

Andrew Donald Design Engineering – Designing and building automation solutions

When Barry Hendy first graduated as an engineer from RMIT in the early 1980s, his first boss was Andrew Donald, then the Engineering Manager at Machine Dynamics, a leading Australian robotics manufacturer where they worked together for 12 years. Little did Hendy know then that he would one day head up a company that Donald would establish a few years later. By Carole Goldsmith.



Now the Managing Director and co-owner of Andrew Donald Design Engineering (ADDE), Hendy recalls: "After that job, Andrew and I went our own separate ways. I worked for several companies globally, among which were Kodak and ANCA, in business development and marketing. Andrew started ADDE 20 years ago and built up the business to what it is today."

Headquartered in Bayswater, in Melbourne's eastern suburbs, ADDE designs and builds turnkey industrial automation solutions. The company's team of engineers, industrial designers and robotics experts work on projects for clients across a wide range of industries, ranging from pharmaceuticals, food, aviation, defence, automotive to general manufacturing. It has 30 employees, including 15 engineers covering mechanical, electrical, control system, robot and programmable logic controller (PLC) programming.

"When Andrew wanted to retire around six years ago, I was his succession plan," Hendy adds. "Our Finance Director - Sophie Collis and I bought the company as co-owners. I came to ADDE with an international business and marketing background as well as foundations in the automation industry."

Although retired, Andrew still maintains an interest in the business, offering guidance on projects.

"When we build an automation system for a client we work with them from concept development right through to production," Hendy says. "We have a major strength in the pharmaceutical industry. Generally our clients don't have in-house engineering departments. They want custom-made automation equipment such as an assembly line for production of a particular product. So we build it and deliver it to their premises."

ADDE is an authorised value provider of ABB Industrial Robots and a distributor for Universal Robots' industrial robotic arms. Consequently it can offer traditional industrial robot solutions as well as the latest collaborative robots.

Collaborative robots in action

Hendy explains that collaborative robots can safely operate and be integrated into the workflow beside operators, without the need for a cage around them, as would be required by traditional industrial robots. ADDE's website includes various videos showing collaborative robots in action, working beside operators doing a range of metal tooling tasks. When asked if there are any possible safety risks with operators working around the collaborative robots, Hendy says: "It all depends on the task you are doing. It is certainly not safe if you put a chainsaw on it, but for most handling tasks they are safe."

The brain of every automation system is the control system, and it is often the control that sets it apart. It can be as simple as a PLC controller, or it may require high-speed processing, communications and data collection. Human interfaces, product and configuration settings plus the traceability of data are all areas in which ADDE has extensive experience.

Hendy explains the ways in which ADDE can help manufacturing businesses: "If you can't find the machine you need on Google, come to us and we will build it for you. Firstly, make sure you fully understand your requirements, then we can visit your site to discuss your needs. What we like to see is documentation of all your products, rates and processes, then we can design, build, install and commission custom-made automation solutions for your specific needs."

Meeting manufacturers' needs.

ADDE's customers include Thales, George Western Foods, Davey Pumps, Boeing, Ward McKenzie Foods, AWTA and MiniFab. It also boasts a strong customer base in the pharmaceuticals industry, servicing the Australian operations of major global players such as AstraZeneca, GlaxoSmithKline, Hospira, Pfizer, MSD and CSL. ADDE extensive pharmaceuticals experience means it has a strong understanding of the sector's quality, environment and process requirements.



“We have completed handling, vision inspection, sorting, buffering and packaging systems for a range of products including syringes, vials and ampoules,” Hendy explains. “Also we have considerable experience in ampoule finishing processes including corona surface treatment (surface modification technique), pad printing, vision inspection, leak testing and serialisation.”

Most of ADDE’s clients are in Victoria, but New South Wales-based AstraZeneca is one of its major customers, delivering automation solution projects at its Australian manufacturing operations in North Ryde, north of Sydney.

“Over the past four years we have designed and built eight finishing lines and matching case packing and palletising cells. These lines are inspecting, printing and packing respule products for asthma treatment for the Chinese export market. Now we are working on another three manufacturing lines for AstraZeneca to support their continued growth in this market.”

Hendy describes some other projects ADDE is currently undertaking for Australian manufacturers. “We are building a major manufacturing line for defence and aerospace company Thales, to produce mining boosters at its Munitions’ plant in Benalla, regional Victoria. This will take about 12 months to complete.

“We’re also working on two case packing systems for food manufacturer Ward McKenzie in Altona, west of Melbourne. McKenzie is moving to shelf-ready packaging driven by the supermarket chains who want trade packaging ready to remove the top and place directly on the shelf.”

McKenzie needed two new case packers, but they had to be flexible enough to accommodate a wide range of their products and produce smaller batch runs, typical for Australia.

At the AWTA (Australian Wool Testing Authority) in Kensington, inner Melbourne, ADDE built a wool keeper cleaning system in 2015 based on an ABB industrial robot. AWTA maintains wool samples in plastic ‘keepers’ stored in racks in their warehouse, which are kept for 30 days after testing. Up to 2,000 of these keepers have to be emptied, cleaned and the wool sorted every day. The ADDE cell has automated this process increasing efficiency and reducing RSI issues.

ADDE has also developed the largest robot palletiser in Australia. Built for George Weston Foods in Castlemaine, it has 17 robots, 32 pallet stations and four pallet shuttles and handles more than 9,000 cartons per hour. Every palletising system has its own unique requirements of product range, mix, rates patterns and pallets.

Inside the workshop

To view some of the automation projects the company has on the go, Hendy takes AMT Magazine on a site tour. On the way down to the manufacturing plant, we see a range of the products made on an ADDE client’s automation systems. Hendy opens the AWTA wool keeper to show the wool inside and then points to a range of pharmaceutical capsules and bottles plus packaged products. We also pass a Universal Robots UR5 that was used for handling products for a client.



Moving on through to the main workshop, it looks more like Q’s laboratory in a James Bond film than a conventional manufacturing facility, with a number of production lines and machines in the process of being built and tested by employees. At one workstation, an electrician is working on part of the Thales project.

The Ward McKenzie case-packaging machine is almost complete. Hendy points to a large machine that his engineers have custom designed and built. It works together with an industrial robot-based system to make and fill the shelf-ready packaging. ADDE has conducted trial runs of the custom packaging using McKenzie’s various household name food products, such as bicarbonate of soda, mustard, pepper and other spices.

“This machine will be transported to their factory in three parts,” Hendy says proudly. “It has been built to package up to 90 cartons per minute.”

We then move on to a tube filler system designed and built for Brisbane microbiology company BioMerieux. This system will be taking tubes, removing the cap and filling them with the company’s products. It uses one Universal Robots UR3 robot to pick the tube and take the lid off, while a second robot fills the tube and puts the lid back on, completing the process. The machine is still in commissioning and is not yet meeting the specified rates, so the team are taking video of it working and discussing how to speed the system up.

Challenges and moving forward

“Over the years, we have designed and built lots of automation systems and I have distilled our experience into what I call ‘The three P’s’,” says Hendy. “To have a successful automation project you need to think about the product, the process and the people. Product – know the details of all the products and all their variations and rates. Process – understand everything you need to do including quality, inspections and processes. And people – your team have to buy-in to the goal of automation. The smoothest projects are when you have champions that want to see it work.”

Hendy says that the biggest challenges in the industry are the peaks and troughs.

“We do however have a dedicated group of highly skilled, long term people. We all enjoy the diversity of the projects. Each one is a challenge to work on and conquer.” **AMT** www.adde.com.au