

# 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

TPEraser / TPWrite  
TPRead NUM / TPRRead 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