastal climate; UV exposure and high salt and humidity levels causing the timber to warp and split over time.

Figure 1. Documentation from the Production Process



This discovery prompted Alex to approach Locus with an objective to revamp and redesign the range to endure in the outdoor environment. The issues were discussed and outlined at the outset of the project, including a desire by the project team to reformat the products to make them more appropriately sized to both the consumers and the outdoor living context.

The Approach

Locus underwent a period of material and process analysis to establish the most feasible options for producing a range of long lasting outdoor furniture that retains a purchase quality in the products.

Timber

The first strategy the design team employed was the decision to design using timber sourced from a Forest Stewardship Council (FSC) certified forest and producer, Pacific Wood Products in the Hawkes Bay (www.pwp.co.nz).

It was determined that the timber needed to be treated for use outdoors and must restrict the movement that is common in timber products. Clearwood, a finger-jointed radiata product was chosen as the new substrate for the furniture. The finger-jointing process leaves the timber free from defects and provides a stable material that is more resistant to movement than standard timber lengths. The timber is also preservative treated with pyrethrum to the H3.1 durability standard for building materials.

As an additional bonus, the use of Clearwood reduced the weight of the units significantly, enabling them to be manoeuvred with more ease throughout the spaces they inhabit.

Finishing

The Design team had previously undertaken an assessment to establish the key environmental impacts of exterior timber products; this used Life Cycle Assessment (LCA), and determined that Coatings (repeated every 1-2 years) are responsible for the largest impact of an exterior timber product.

It was essential that the finish on the new range was able to protect the products from the elements long term and require only minimal maintenance. Painted finishes outperform stains and oils in both of these aspects so a selection of paints was trialled to find a suitable paint system.

The team worked with Resene to select and develop a water based enamel system with an extended life span that would be finished in a factory environment to 120 micron dry film build. Lustacryl, a semi-gloss waterborne enamel, was chosen for its enduring qualities in the exterior environment. This same paint is used for exterior cladding on homes and with a high LRV (Light Reflectance Value) can be guaranteed for a lifespan of up to 10 years with only minimal cleaning required to maintain a high quality finish.

Manufacture

The revamped collection is now manufactured by Opco, an ISO 14001 certified manufacturer. Opco was the first Furniture manufacturer in NZ to obtain this internationally reputable environmental management standard. Other components are also manufactured by Accord Precision (Stainless) which are also ISO 14001 certified.

Units for the original Cayo range were being produced at extremely high cost so simplified assembly and

Figure 2. Newly painted components from the Cayo range



Figure 3. Assembly of Cayo seat frame



standardised components were utilised to reduce both production time and cost for each product. The range has been designed to completely knock down without diminishing the assembled product aesthetic value (by using stainless fasteners) to ensure freight impact is minimised in transit to market.

Sizing of the units was decreased to accommodate the general populace who do not fall within the 95th percentile of human dimensions. This reduced the volume of material that was necessary for each unit and further impacted on the overall unit cost.

It was apparent that Coast was lacking a structured production process so CAD modelling of the products was undertaken to produce precise manufacturing documentation and systems were set in motion for straightforward production of the revamped range.

Environmental Sensitivity

Firstly, the Cayo is created primarily from materials (timber, paint and custom fixtures) sourced in New Zealand, and uses an audited New Zealand supply chain which includes the timber, manufacturing and paint.

The product is constructed from a climate positive material that is grown, processed and manufactured by an environmentally credible (and externally audited) supply chain in New Zealand. The material is sourced from an FSC certified producer which ensures that all material comes from a sustainable plantation. FSC is the gold standard internationally and includes environmental, economic and social factors in the production, chain of custody and forest management.

The timber is primed and painted to provide an extended period of use and increased durability, in effect it keeps

the product looking better for longer. The product can also be easily repainted further extending and protecting its expected lifespan.

Strong UV light rapidly degrades unpainted timber, and timber stains, whereas a paint with high Light Reflectance Value (LRV) is known to reflect the light and maintain its surface integrity for longer. The paint surface will not require maintenance for a period of 7-8 years compared to a similar stain which would require annual resurfacing, whilst at the same time degrading timber quality over a similar period.

Innovative Features

The Cayo products are manufactured from a renewable FSC certified timber and feature a robust and durable water based enamel finish that delivers a smooth finish and beautifully contrasts the cushions and fabric. The fixtures are from stainless steel ensuring they last as long as the product does. This combination has delivered significant durability enhancements for the Cayo range in the outdoor furniture sector. Current timber products are finished with stains which typically have a lifespan of less than two years. The Cayo water based enamel finish cross-links with the timber providing a hard and wear-resistant layer. The minimum lifespan is 5 years but would likely exceed 10 if the finish is washed periodically. This represents a significant performance improvement.

