Wood coatings to regain market share

A revolutionary new powder coating technique could help wood products regain market share against tough competition from metals, plastics and wood-plastic composites.

“Powder-coated wood finish is far more durable than a liquid finish. …Powder-coated wood is projected to grow rapidly over the next five years and this growth will largely be due to the dramatic improvement in the finish appearance and performance and the rapidly growing interest in being green…”

Over the last 10 to 15 years, low- or zero-maintenance alternatives have eroded timber’s traditional markets in cladding, window and door products from almost 50 per cent down to just 25 per cent.

“People like wood, but they don’t like having to repaint every four years or so,” says CSIRO researcher Dr Voytek Gutowski.

“Powder-coated timber will combine wood’s traditional appeal and intrinsic environmental advantages with superior toughness and excellent resistance to UV and moisture penetration. It’s a brilliant product concept that means little or no maintenance.”

“The ‘icing on the cake’ will be the availability of different colours and surface finishes to further stimulate demand from designers, architects, builders and home owners.”

CSIRO estimates suggest the new process will enable timber windows to regain 20–25 per cent of lost market share within four to five years of project completion. Other encapsulated timber products such as sidings, railings and solid wood furniture for external use could grow at three to five per cent a year.

New-generation wood products would also help revitalise Australia’s domestic wood products industry and create export opportunities.

Powder coating is a dry surface finishing process in which electrostatically-charged fine particles of pigment and resin are sprayed onto an electrically-conductive surface. The key to the new wood coating process will be to make the wood surface electrically conductive so it can attract and bond the powder coating to the product surface.

Gutowski and his colleagues have received a number of international awards for previous work in developing powder coatings for similarly challenging, non-conductive substrates such as automotive plastics.

The primary objective of the current FWPA-funded project is to validate new-generation zero-waste technology for making high-performance, powder-coated solid wood products. The project will draw on the combined expertise of powder-coating suppliers Dulux and Orica, CSIRO and Swinburne University researchers, and timber product manufacturers ITC Timber Ltd and Canterbury Windows.

The first step will be to demonstrate the feasibility of using the technology to powder coat radiata pine and Victorian ash. The next stage will involve establishing an industrial pilot plant and conducting exposure trials.

Once the effectiveness of the technology has been proven, the close involvement of suppliers and users will help to ensure rapid uptake.

The US market for sidings, decking, railings, doors and window frames is currently worth more than US $15 billion.

“We anticipate that the new technology developed through this project will transform high-maintenance, low-value wood products into low-maintenance high-tech products,” Gutowski says.

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FWPA Project PNB156–0910: Concept proof: New generation, hi-performance wood products coated or encapsulated in zero-waste powder coating