

textile technology



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The aim of AWI's Textile Technology portfolio is to work in the science arena with organisations and companies to develop new and improved wool products and market their benefits to designers, manufacturers and retailers.

Key outcomes and achievements

Textile product development themes

AWI developed a series of textile product development themes (marketing platforms) to help guide R&D into areas of highest market opportunity. The themes describe the market opportunity from the consumer's perspective. R&D projects are then developed to meet the market need. Marketing materials (consumer research, branding opportunities, technical packages) are prepared for each theme, to help designers, retailers and consumers see the benefits of the products.

The textile product development themes provide a vehicle for transferring research from the laboratory to the marketplace. They do this by pulling together AWI projects and packaging existing and new technologies that offer significant product performance improvements. Equally, it is also intended that the themes provide science and research organisations with guidance on what sort of R&D is needed to create products sought after by consumers.

The textile product development themes are being used to:

- target global fashion designers and retailers with appealing and innovative apparel concepts – this is an opportunity for Merino wool to increase its presence in the fashion apparel markets;
- rebuild market share in several traditional product markets, such as corporate uniforms, bedding, active wear, wool/cotton blends, winter warmth, and baby and infant wear; and
- help Australian Merino fibre enter new markets where it has not been used before, such as medical textiles, protective clothing and electrostatic wool filters.

Some of the product development themes are:

- **Merino Super Soft** – new super soft Merino knitwear.
- **Total Easy Care** – easy care clothes that can be machine washed at home and tumble dried with minimum ironing required.
- **Summer in the City** – ultra lightweight tailoring for both men's and ladies' markets.
- **Active Performance** – for the action sports and streetwear markets.
- **Natural Healing** – for the medical textiles market.



- Textile product development themes were developed to explain the benefits of wool products to designers, manufacturers and retailers, and provide a vehicle for transferring research from the laboratory to the marketplace.
- Fashion garments, made from a yarn developed as part of AWI's 'Super Soft' textile product development theme, were developed by young women's fashion label Kookai ready for launch in July 2005.
- Six new TRANSseasonal wool and wool blend fabrics – soft, luxurious yet durable – were developed by AWI in conjunction with companies around the world, and will be marketed in the northern hemisphere in late summer/early autumn.
- The best qualities of Australian Merino wool were showcased to the world when AWI joined forces with celebrated Australian fashion designer Akira Isogawa to take a new featherweight wool fabric to the Paris fashion week and Mercedes fashion week.
- With the help of AWI, another successful designer, Josephine Nathan, participated in Hong Kong's fashion week and the World Fashion Boutique.
- New markets for wool where bright, clean and pastel shades are essential are a step closer after CSIRO researchers made an important breakthrough in understanding the mechanisms of why photoyellowing of wool occurs.

Merino Super Soft wool fabric

AWI approached young women's fashion label Kookai with the idea that we could improve the handle and touch of its knitwear, without changing the price, by using wool with new fibre specifications to make a soft, no prickle yarn. The yarn for the fabric was sourced as part of AWI's 'Super Soft' textile product development theme that aims to redefine wool as soft, gentle, feminine and comfortable for the skin.

The fabric is made of 18.2 micron Australian Merino wool with long fibre length, sourced from Gostwyk Station in New England, NSW. The long fibre reduces the chance of pilling and allowed the twist in the yarn to be slackened by 10 per cent, which made softer fabric. Sudwolle GmbH & Co KG in Shanghai produced the yarn, which has been knitted by ABMT Textile Pty Ltd in Melbourne. All of Kookai's Australian stores have been offering next-to-skin knitwear garments made from the new yarn.

TRANSseasonal wool fabrics

Six new TRANSseasonal wool and wool blend fabrics were developed using a number of textile mills around the world – a joint AWI/Woolmark project. The fabrics are soft, luxurious yet durable. The developed fabrics are:

- a wool/silk blend made by Macquarie Textiles in Australia;
- two wool/linen blends made by Ulster Weavers in Northern Ireland;
- a wool/cashmere blend made by Polgat in Israel;

- a wool/lycra blend made by Clissold in the UK; and
- a wool crepe made by Parkland in the UK.

Five out of these six fabrics were sold commercially by the mills in large quantities, far exceeding the modest project goal. In addition, the developed fabrics were used by four top UK fashion designers to create garments for this year's autumn season in the UK.

Total easy care knitwear into US

AWI and The Woolmark Company joined forces in a project to get more Americans wearing Australian Merino knitwear. The project is using dedicated supply chains to meet specific US retailer and consumer expectations for total easy care (TEC) knitwear that can be machine washed and tumble-dried, and retain appearance and softness.

It is expected that the first knitwear garments produced through the project will retail through LL Bean and Talbot in the US in their 2005 autumn/winter. The first order received from these companies equates to 70,000 pieces.

Garment treatment for easy care wovens

Together with the Woolmark Company, we have developed an improved garment-based easy-care technology for producing wool trousers that meet machine wash, tumble dry and minimum iron performance (TEC) specifications. The technology has been commercially proven in trials at TAL Apparel, a large garment manufacturer in Thailand. TAL will

Developing whiter, brighter and more light-stable wools

Textile Technology

CASE STUDY



During 2004/05, CSIRO researchers participating in our basic science program made an important breakthrough in understanding the mechanisms of why photoyellowing of wool occurs. They have now identified three key processes in wool photoyellowing, including a specific reactive form of oxygen, which means they can now look at ways of stopping or interrupting the process.

The development of whiter, brighter and more light-stable wools will allow the creation of improved dyeing regimes for wool. This should enable wool fabrics to be dyed in brighter, rich colours. Such technology will therefore substantially open up new markets for wool where bright, clean and pastel shades are essential.

