

# Sam Harries Presentation

*by* David Harries

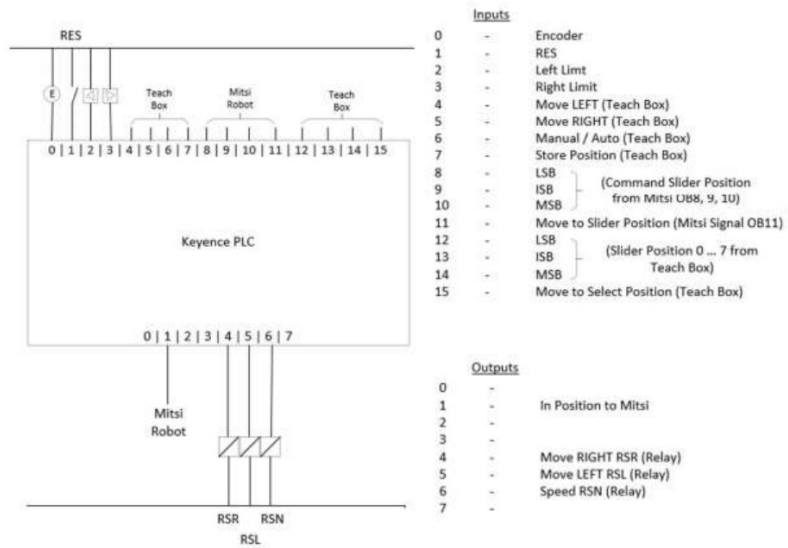
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|----------------|----------------------------------------------------------------------------|-----------------|-----|
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| TIME SUBMITTED | 12-JUN-2020 07:52AM (UTC+0100)                                             | WORD COUNT      | 81  |
| SUBMISSION ID  | 130571926                                                                  | CHARACTER COUNT | 460 |

