

Project Design preestation

by Nicholas Devoy

FILE	15326_NICHOLAS_DEVOY_PROJECT_DESIGN_PREESTATION_166238_274409146.PPTX (2.24M)		
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Company background

Tata Steel Europe

- One of the largest Steel producers in Europe
- Are one of the leading steel manufactures in strip and long products
- Trostre works consists of over 13 different process lines
- Types of steel coated include: Tinning, chrome coating and protact.

Tata group are in possession of many company's spanning multiple sectors such as:

- Tata Automotive
- Tata Beverages
- Tata Technology
- Tata Steel Europe



The Problem

- The current Function spare assembly is old
- DC Drive and PLC need upgrading
- Allen Bradley 1336 plus
- Doesn't conform with site standards



The Project

Objective

An upgrade on the FSA (Functional Spares Assembly) to test incoming devices to be used on all of the lines within the Trostre site, these will include:

- AC motors
- DC motors

Specification

Process specification - What must the prototype do?

- The prototype must be able to function test and operate all devices listed on the last slide.
- Depending on the situation, the devices must feedback to the PLC on the FSA to control for example, a motor or fan.
- The PLC must show up prototype alarms as if it would on the line to make sure that the device is functioning correctly.
- The PLC must send the alarms to the prototype HMI screen.

Electrical Specification

- Must be able to use PID control
- Each drive will have its own isolator
- The Drives will be linked with the PLC software

Why must this project be done?

- Allows the line to run whilst devices are being tested.
- Less time wasted.
- Able to discover faults before it goes on the line.
- Save money



Solution One

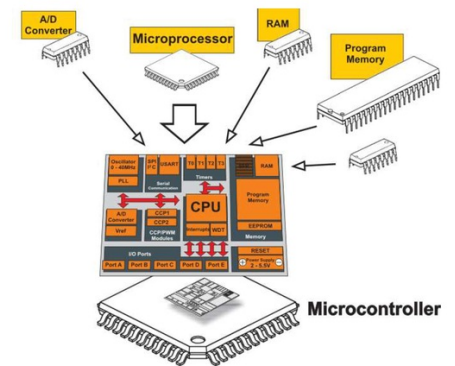
Micro-logic programme

Advantages of using Micro-Logic Programme:

- size of a circuit can be reduced significantly.
- Generally cheaper than drives.
- Reliable

Disadvantages of using Micro-Logic Programme:

- Not Suitable for work place (not heavy duty).
- Requires a good programming knowledge
- Limited I/O
- Specific spares required



Solution Two

Basic Drive

Advantages

- Cheap
- Easy to install

Disadvantages

- Wont have accurate speed control due to no encoder slot.
- It wont have a tension loop to accurately control the tension of a process line



Chosen options

Siemens S7 300 PLC

- Versatile
- Conforms with site standards
- Familiar
- Unlimited I/O
- Reliable
- Ease of operation

ABB DC800 Drive

- Conforms with site standards
- Familiar
- Has a slot for encoder
- Has a built in fan
- Easy set up
- Local/Remote available

