AMGC
ADVANCED MANUFACTURING GROWTH CENTRE LTD

CUSTOMISED PRESCRIPTION EYEWEAR

Dresden

Dresden Optics is a promising startup manufacturer, selling its affordable, modular glasses through seven retail locations. It is looking to disrupt the eyewear market through greatly increasing production for local and export markets and manufacture using 100 per cent recycled materials. This AMGC co-funded project will create a robotic system to increase quality and throughput of injection moulded frames.

How has the Growth Centre helped?

The project has been assisted through $250,000 in co-funding from the AMGC. The AMGC assisted with advice on a complementary CRC-P project, which will enable the reliable use of recycled materials for production.

What's changed?

Automated processes are essential for Dresden to scale, with goals to grow output from 33,000 units produced annually to 5,235,000 within a decade. There are improvements in production quality, cost and margins, and the delivery of a technology for injection moulding that manufacturing partner Astor Industries can deploy in other sectors.

Success story overview

Dresden Optics was established in 2014 by Bruce Jeffreys and Jason McDermott, and its goals include disrupting the market for prescription eyewear.

The startup has six Australian stores and one in Canada with retail revenues of $2 million. Last year it manufactured 33,000 units, with production admittedly "boutique" as well as "ad hoc and slow," according to Jeffreys.

As well as scaling up production, work is underway to realise a goal of using 100 per cent recycled material. Dresden frames are currently made of recyclable nylon. In-house research and development to use recycled material such as milk bottle lids and fish netting has given mixed results, with many failed parts and high variation in quality.

An 18-month program will transform Dresden's current business model, boosting capacity through fully-automated production and completely using recycled plastic as a feedstock. The first collaborative project, supported by the Advanced Manufacturing Growth Centre, will implement a fully-automated production system. The second, a CRC-P effort, will address material science issues around using salvaged plastics. The complementary collaborative projects address production after and before injection moulding, respectively.

> **"Basically, the automation and the tooling aspect is about the platform, which we are basically building at the moment,"** explains Jeffreys.

“Once we have the right platform we can experiment with the material science side of it.”

The fully-automated production system will take production at Astor Industries, Dresden’s manufacturing partner, from 400 to 800 units per day per manufacturing cell.

The AMGC-supported project will move this robotic system from manufacturing readiness level (MRL) 3 to 10, at which point it will be able to replace two injection moulding machines. It will enable more efficient material use, lower costs and power usage, and improve margins.

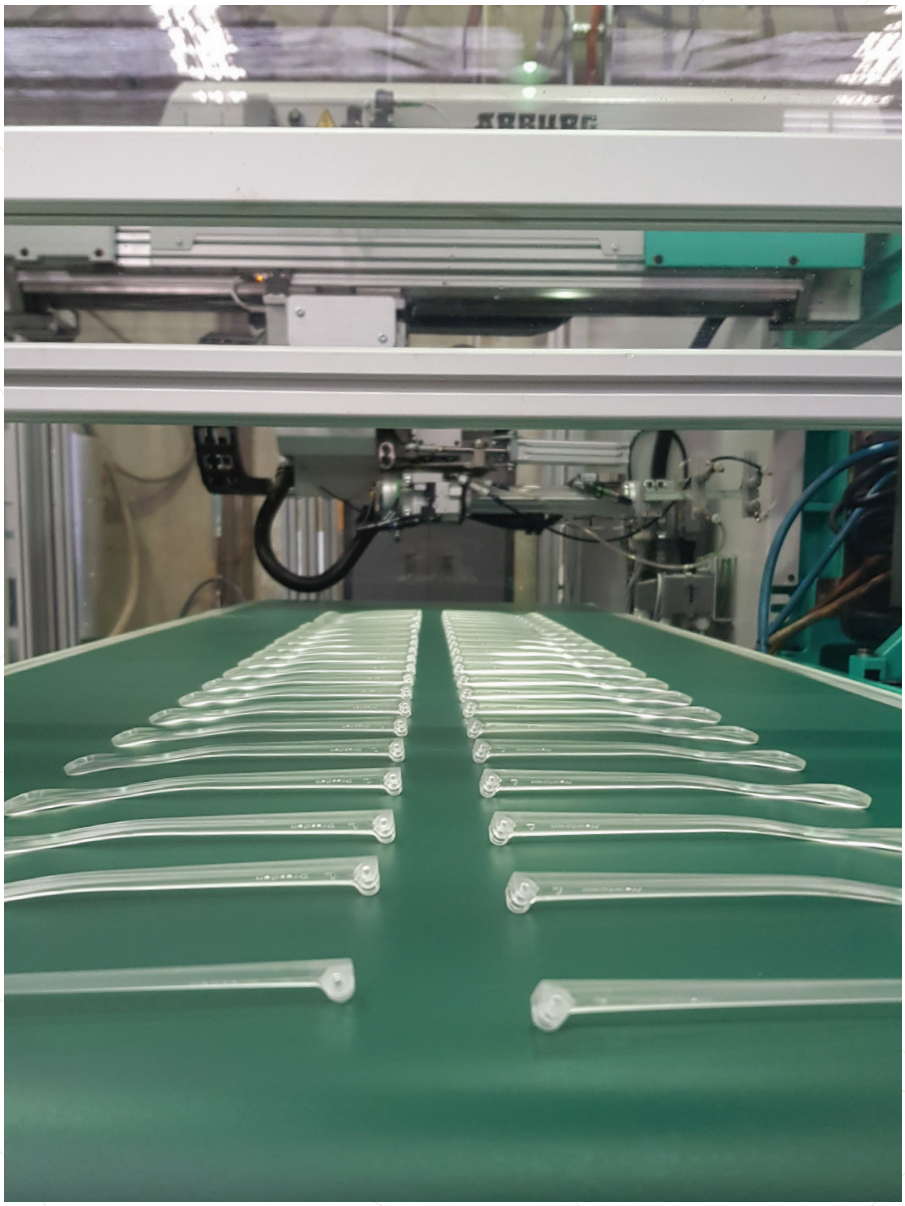
The system will pick up moulded parts, cut off waste material, and place them down in the designated area. The project will see the system designed, installed, and programmed to integrate with injection moulders and material handling processes, fully tested and validated.

Contributors to the project include tooling specialist Elemental Manufacturing, equipment integrator Consonic, materials science experts of the University of NSW, and plastics manufacturer Astor Industries, which will increase its capabilities through the system’s development for use with other products. All glasses frames will continue to be manufactured by Lakemba, NSW-based Astor, with lenses made at the point of retail.

Jeffreys describes the project as a “game-changer”, allowing entry to export markets, and to eventually provide ultra-low-cost eyewear into developing nations.

“We are a volume business. If volumes are not there then we won’t be able to export,” he explains.

“That’s the dynamic. Especially with developing markets where we can price the product lower to attract people on lower incomes. So basically, it is bread and butter. It is core. The only way to survive is we’ve got to have volumes and reduce the cost.”



Volumes are predicted to increase from 33,000 to over 412,500 by 2022, and then 5,235,000 by 2027.

Jeffreys credits the AMGC as being “critical” to helping develop the company’s technology, in validating Dresden’s approach in the context of advanced manufacturing, and in providing advice on the two projects detailed above.

“For managing that, we do not have the capability. We’re too busy to be able to talk to other companies or other research institutions, because just within our AMGC and CRC-P projects, there’s a lot of work just in that,” he says.

“Effectively, we would never have had the confidence to invest in setting up this new industrial process, this supply chain. So, it basically means we’re able to build cutting-edge technologies. We would have remained a boutique, niche manufacturer, and now we have a chance to be a mass market manufacturer.”