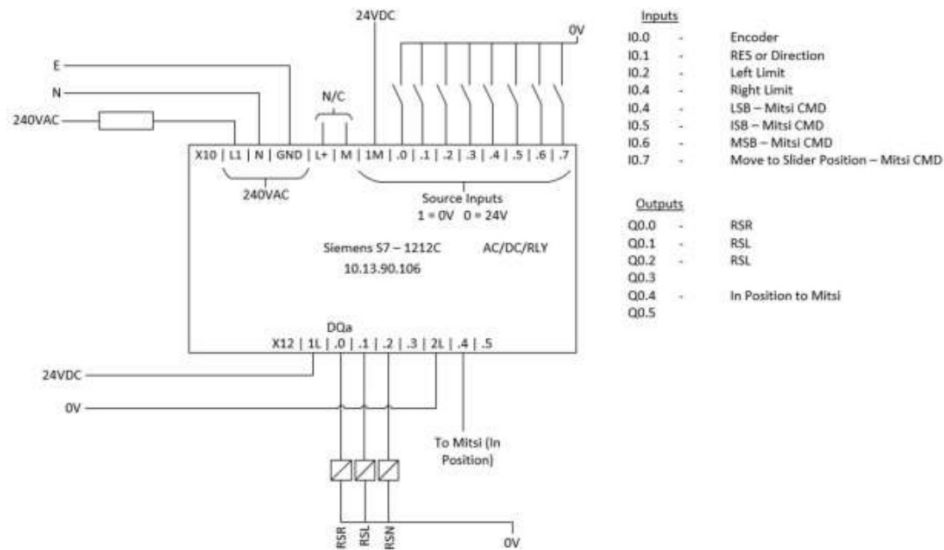
# Linear Drive System

SGEE6003 Major Project

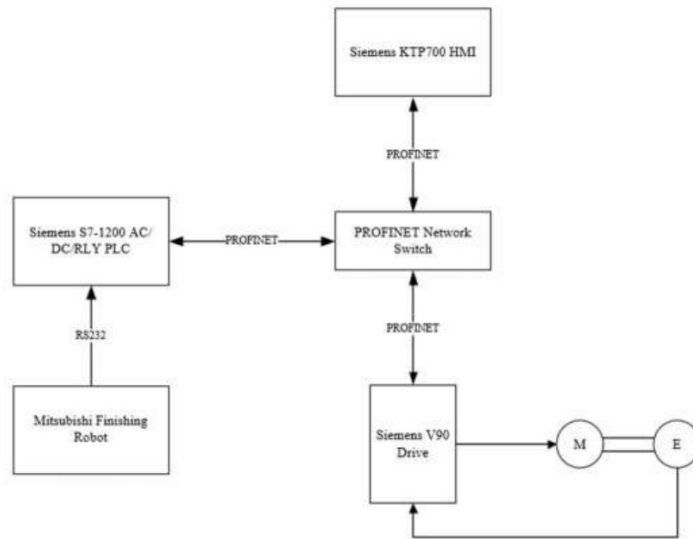
# Replacing Existing Hardware



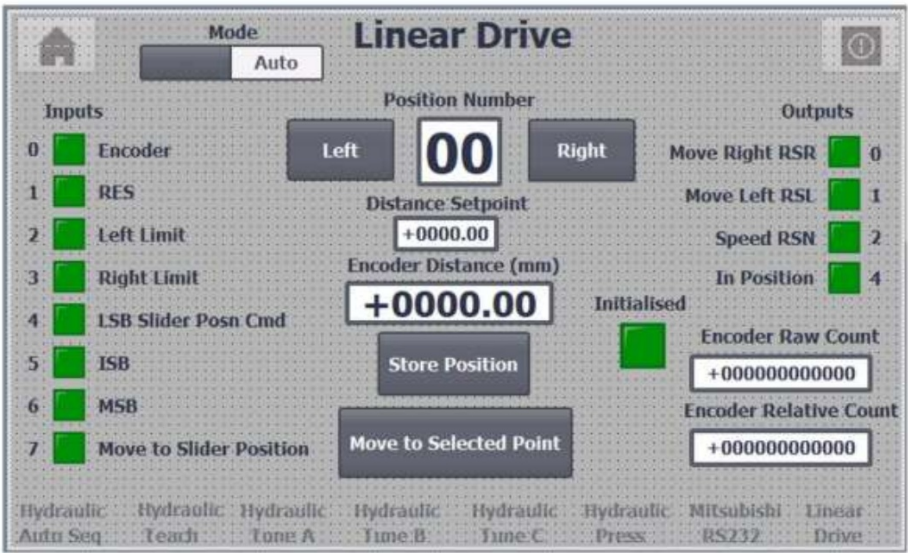
# Replacing Existing Hardware



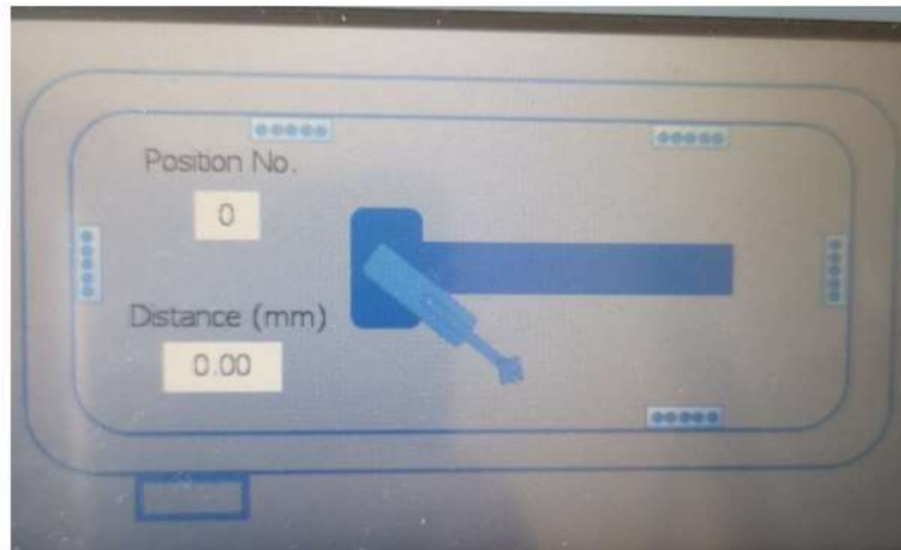