All fabrics are Sunbrella Marine Grade which has an extended life span that aligns with the timber finish.

The Cayo range has been field tested with a wide range of body types to establish an effect sizing framework. This included a structured assessment phase during design and development. The Cayo features generous arm rests finished in an extra layer of paint to ensure they last as well as the rest of the unit. These arm rests provide a great rest for drinks, books, and more.

The aesthetics of Cayo are understated and simple elegance. Detailing is kept to a minimum to ensure the design works effectively in its environment. The Cayo range offers relaxed seating and can be used both indoors, in outdoor rooms or in a totally exposed situation. High quality materials provide real versatility.

Figure 4. The revamped Cayo Collection



A New Solution

The recreated Cayo range reinterprets timber furniture for the modern life, by extending the life span and reducing product maintenance. Its elegant simplicity will be at home in many different environments and architectural styles.

The range uses the latest manufacturing technology in the raw material processing (the timber), the machining, and the finishing. All products are made using painted timber from a sustainably managed source and created with an attention to detail that is particular to Coast, including the use of stainless fastenings and stylish furnishings in hardwearing sunbrella fabric and dripore foam.

Figure 5. Cayo Two Seater Couch



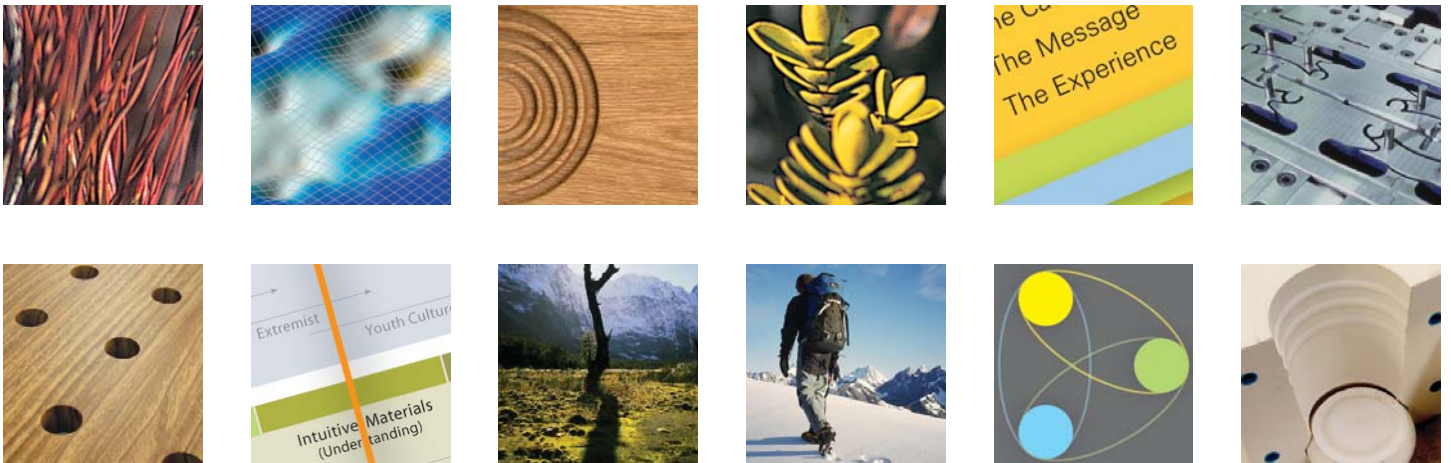
Summary

The important design decisions for the Cayo range can be summarised as follows:

- ▲ FSC certified timber supplier with a closed loop manufacturing environment
- ▲ Selection and use of a rapid growing plantation species from NZ
- ▲ Selection of a water based enamel paint system to keep the product looking good for longer.
- ▲ Selection of a light colour that will effectively reflect light extending surface life.
- ▲ Reduction in overall foam volume
- ▲ Use of stainless fasteners for durability and the fact they



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In the six years since Locus was started we have built a reputation for deep research, original design and effective implementation. Our approach to sustainability has been pragmatic and practical, we simply aim to address these issues on a daily basis for both ourselves and our clients benefit.

This is achieved with simple design strategies, through to more advanced analysis using life cycle assessment and systemic analysis. As a team we have

an overarching commitment to sustainable product design (SPD) from research into SPD through to commercial applications of the products that we design.

Our focus has been on research and development rather than just design; we drive to deliver a basic point of difference by using research to build a platform for product development and engineering. We believe in the strategic use of design on a short, medium and long term basis.

Locus has a client base that extends from New Zealand to the UK and has an informed international outlook.

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