Robotics

IRC5
Programming and Operation

Course Outline
Duration 5 days
Beneficial to programmers, operators and maintenance staff

Subject areas

Safety Instructions
- Emergency stops
- Enabling device
- Cell interlocking and modes of operation
- Brake release and Pinch points
- Program reset and Collision awareness

System Description
- Robot and external mechanical units
- Control system and Operators panel
- FlexPendant

Program Operation
- Starting, stopping and stepwise program operation
- The program Editor and Production windows
- Teach, Test and Production operation
- Override speeds
- Continuous & Cycle running modes
- The Program and Motion pointers
- Start up and Shut down procedures

Jogging the robot using the joystick
- Axis and Linear jogging
- Tool Re-Orientation
- Coordinate systems
- Jog speed and incremental positioning

Event messages and logs
- Error identification
- Recovery

Programming Theory
- Creating a new program
- Instructions and pick-lists
- Move instructions (MoveJ, MoveL & MoveC)
- Modifying move instructions
- Saving and opening programs
- File Management & Backup.

Program editing
- Deleting, inserting and changing
- Cut, copy, paste
- Selecting range

Tool point definition
- Tool centre point (TCP) theory
- Create a TCP using the approach point method

Work object coordinate definition
- Workobject theory (User and Object frames)
- Create a workobject using calibration points

Logical Instructions
- Inputs (WaitDI, WaitUntil)
- Outputs (Set, Reset, SetDO)
- Wait time

Routines
- Program flow and call chain
- Creating, calling & returning from routines
- Debug menu and program reset

Modules
- Task structure
- Program and System modules
- Backup and Restore
- Mass memory storage (hd0a and memory stick)

Data
- Robtarget, speed, zone, tool, workobject, numbers
- Data definition local / global
- Variable, Persistent and Constant

Decision making Instructions
- IF Then… and editing structure
- Compact IF
- While
- Test

Working with numbers
- Increment / decrement
- Clear

FlexPendant communications
- TPErase / TPWrite
- TPRead NUM / TPRead FK
- Comment

Evaluating Cycle times
- Clock data
- Starting, stopping and reading clocks

Objectives
On completion, participants will be able to perform:

- Safe robot operation
- FlexPendant operation
- System start up, shut down and error recovery
- RAPID programming and editing
- Programming and operation of inputs / outputs
- Tool and Workobject definition
- Backup and Restore system information