# System Block Diagram



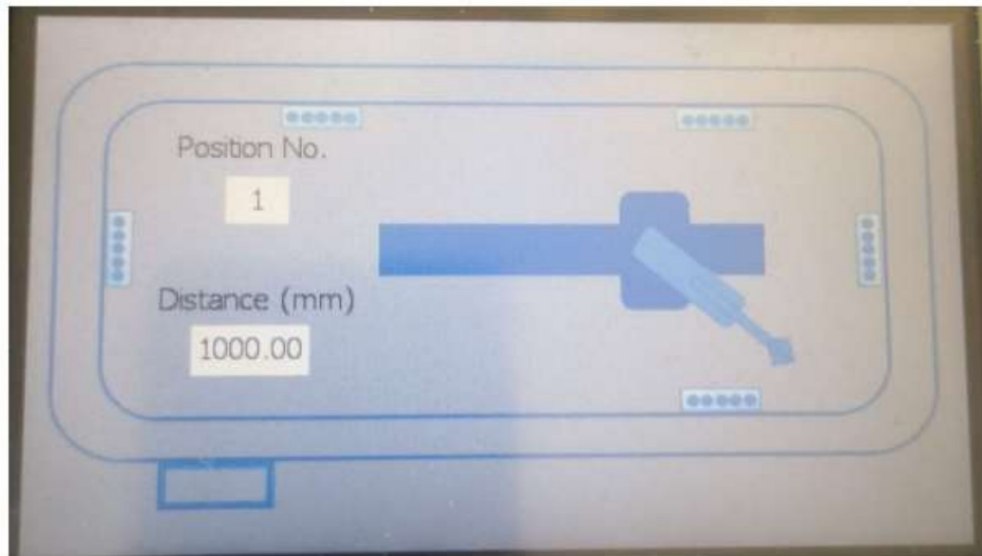
# New HMI Screen



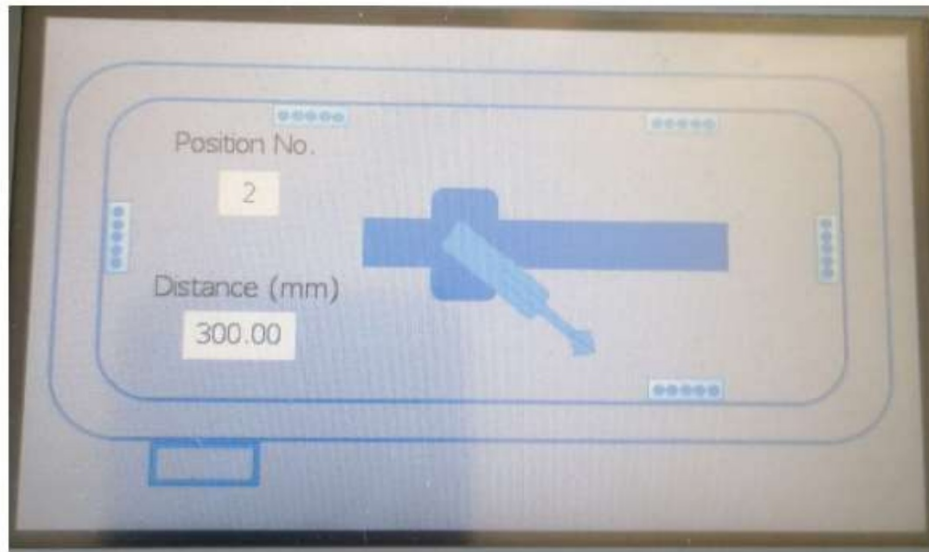
## Mimic – Position 0



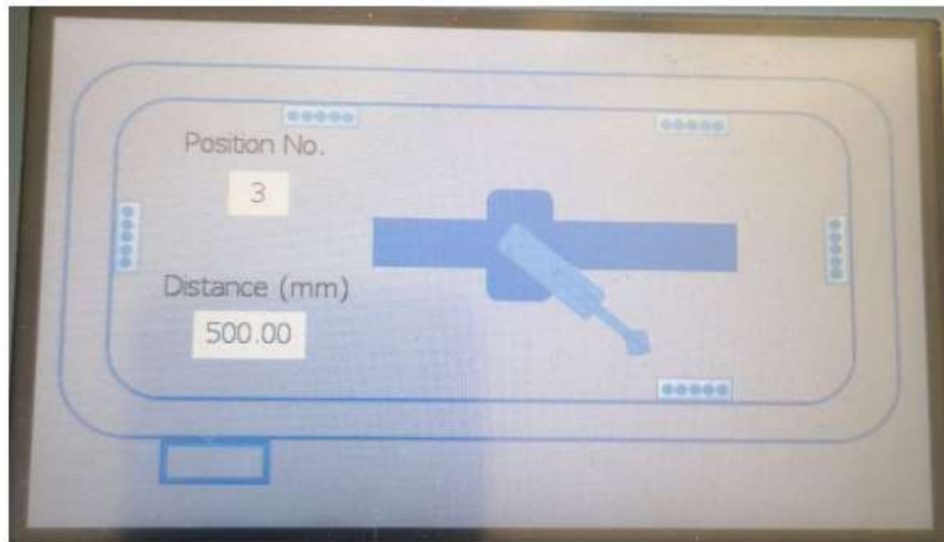