CSIRO Textile and Fibre Technology Coloration Project Leader Dr Keith Millington said he hoped the work being funded by AWI would help fast track other research and open up new markets for wool.

“The new colouration projects are about making wool fabrics available in bright, vivid colours that are not traditionally associated with wool,” Dr Millington said.

manufacture TEC wool trousers using the improved technology and has made a large investment in new plant equipment to expand manufacturing capacity for TEC wool trousers.

The initial target market for commercialisation is Germany where the concept of machine washable wool trousers is well established and the new product should be well received by retailers and consumers. Sample garments suitable for the German market are being produced for presentation to retailers and branding for promotion and garment labelling is being developed.

Woolfleece™

Interest is gaining pace from manufacturers in the Woolfleece™ fabric – the bi-layer structural blend of knitted fibres where the wool is next to the skin and the polyester is on the outside. This high quality blend containing up to 35 per cent wool of around 22 micron fabric was developed in conjunction with The Woolmark Company.

The first order of 100,000 metres was received from a large Japanese retailer which is converting the fabric into 320,000 gloves. We continue to pursue a plan to transfer this technology with other manufacturers in Asia.

Murata Vortex Spinning system

The adaption of the high-speed Murata Vortex Spinning (MVS) machine to short staple wool and wool blends continued apace this year with five assessments by industry partners of the MVS machine successfully completed. With faster spinning speeds and less mill



preparation steps, the MVS promises greater productivity for less cost. For wool, the MVS is up to 20 times faster than the traditional worsted wool spinning machine. Other developments this year included a successful commercial trial in Hong Kong and the undertaking of initial planning for the technology transfer to China and Indonesia.

CAWIN project producing fancy yarns

There have been promising results this year from an AWI-funded project into the development of 'fancy yarns' for the Chinese market. The work, being carried out by Xi'an University as part of the China Australian Wool Innovation Network (CAWIN) initiative, involved the design of a modified mechanical spinning device to create the wool blend yarns. Fabrics and garments have been made and talks have begun with companies in China to trial the spinning device, the yarns and the fabrics. The yarns will be exhibited at SpinExpo, a trade fair specialising in textile fibres and

yarns in the Asia Pacific zone, in Shanghai in September.

Low temperature scouring to help top makers

With the aim of increasing top yield for processors, we undertook research this year into minimising fibre entanglements during scouring. We successfully completed the development of a low temperature detergent and discussions are underway with a commercial partner. By operating the scour at lower temperatures, reduced entanglement during scouring occurs. With fewer fibre entanglements to remove, there is less fibre breakage and hence fewer noils and a longer top length. Another benefit is a 20 per cent saving in energy costs.

Global Innovators Wool Pipeline Tour

Nine up-and-coming young fashion and design students from Europe were involved in an intensive two-week tour of the Australian wool industry in October 2004. The AWI Global Innovators Wool Pipeline Tour showcased Australian Merino wool and provided an insight into the production of the fibre.

The young designers got an insight into the industry from wool breeding and genetics, through to the selling system, processing and finished textiles and fashions. It laid the foundations for loyalty to Australian Merino wool among these future top global fashion and textile designers.



Top left: AWI investment has resulted in the commercialisation of new super soft wool knitwear.

Top: A project with Chinese universities has resulted in 'fancy yarns'.

Above: The Australian Wool Fashion Awards promotes Australian wool to a wide audience.

The Australian Wool Fashion Awards

AWI sponsored the 2005 Australian Wool Fashion Awards which were held in March in Armidale. This long-standing and prestigious fashion competition is an important vehicle to promote Australian wool to a widening audience of new consumers, fashion buyers, designers and processors. The collection was also showcased to delegates at this year's IWTO Congress.

Future goals

The future goals of the portfolio are to:

- develop a wide range of new products for Australian Merino fibre in the fashion apparel markets;
- develop products for Australian Merino fibre in the sports, active wear, protective clothing, medical and filtration markets;
- increase demand for Australian Merino by developing a more diverse, cost effective product base from Merino fibre, and to broadly and effectively transfer the outcomes to industry; and
- develop the new fundamental knowledge about the surface, structural and chemical properties of wool fibres.

Working with leading designers

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CASE STUDY



AWI joined forces with celebrated Australian fashion designer Akira Isogawa to take a new featherweight wool fabric to Paris fashion week in March 2005 and Mercedes Australian Fashion Week.

The 100 per cent Australian Merino fabric was developed in conjunction with AWI and Sydney-based knitter DPK, and featured in Akira's autumn/winter ready-to-wear collection.

Working with leading designers such as Akira Isogawa is important to get innovative wool fabrics into the market and showcase the best qualities of Australian Merino wool to the world. Mr Isogawa said AWI welcomed the challenge he presented to them. "They embraced my idea to develop ultra-fine, ultra-soft, transeasonal wool products that I can use for both my autumn/winter and spring/summer collections," Mr Isogawa said.

With the help of AWI, another successful designer, Josephine Nathan, participated in Hong Kong's fashion week and the World Fashion Boutique.

Ms Nathan of woolliwoolli designs took 40 of her Australian Merino creations to the event, using the opportunity to both showcase her talent and get a first hand feel for the needs of the growing Asian fashion market.

Ms Nathan said that it was evident from everyone she spoke to at the events that Asia is hungry for western design.

"Australian fashion is just so popular at present. In fact, I was introduced to buyers from Bangkok who specifically attended the events to scope out Australian fashion designers," Ms Nathan said