

# Nuclear Waste Processing Control System



## CLIENT

Australian Nuclear Science and Technology Organisation (ANSTO)

## LOCATION

Lucas Heights, Sydney, Australia

## CAPABILITIES

- Automation Engineering, Functional Safety Engineering
- Detailed design - hardware and software
- Factory Acceptance Testing, Site Acceptance Testing & Commissioning
- Electrical panel design and build
- Compliance to international safety standards

## TECHNOLOGIES

- Citect SCADA 7.5
- Allen Bradley GuardLogix (certified to SIL3)
- Allen Bradley Point Guard
- Rockwell ThinManager
- VMWare

## PROJECT SUMMARY

The Australian Nuclear Science and Technology Organisation (ANSTO) is one of Australia's largest public research organisations and an international player in the field of nuclear science and technology.

ANSTO's new "SyMo" waste processing facility at the Lucas Heights nuclear reactor plant uses their Synroc technology to immobilise waste from the production of Molybdenum-99, in a global, first-of-a-kind operational Synroc plant.

Synertec was engaged by ANSTO to design the Safety Instrument and Control System for the Safety Instrumented System (SIS) and the Information Technology System (ITS) for the SyMo waste processing facility.

## THE CHALLENGE

ANSTO required an SIS and ITS for the new facility that would integrate not only with all systems in the facility, but in particular, the nuclear hot cell that was being designed and developed by ANSTO inhouse. Our solution needed to be compatible with critical functional safety standards.

## SYNERTEC'S SOLUTION

Synertec worked closely with ANSTO to develop a solution that would meet all requirements for safety and system integration.

Our experienced automation and electrical teams provided the safety requirement specification along with the complete design of all hardware and software. The full design package also included the design of the electrical and instrumentation systems incorporating a complete suite of drawings. Panel and cabinet layouts, cable schedules, loop drawings, and termination diagrams were included as well as a Supervisory Control And Data Acquisition (SCADA) control system for the SIS and ITS built on a virtual platform.

Throughout all project phases, Synertec were responsible for the full functional safety lifecycle for the SIS, including Safety Integrity Level (SIL) workshops and assignment, Safety Instrumented Function (SIF) calculations, and safety validation and verification.

Our project scope included the following main elements:

- Safety requirement specification
- Full hardware and software design and supply (SIS and ITS)
- Electrical & instrumentation design
- System validation