## Mimic – Position 1



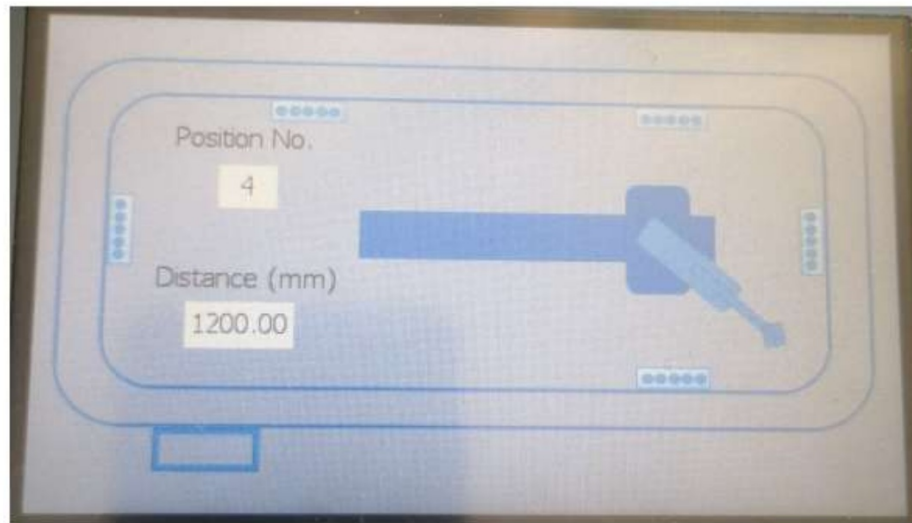
## Mimic – Position 2



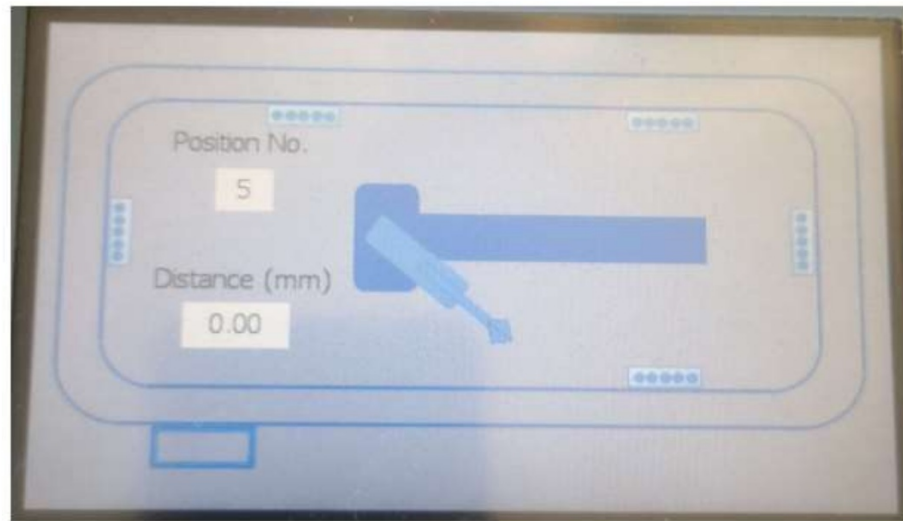
## Mimic – Position 3



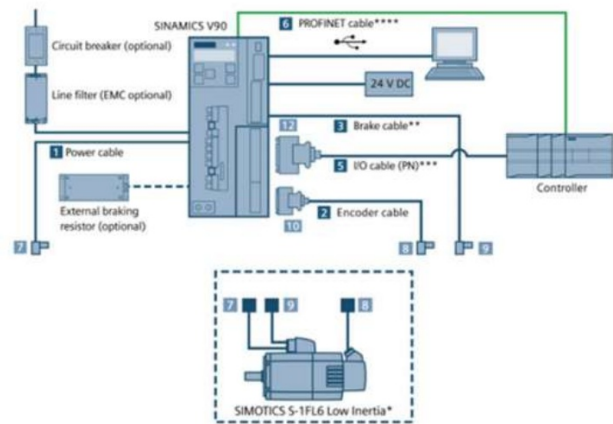
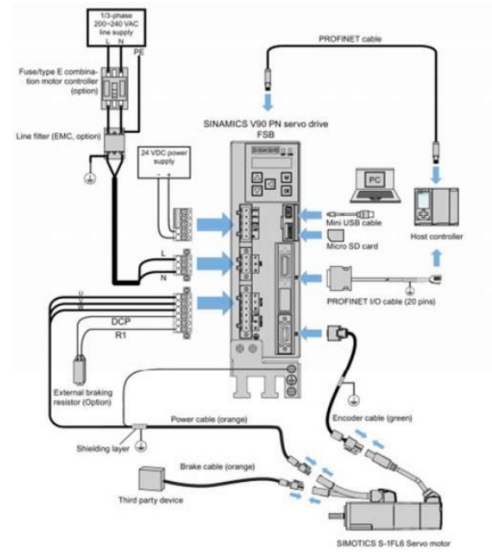
## Mimic – Position 4



