Instrumentation and Control Engineering – Industry Trends

End users facing globalisation are driving plant performance at a level that would be inconceivable without modern process control engineering systems and business processes. The demand for Instrumentation and Control (IC) technicians, is on the rise in Australia.
The field instruments measure physical parameters like level, temperature, flow pressure, etc provide input to the process control system. The field instruments are widely used in a process control and automation.
The data acquired by field sensors in real-time are stored in PLC/ SCADA/ DCS control system database and is analysed and manipulated to control the
process variables to the desired set points.

Applications of Instrumentation and Control Engineering include:

1. *Remote monitoring and safety for the critical infrastructure*

In Oil and Gas facilities, Mineral processing, Food, and Chemical Processing industry, the field sensors data is stored and analysed in PLC/ SCADA/ DCS control system, and provides real time:

- monitoring of process and equipment conditions.

- process optimisation by analysing historical process and equipment performance trends.
- recording of process deviation from desired process conditions.
- diagnostic of equipment and process health and to plan its overhaul/ repair or prior any breakdown.
- triggering process alarms and shutdown to operate the plant safely.

2. Power grid quality control: grid-connected PV solar feed in
The stability of the electricity grid which receives PV Solar feed from roof top solar, is compromised during change of clear sky day to an overcast day, due to:

- sudden overload experienced by power gird, leading to tripping of the partial/ complete grid; and
- Time lag to bring in spinning reserve supply from gas fired synchronous generators.

This issue is now being addressed by installation of smart digitally controlled equipment which can cut off feed in PV Solar remotely. When the reduction in generation of PV Solar is detected by network operator, it

- triggers the signal to cut off feed in Power from Roof Top solar; and
- kick off the spinning reserve generator reducing the time lag that would have experienced without shutting off PV Solar.

Refer case study dated 14th March 2021 in South Australia where a grid-connect PV was switched off by energy authorities to stabilise the electricity grid. https://www.abc.net.au/news/2021-03-17/solar-panels-switched-off-in-sa-to-stabilise-grid/13256572.
3. Human Machine Interface (HMI) and Supervisory Control and Data Acquisition (SCADA):
HMI and SCADA technologies for process control automation help to achieve business goals for improved facilities utilisation, productivity, product quality, availability, protection, flexibility, and speed.

Instrumentation and Control Engineering Training Available from PMV
PMV offer a variety of Instrumentation and Control Engineering Training options designed for those working towards a career in industrial automation.
Our training is a blended delivery of 70% hands-on, practical training and 30% theory, you will get a chance to work on a real PLC, in our purpose-built skid, like what you are expected to see in the workplace.
Full qualifications we offer, involving PLC and SCADA:

- UEE40411 Certificate IV in Electrical Instrumentation
- UEE31211 Certificate III in Instrumentation and Control
- UEE51011 Diploma of Instrumentation and Control Engineering
- UEE61511 Advanced Diploma of Instrumentation and Control Engineering

For further course information, or to book in, contact the office