ABB AC550 Drive

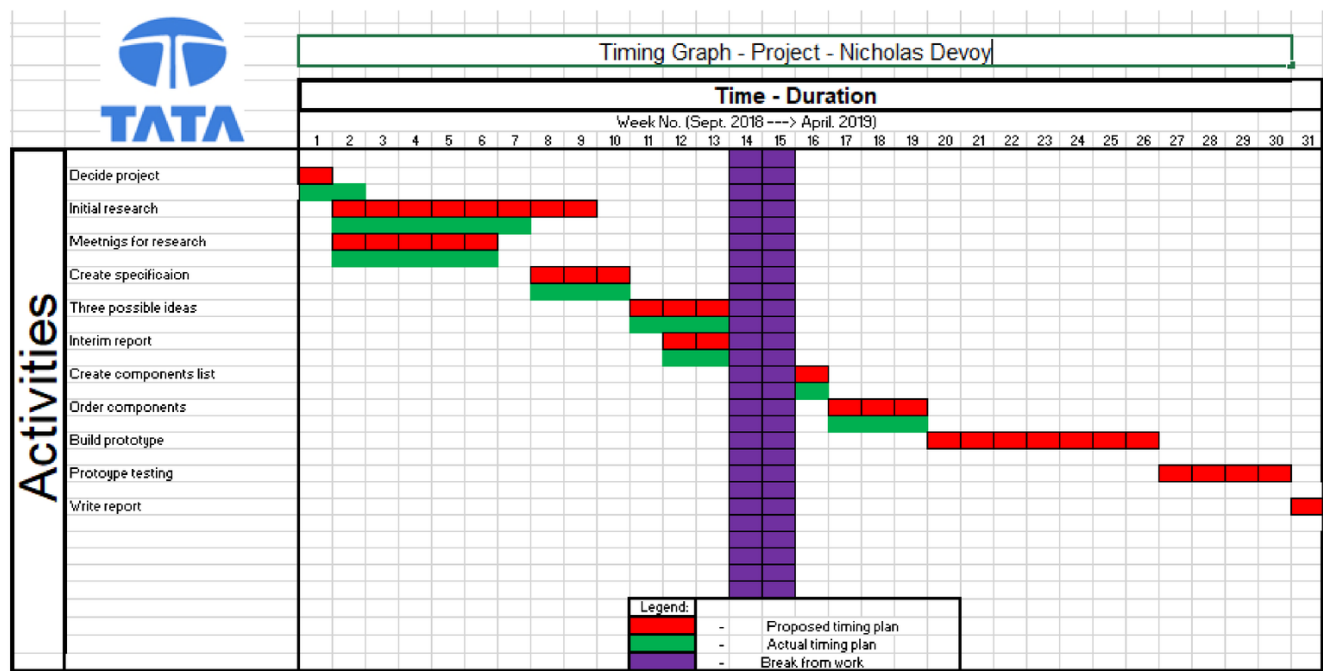
- Conforms with site standards
- Familiar
- Easy set up
- Local/Remote option
- Compatible with Siemens PLC

Pricing and Scaling

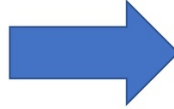
- ABB DC800 - £1000
- ABB AC550 - £4000
- SIEMENS PLC S7 300 - £700
- SIEMENS I/O - £500
- HMI - £300



Gant chart

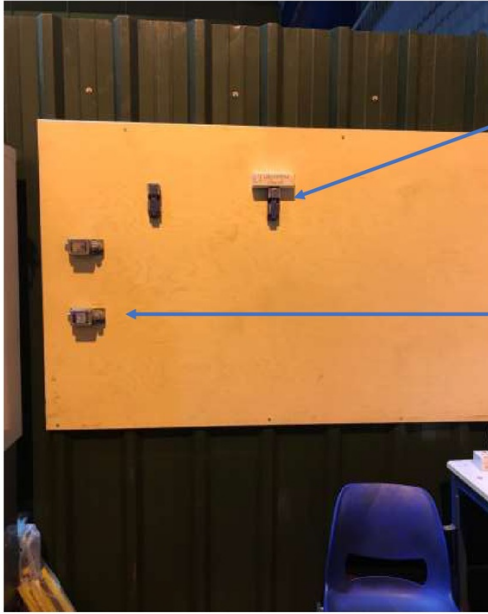


Progress



Extra

Active simulations



Inductive sensor

Limit Switch

Final test of project

- There will be different programs written for different scenarios.
- Tested on every component.



Thanks for Listening

Any Questions



Project Design preestation

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

70/100

Instructor

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GRADING FORM: CSG-RUBIC

NICHOLAS DEVOY

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RESEARCH-INFORMED LITERATURE

 Project background investigation is evident. 7/10 Research into the solutions is good 6/10

13/20

KNOWLEDGE AND UNDERSTANDING

 Problem definition showed a good understanding. 4/5 Project constraints were not covered in the slides but were covered in the questioning section and comply with company policy. 2.5/5 Environmental and sustainability is was covered in the questioning and the project has a sustainability element to it. 3/5 Functional design was clear and a good understanding was demonstrated. 4/5 Response to questioning was good and professional. 7.5/10

21/30

ANALYSIS

 Problem definition from an analysis perspective was clear with test procedures explained. 3.5/5
Functional design specification was clear and included the important technical points. 7/10 Justification
of final solution was achieved by comparison of solutions and was explained in some detail. 3.5/5 **14/20**

PRACTICAL APPLICATION AND DEP.

 Design specification was clearly explained. 3.5/5 Critical choice of final solution was achieved with
comparison and explained very well. 7/10 Project planning was clearly explained using a Gant Chart.
3.5/5 **14/20**

SKILLS FOR PROFESSIONAL PRAC.

 Quality of slides was to a very good standard with the use of relevant images. 4/5 Quality of delivery
was professional. 4/5 **8/10**