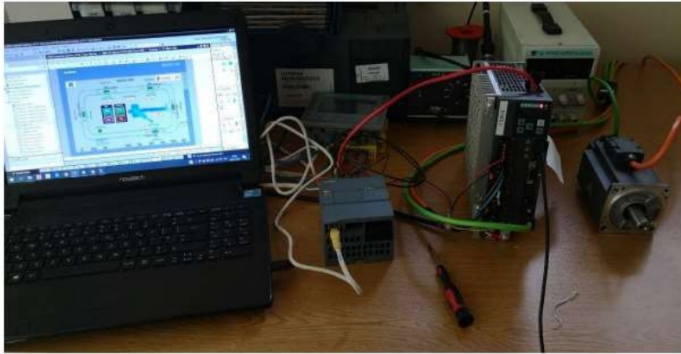
## Mimic – Position 5



# V90 Drive + Servo



## V90 Physical Setup



# Configuring Drive – V-Assistant



# Configuring Drive - Telegram

The screenshot displays the Siemens SINAMICS V-ASSISTANT software interface, specifically the 'Speed control mode' configuration window. The interface includes a task navigation pane on the left with options like 'Select drive', 'Set PROFINET', 'Select telegram', 'Configure network', 'Parameterize', 'Commission', and 'Diagnostics'. The main area shows the 'Selection of telegrams' section, where the current telegram is set to 'S: Standard telegram 3, PZD-5/9'. Below this, a text box explains that process data (PZD) links are set up automatically. The 'PZD structure and values' section is divided into two tables: 'Receptive direction (PZD count=5)' and 'Transmit direction (PZD count=9)'. Both tables list telegram numbers, descriptions, and values.

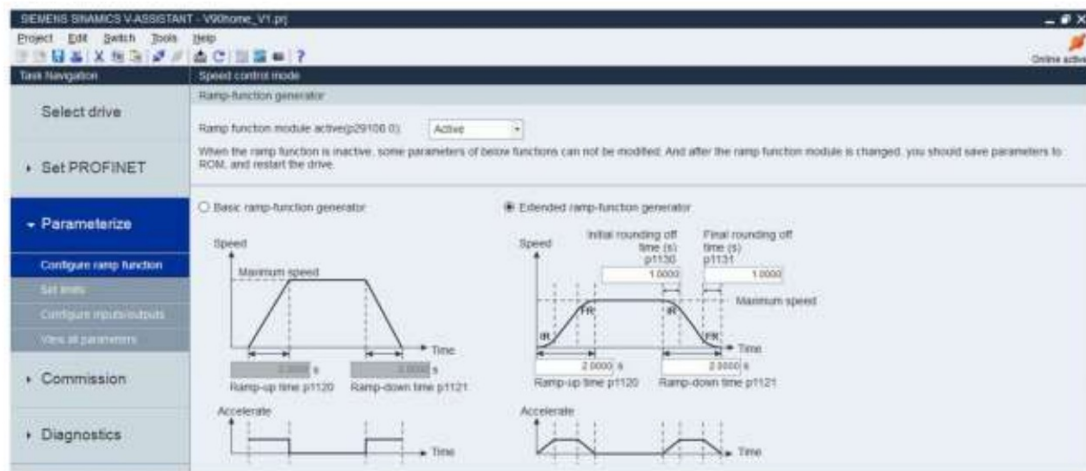
**Receptive direction (PZD count=5)**

| Telegram | Description                               | Value |
|----------|-------------------------------------------|-------|
| STW1     | Control word 1                            | 0400H |
| bit0     | rising edge = 0: pulses can be enable     | 0     |
| bit1     | 1 = No OFF2 (enable is possible), 0 =     | 0     |
| bit2     | 1 = No OFF3 (enable is possible), 0 = OFF | 0     |
| bit3     | 1 = Enable operation (pulses can be en    | 0     |
| bit4     | 1 = Operating condition (the ramp-funct   | 0     |
| bit5     | 1 = Continue ramp-function generator,     | 0     |
| bit6     | 1 = Enable setpoint, 0 = inhibit setpoint | 0     |
| bit7     | rising edge= 1: Acknowledge faults        | 0     |
| bit8     | Reserved                                  | 0     |

