



CASE STUDY

DESCRIPTION

DESCRIPTION KUKA KRC2 KR240 Robot Milling Cell

Customer: COMMARQUE

Date: 06.11.17



COMMARQUE CASE STUDY

Country	UK, London	Date	06.11.17
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1 INTRODUCTION

The project is to design and build a control panel to integrate with Used Robot KUKA KR240 with Edition 5 Controller along with a two tonne capacity turntable and install and commission the robot and control panel.

The concept is for a milling cell utilising two different spindles that have common electrical and pneumatic connections and bracketry.

The inverter and all the cell control equipment will be housed in the Phoenix Control Panel.



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2 PHOENIX SCOPE

2.1 ROBOT IO

- To provide an interface between the robot controller and the peripheral equipment there are a number of digital inputs and outputs along with an analogue output module mounted in the cell control panel.
- Along with the coupler there are four off 4 digital input cards, two off 4 digital output card and an analogue output card.

2.2 THE DOOR SAFETY SWITCH

- The cell access door will be monitored by a Guardmaster two channel safety switch that is integrated into the robots operator safety circuit.
- The supply and installation of the door safety switch is in the scope of Phoenix Control Systems Ltd.

2.3 THE CONTROL PANEL



24VDC Main CB
24VDC Power Supply
24VDC Equipment CBs
Main Isolator

Spindle Run Relay
Estop Safety Relay
Operator Safety Relay
Reset Relay

Spindle Inverter
24VDC Terminal Strip
Beckhoff IO

Spindle MCB
Robot MCB
Door Safety Switch Terminal Strip

X11 Connector (Robot Safeties)
X15 Connector (Tool Rack)
X12 Connector (Spindle IO)
X1 Cable (Robot Power)



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Main Isolator

Panel Fan Exit Filter

Cycle Start Button (Green PB with Lamp)

Programmable Button (Red PB with Lamp)

Drives On Button (Orange PB with Lamp)

Reset Button (Blue PB)

Estop Button

Panel Fan Entry Filter



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2.4 INSTALLATION, COMMISSIONING

- The electrical install of the robot (there will be no containment), put in place and connection of the controller supply cables, data cables, motor cables and earth bonding).
- The electrical install of the spindle cables (put in place and connection of the cables from the robot back plate (found on the rear of Axis 1), to the control panel)
- The electrical install of the cell control panel (there will be no containment) and connection of the cables from the control panel to the main incoming supply, from the control panel to the door lock).
- The commissioning of the robot (mastering, floor defined working base data, turntable root point and offset along with two spindle tool definitions for the cutting trials).
- The commissioning of the safety circuits (Estop and Operator safety) and control panel push button controls.
- The programming and testing of the auto tool changer sequences.

2.5 TOOL RACK

- The ten position tool rack



2.6 ELECTRICAL SUPPLY

- Phoenix will connect the control panel supplies into the wall mounted 32Amp 5 pin socket supplied by the Client. (Note cable lengths have been calculated based on a distance of 10 metres between supply point and the Phoenix Control Panel)



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2.7 INSTALLATION ITEMS

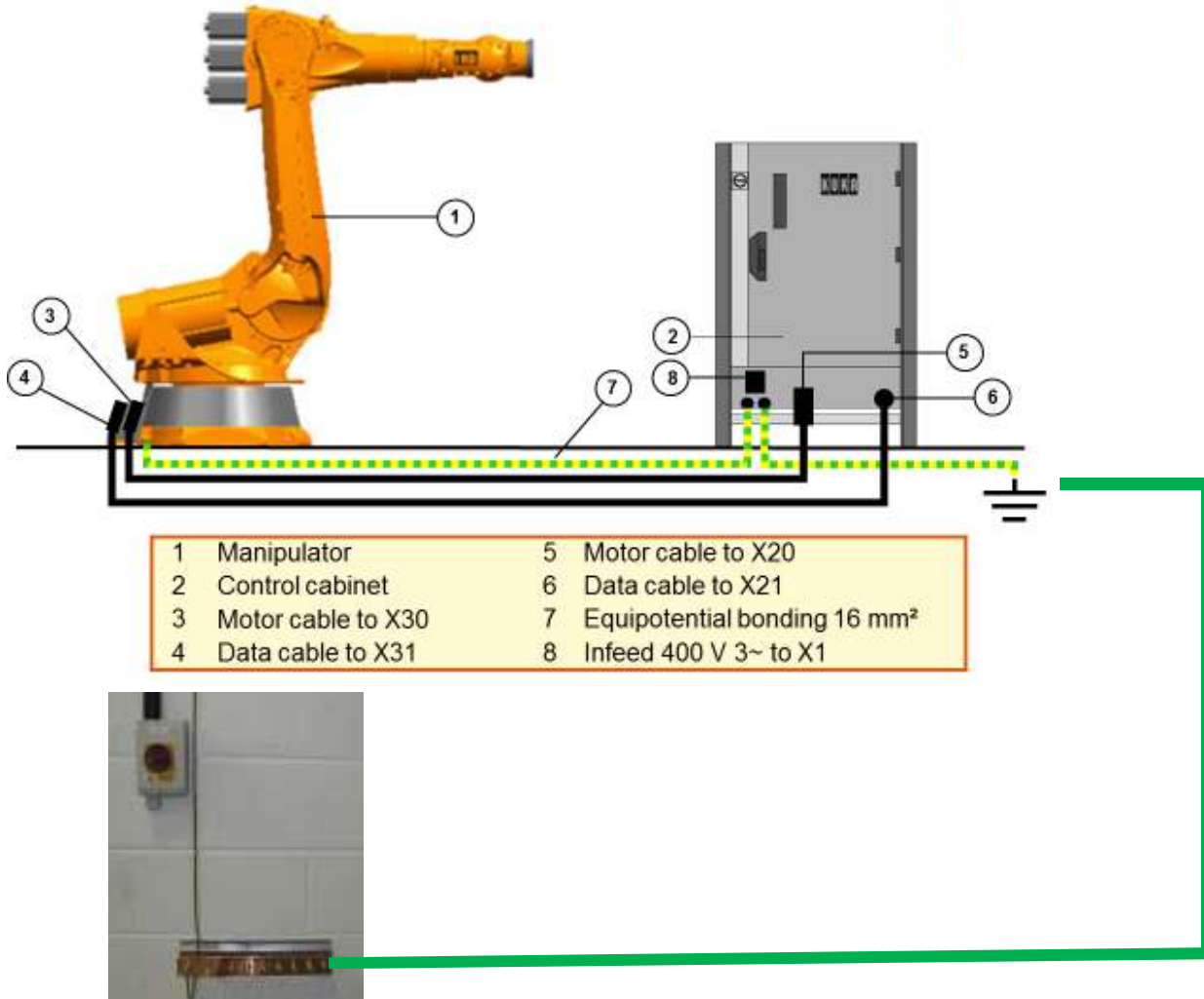
- The mechanical installation of the robot and turntable. (The client will carry out this task under the direction of Phoenix Control Systems Ltd)
- The mechanical installation of the ten-position tool rack. (The client will carry out this task under the direction of Phoenix Control Systems Ltd)
- The mechanical install of the Phoenix Control Panel on it's stand. (The client will carry out this task under the direction of Phoenix Control Systems Ltd)

2.8 TRAINING

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Equipotential Bonding

The robot and controller need to be bonded to a building earth as below.



Kevin Amos
Project Manager



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3 PHOTOS

