

Senate Standing Committee on Economics
ANSWERS TO QUESTIONS ON NOTICE
Industry, Innovation, Science, Research and Tertiary Education Portfolio
Additional Estimates Hearing 2011-12
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AGENCY/DEPARTMENT: COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

TOPIC: Future Manufacturing Flagship

REFERENCE: Written Question –Senator Bushby

QUESTION No.: AI-100

What does CSIRO consider have been the most tangible, practical achievements of the Future Manufacturing Flagship over the course of its existence?

ANSWER

There have been numerous achievements and impacts from the work of the Future Manufacturing Flagship. The following are a small number of selected highlights.

- **Geopolymers** - eco-friendly cement replacement. An environmentally friendly alumino-silicate geopolymer system incorporating industrial waste products (fly ash) to produce an eco-friendly replacement for cement. One application in commercial use is for lightweight, high strength, wall panel systems. Potential to capture a \$100m/year share of the global market for cement based building products. These geo-polymers can potentially achieve a 43% reduction in embodied carbon emissions compared to products made with Portland cement.
- **BioFiba** – biodegradable pallets. An environmentally sustainable bio-composite pallet as an alternative for single-use timber pallets. Collaboration with industry partner that aims to capture 2% of the market in two to three years, estimated to generate \$500 million a year into the Australian economy through the sale of raw materials and the sale of extrusion equipment. Supporting Australian manufacturing jobs. Eliminate the use of carcinogenic agents used to fumigate timber. Reduces global deforestation and CO₂ emissions.
- **Zero-waste powder coating process** – Sustainable, safer powder-coating designed to withstand heat-sensitive environments, with reduced curing temperatures and times and no use of solvents. The process is being currently used in furniture and auto applications and is broadening its use in other areas. The technology has a potential to generate over \$100 million economic value a year from sales with a multi-million dollar export market as well as operational savings.
- **Topcoat Reactivation Technology** - A simple, easy to apply spray-on treatment process which simplifies both the application and repair of polyurethane paint coatings used in aerospace applications. Now in use in Boeing's paint hangar operations on over 850 new aircraft worldwide including the new 787. Offers cost savings in maintenance, labour and lost flying time. The process provides significant productivity improvements and safety to workers.
- **RMAX – biodegradable expanded foam** – these are fully biodegradable expanded foam beads that can be moulded into products for packaging, building and other uses. RMAX will

significantly reduce the large volumes of polystyrene that end up in long-term landfill. This technology could enable the conversion of packaging waste into composted garden products.

- **Rotated Arc Mixer (RAM)** – A clever industrial designed mixer that doesn't use beaters, blades or stirrers to mix materials. It mixes fluids more efficiently with lower energy costs than traditional mixers and does not clog, allow material to build-up, or leave large amounts of material incompletely mixed. The RAM mixer has been successfully trialed by a large food manufacturer. This represents a major developmental milestone in CSIRO's commercialisation of the RAM technology.
- **SiroLock** – carding solution for fibre control – Improved efficiencies of doffing (fibre removal from carding machines) creates higher quality product, with lower maintenance costs and provides savings for the textile industry. When used as a doffer wire, the trials showed increased fibre length, reduced small fibre entanglements in the web and combing waste. Productivity improvements of 35 per cent, better quality product and lower maintenance costs. The SiroLock doffer and worker wire has been successfully commercialised by Bekaert -the international leader in carding wire manufacture.
- **TiRO™** - A titanium powder production and high-efficiency metal separation process currently under commercialisation. The process uses simpler plant, is safer, fully automatable and low in energy use. This process has potential to double the export revenue of titanium ore (\$700 million to \$1.4 billion) and create new markets for titanium metal.
- **Manufacturing Trends to 2020** – a document developed in collaboration between CSIRO, the Future Manufacturing Industry Innovation Council and the Department of Industry, Innovation Science, Research and Tertiary Education to map out trends and drivers that are likely to influence the direction of manufacturing in the future.

In addition, as part of a review of CSIRO's impact in 2010 ACIL Tasman undertook an analysis of the Flagship program. A copy of the resultant report is available on the CSIRO website at: <http://www.csiro.au/en/Portals/About-CSIRO/How-we-work/Budget--Performance/Performance-reviews/Impact-and-Value-2010.aspx>.