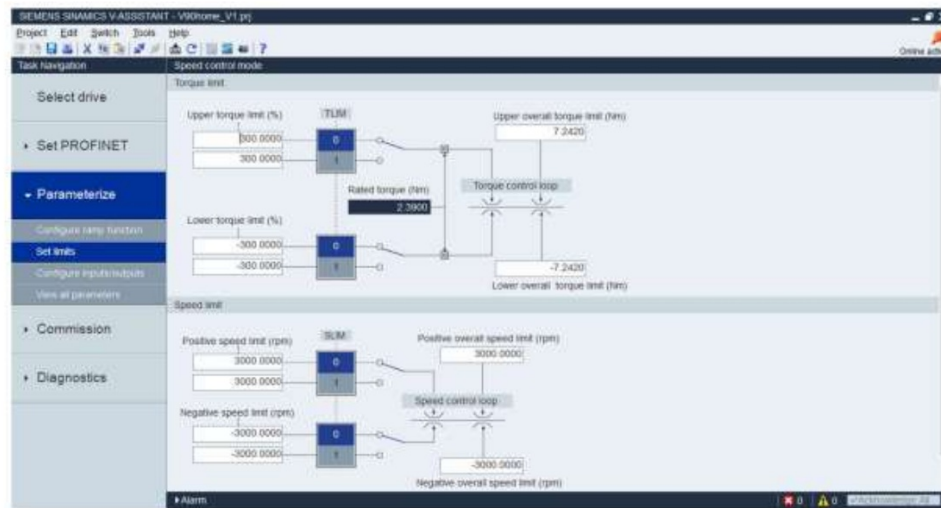
**Transmit direction (PZD count=9)**

| Telegram | Description                              | Value |
|----------|------------------------------------------|-------|
| ZSW1     | Status word 1                            | EB40H |
| bit0     | 1 = Ready for servo on                   | 0     |
| bit1     | 1 = Ready for operation                  | 0     |
| bit2     | 1 = Operation enabled                    | 0     |
| bit3     | 1 = Fault present                        | 0     |
| bit4     | 1 = No coast down active (OFF2 inactive) | 0     |
| bit5     | 1 = No fast stop active (OFF3 inactive)  | 0     |
| bit6     | 1 = Switching on inhibited active        | 1     |
| bit7     | 1 = Alarm present                        | 0     |
| bit8     | 1 = Speed setpoint - actual value deviat | 1     |

