

Case Study - Bambi Enterprises

We have engaged in many innovative product designs during the SIP programme.

Projects to development & implement various plant fibres from renewable sources were exciting and successful e.g.

Development of "Tencel" Fibre Quilts, Mattress Protectors & Pillows.

The aim of the project was to develop quilts, underquilts & pillows from a renewable resource called TENCEL which uses eucalyptus tree wood pulp instead of a fibre like polyester which is made from crude oil.

Tencel also has superior therapeutic properties.

We were the first in Australia to use Tencel for quilts, underquilts & pillows. The product has wonderful benefits.

TENCEL® is a natural fibre made from plantation forests of eucalyptus trees:

TENCEL® is perfect for moisture control, cleanliness & odour freshness

- Excellent moisture management - absorbs 50% more moisture than cotton! The ideal pillow and mattress protector for those hot sweaty nights
- Prevents formation of bacteria by absorbing moisture quickly keeping bedding nice & dry. During the moisture absorption process any odours or smells disappear & therefore less washing or laundering required

TENCEL® gives skin comfort by its ULTRA SMOOTHNESS, coolness & dryness, and by being clean & pure

- It is a cellulose fibre gentle to skin, giving a feeling of well being
- Many people suffer from sensitive skin & allergies - TENCEL® is wonderful for these conditions
- Cooling effect & smooth fibres prevents skin irritations
- Eucalyptus is a fragrant raw material with a pleasant smell. The oil is used for medicinal purposes and the residue left in fibre has a pleasant effect on skin
- It is washable

**TENCEL® is kind to nature coming from natural renewable sources,
environmentally friendly production & is 100% biodegradable**

- It is 100% organic
- It is naturally pure - no toxic substances remain in fibre
- It is Earth friendly compared to cotton
- Only small amounts of water are required to grow eucalyptus trees for TENCEL® - cotton requires vast quantities of water & irrigation
- No pesticides are used in the cultivation of eucalyptus trees - cotton needs constant use of pesticides
- Eucalyptus trees can be planted on so-called marginal lands which cannot be used for production of food produce
- The fibre yield from TENCEL® is 10 times higher than cotton
i.e. one TENCEL® quilt can be extracted from approximately 1/10th of the soil require to produce a cotton quilt

Technical Problems

We were the first people in Australia to use this new age fibre. We purchased three bales of fibre from Austria and had them air freighted to Australia for research and development. This fibre had various staple lengths and finish - we did not know how our carding line would handle these new fibres.

The main issue during this development involved changing our machinery to successfully process these fibres ending with a product suitable to our customers.

- At first we used a fibre with a long staple - it was so light and fluffy it clogged up the end of our first conveyer, this was cleaned and conveyer slowed down.
- The next time the fibre reached our pressure chamber OK but it was too light - pressure gauges needed to be adjusted.
- Various changes were made to licker in rollers and the speed of swift roller was reduced with worker rollers going a different speed.
- When the fibre web reached our cross lapper it had so much loft the rollers clogged up & stopped, this required an URGENT stoppage of the whole process - we narrowly averted major damage.
- The equipment was cleaned and we started again.
- After many trials at different line speeds we succeeded in running the three stable lengths.
- 100 quilts were produced and we found that the ones made from the short staple had no lasting loft - the market requires loft.
- The long stable was the most difficult to run - we tried some lubricant but this did not help.
- We tested different wetting rates.

- Finally after more trials we settled on a blend of Tencel fibres and a small quantity of Ingeo (corn) fibres from Taiwan. The Ingeo Plant (corn) fibre was dry and did not have a good feel but it blended well with Tencel and went through equipment ok.
- We then carried out different trials on various fabrics to cover the fill - settling on a 100% Tencel fabric.

Development of Tencel Pillow

We needed a pillow to go with Tencel quilts.

Both could be promoted as a package.

Tencel pillow shells were very soft to feel but would the fibre have sufficient loft for a pillow?

- 50 pillows were produced with 100% Tencel - they looked great but within weeks they went flat.
- Another 50 pillows were produced with 50% Tencel/50% Ingeo plant fibre - these were OK for a while but also went flat.
- Another 50 pillows were made with 1/3 Tencel, 1/3 Ingeo, 1/3 Polyester.
- More trials were carried out until we settled on a 10% Tencel, 40% Ingeo (corn), 40% polyblend.

Since developing this product it has been another addition to our growing range of bedding products from renewable resources.