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# Technology Showcase: A Career in Automation and Robotics

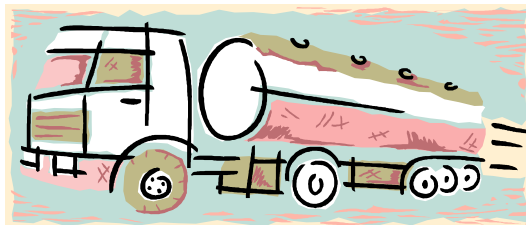
The display introduces the role of Automation and Robotics in Industry. It introduces the PLC as the core technology involved and the role of professional engineers and trades persons in the design, implementation and maintenance of that technology. A Catapult demonstration highlights the capabilities of the PLC and demonstrates how it is programmed.

## Automation

- “Automation & Robotics” refers to the use of computers and complex mechanical and electrical machines to help us to make things better, safer and cheaper.
- Automation and Robotics is used extensively in almost every modern factory. It is one of the fundamental parts of Advanced Manufacturing.
- It is used to help with; the processing of food, to make cars and trucks, to refine petrol, to make bricks, to roll iron for roofs, to make toys, electronics, bikes, furniture, paint, solar panels, wind turbines and many other things.

## Making Yoghurt

- The Yoplait factory uses automation to process 40 tankers full of milk per week into Yoghurt, Yogo and Petit Miam



- On the table you will see Yoghurt cups as they come out of the machine.
- The cups are formed and filled, labels attached and lids sealed in one automatic operation.

## Making Carpet

- Godfrey Hirst is one of the world's leading carpet manufacturers. They are Australia's largest manufacturer and exporter of carpet.
- They have a large factory in South Geelong where their carpet is manufactured.
- The Godfrey Hirst factory is highly automated. This helps to improve quality, reduce costs and helps ensure safety of personnel, thus enabling them to be internationally competitive.



## Industry is vital and needs Automation

- Australian industry plays a very important role in sustaining our lifestyle;
- **The importance of industry in Australia will increase as we face the challenges of shortages of water and energy, and of global warming;**
- Industry increasingly needs automation and robotics to be world competitive. Advanced manufacturing plants make extensive use of automation and robotics;



## PLC Automation

- The core component of industrial automation is the PLC (Programmable Logic Controller). A PLC is in actual fact a small industrial computer.
- PLCs come in a range of sizes. 1000s of PLCs are in use in Australia at places like Ford, Shell, Alcoa, National Foods and Godfrey Hirst.
- PLCs are a fast and reliable means of controlling machines and processes. They help improve quality and safety and reduce labour.



## Pneumatic Catapult

- Students from the Australian Technical College Geelong and Deakin University have built this Pneumatic Catapult to demonstrate the capabilities of a small PLC and a range of mechatronic components.
- **The PLC is faster and more repeatable than a human operator. (See if you can beat this little PLC!)**
- The simple program which controls the Catapult is created on the PC then downloaded to the PLC. It is a type of computer program.



## The Role of Engineers and Tradespersons

- Automation and robotics is built around complex industrial computer technology and depends on software for its operation.
- Automation and Robotic Systems are designed, built and maintained by University educated Professional Engineers and skilled trades persons.
- Working with automation & robotics offers an interesting and challenging career and will suit you if you like computers and technology. Job opportunities will remain strong (even increase!) as Australia addresses the challenges of global warming.



## Career Path in Automation and Robotics

- To become involved in this field as a Professional Engineer you could undertake tertiary studies in Mechatronics, Electrical Engineering, Electronic Engineering, Mechanical Engineering or Computer Science.
- You could study engineering at a variety of universities including Deakin University, Melbourne University, RMIT and Monash University.



## Career Path in Automation and Robotics

- To become involved in this field as a skilled trades person you would take on an apprenticeship in Electrical trades.
- The Australian Technical College in East Geelong provides opportunities for School based Apprenticeships.
- To follow either a University or Trades career paths you should choose maths and science subjects in years 10, 11 and 12.



Careers in  
Automation & Robotics