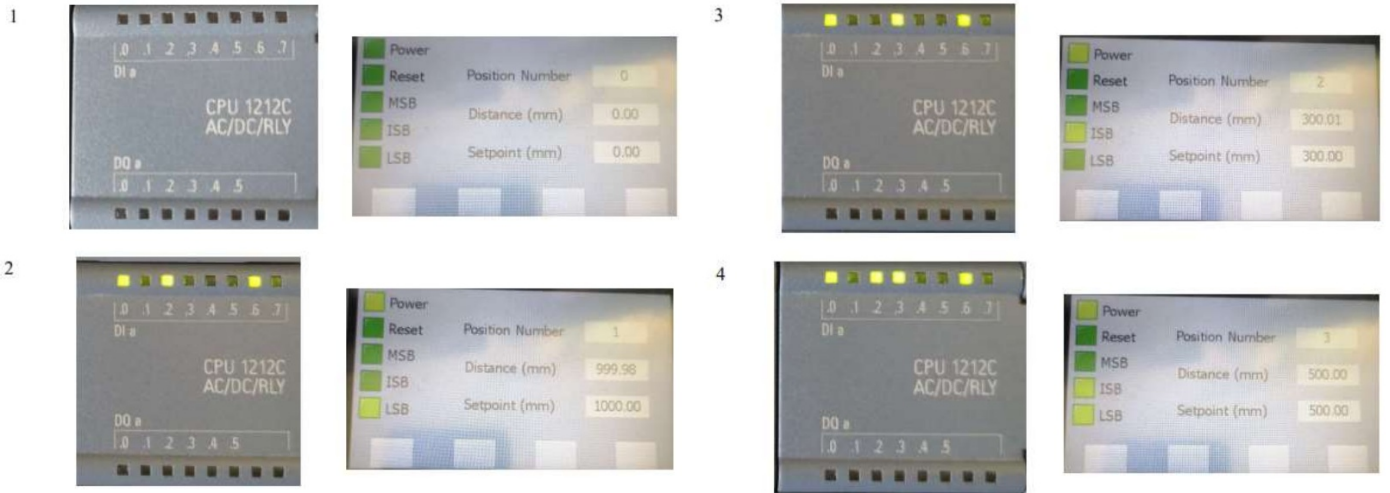
# Configuring Drive - Parameters



# Configuring Drive - Limits



# V90 Tests

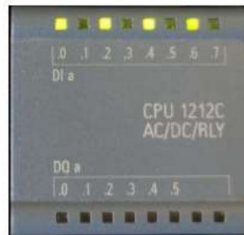


# V90 Tests

5



6



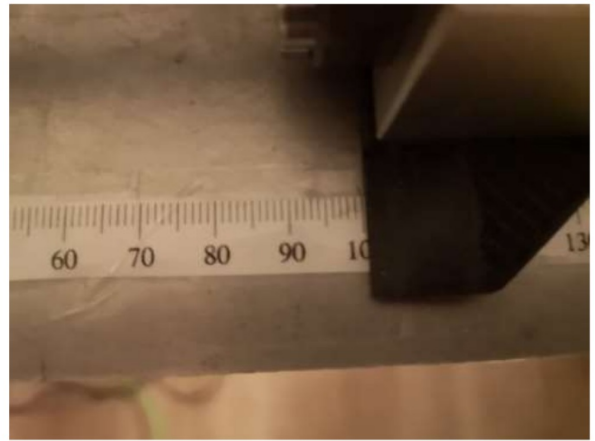
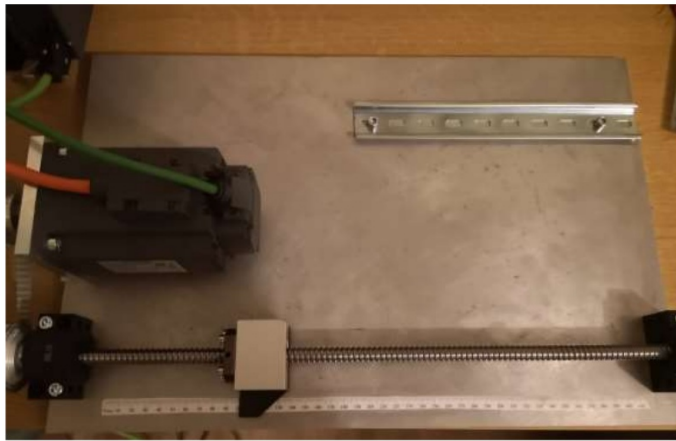
# Test Rig



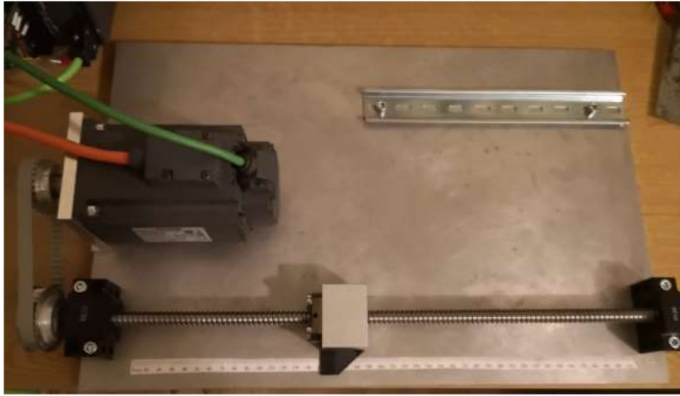
# Test Rig



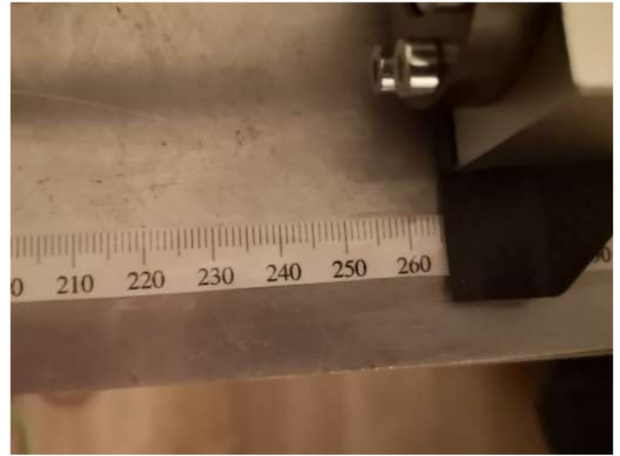
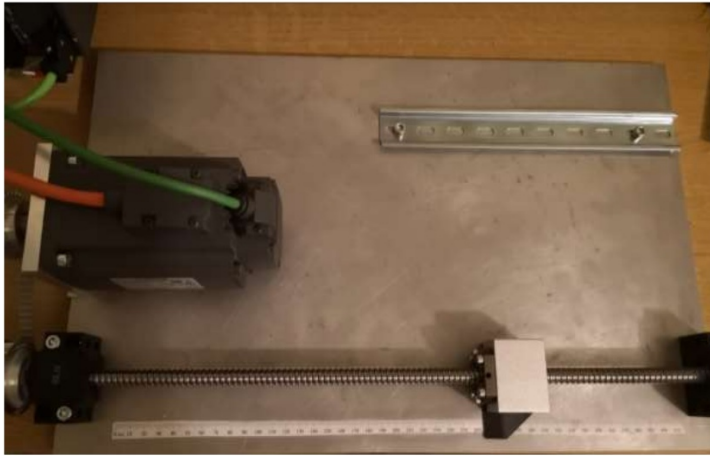
## Test Rig – Position 1



