

Spacewear suits Earth problems

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FROM bras and babysuits equipped with monitors to tough suits to protect sportsmen and adventurers space technology is boldly pushing back fashion frontiers.



Light: Space fabrics

"The space program has over the years provided a catalyst for a lot of the progress we are seeing today in textiles," European Space Agency technology transfer and promotions officer David Raitt says.

"We are using the software, experience and knowhow of space technology for a purpose for which it was not originally meant."

The extremes of the space environment - temperatures ranging from searing cold to furnace hot, cosmic radiation, low gravity and blinding sunlight - have all set scientists huge challenges.

As much as €400 million (\$688 million) out of the agency's average annual €3 billion budget is spent on research and development, and now many on Earth are reaping the benefits of such specialised technology.

The agency has spent years developing light fabrics to reduce the cost of space missions, with every kilo

launched into space costing €10,000, Raitt said, launching an exhibition of space technology clothing in Paris.

The result has been some materials that are 100 times stronger than steel, weigh almost nothing at all and are capable of withstanding great extremes of temperature.

In 2002 the McLaren Formula 1 pit crew in the British Grand Prix wore special overalls "in an idea adapted from space suits" which had 50m of 2mm plastic tubing stitched into the lightweight suit.

"It can get very hot, between 40 and 70 degrees in the pits, so McLaren came to us and asked us if we could cool down their crews," Raitt says.

Cold water was piped into the tubes can keep the wearer cool for up to 90 minutes.

The Anatomic Intercooler System jacket was then more widely developed by Italian bike clothing company Spidi and used in 2004 by Spanish rider Sete Gibernau at the world's hottest motorbike grand prix, in Qatar.

Italian designer Grado Zero, working with ESA, aims to market commercially from September a leather motorbike jacket with inbuilt rider protection.

A gel system in the shoulders and elbows ensures the jacket is supple when worn, but those areas immediately harden on impact, cushioning the wearer. At the back, a strip incorporated into the jacket shines with a blue moving light at night.

The jacket, which will retail at about €1000 and be personally fitted, has also been treated to keep the wearer warm in winter and cool in summer, even though it is made of ultra-thin leather.

"The idea was to create a jacket for all seasons," managing director Filippo Pagliai says.

The company is also working to commercialise a lightweight jacket for climbers that can protect them in temperatures up to minus 50C, using a special compound called Aerogel.

Developed by ESA, it is made of about 80 per cent glass and is the lightest solid known on Earth, but also the most insulating. It was used for insulating probes sent to Mars, but could be in shops from next year worked into nanoporous jackets.

Space suits that had monitors built in to keep an eye on astronauts' heart and respiration rates have provided the inspiration for clothes that could be lifesavers on terra firma.

A new, washable babysuit should be marketed next year that could help spare parents the anguish of cot death.

A bra is also in development that could have monitors built in for women suffering from breast cancer. There is also a suit that protects the wearer from ultraviolet rays.

AFP

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