## Test Rig – Position 2



## Test Rig – Position 3



## Test Rig Position 4



## Conclusions and Questions

Sam Harries Presentation

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

63/100

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20

PAGE 21

PAGE 22

PAGE 23

PAGE 24

PAGE 25

PAGE 26

GRADING FORM: NEW CSG-RUBRIC

DAVID  
HARRIES

63

## 1. ENGAGEMENT WITH LITERATURE

-  Use of technical literature in final design solution: Evidence seen in slide 12 where manuals had to be consulted in order to make the correct connections. The V90 software was all used to set up the telegrams for communication between PLC and drive and other configuration information. Specific technical literature was not explicitly mentioned in the presentation, however there was implied evidence that technical literature had been used. 3/5 **3**

## 2. KNOWLEDGE AND UNDERSTANDING

-  Introduction: Introduction did not give an overview of what the project entailed, a short explanation of the aims and objectives for the project would have set the scene for those not directly involved during the project. 2/5 FDS: There was a clear understanding of the requirements of the project. Requirements to replace existing hardware, the system block diagram and HMI screen were explained. 3/5 Advanced knowledge and critical understanding demonstrated in the design of the project: The hardware design was excellent, plans were for fully integrating the drive system with the older components for seamless transition to new system. No panel was built due to restrictions encountered by Covid-19. Software briefly mentioned but not shown. 7/10 Response to questioning: Generally good but answers were brief and sometimes lacked detail. Prompting needed for some questions. Questions were generally well answered with a bit of hesitation on some of the wider issues. 6/10 Total = 18/30 **18**

## 3. COGNITIVE AND INTELLECTUAL

-  Testing and analysis of result: Good evidence of testing within the limits set by the Covid-19 pandemic with a test rig constructed to show operation. Extensive slides showing the configuration and testing of the drive system. Test rig was constructed and functional, but due to lockdown this was not fully completed. 7/10 Critical evaluation of the project outcomes and comparison with the FDS: Briefly stated with restriction explained. Evaluation of the project outcomes were explained and the main reason for not achieving all the planned activities was given as the Covid-19 lockdown and not being able to access the project at college or his employer's premises. 7/10 Overall conclusions and recommendations: A good explanation given with further plans for completion. Clearly lessons have been learned. Conclusions were given and further work explained in that a control panel would be constructed, followed by ProfiEnergy implementation. 7/10 Total = 21/30 **21**

## 4. PRACTICAL APPLICATION

-  Formulation of innovative and creative design solution to the project problem: Good evidence development using software, hardware and test rig. 4/5 Deployment method, use of material, tools, equipment and techniques in the construction of the project: Good methods adopted within restriction imposed by Covid-19. No panel built. Screens show good design. 3/5 Quality of the final product or system: The technologies and techniques initially proposed for implementing the project were found to be viable. 3/5 Use of test equipment and presentation of results of the project: Limited use of test equipment but results are well presented for screen and system movements. 3/5 Management techniques and planning, comparison with initial plan: Evidence of management techniques but little shown in presentation. However, upon questioning, Sam spoke of the use of his work breakdown structure, log book and Gantt chart. Planning improvements were mentioned 2/5 Total = 15/25 **15**

## 5. TRANSFERABLE SKILLS

-  Quality of the presentation slides: Good but far too many slides (26?) for an 8-minute presentation, many of the testing slides could have been condensed to a single table rather than a series of photographs. 3/5 Quality of the delivery style: Good style, confident delivery. However, time was exceeded by 1 ½ minutes. **6**

Presentation was delivered with confidence, especially considering the circumstances of having to use a mobile phone and not being able to see the panel members. 3/5 Total = 6/10