Teaching materials
Guide notes 1. Introduction to the Test-Bed

MISCE project

Mechatronics for Improving and Standardizing Competences in Engineering

Competence: Automation Technology

Workgroup: University of Cagliari

University of Cassino and Southern Lazio

This document corresponds to the introduction lecture, presenting the experimental platform, for the competence ‘Automation Technology’ using the ‘Test-Bed_n.2’

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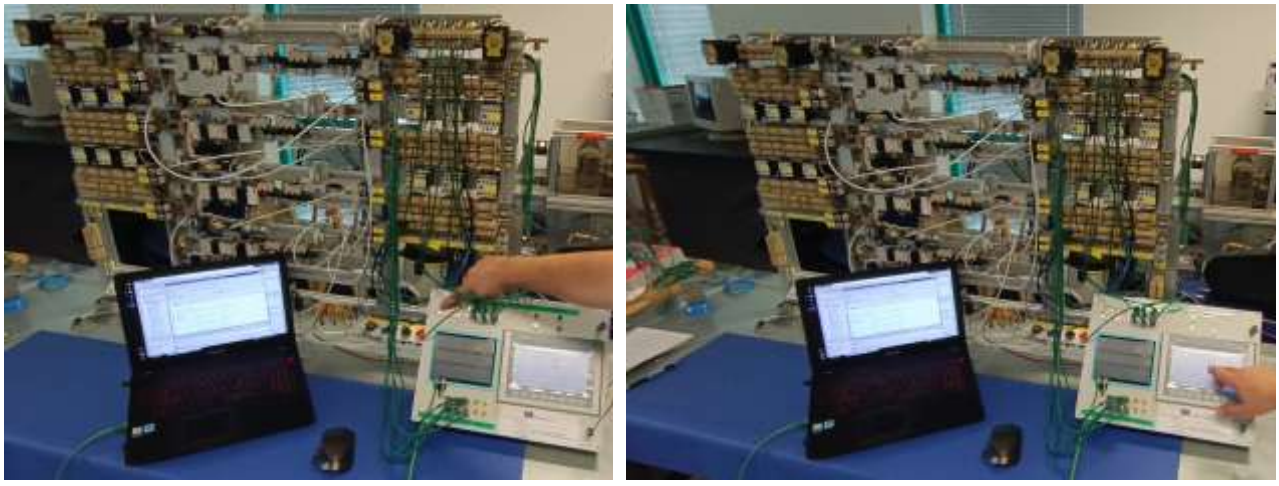
1 Platform overview

The final aspect of the experimental platform is shown in Figure 1.

Figure 1. Experimental platform overview

The main functional elements to understand the basic operation mode of the experimental platform are the following ones:



a) b)

Figure 2. Actuation of the system: a) Physical pushbutton; b) Virtual pushbutton

The Test Bed can be operated in a different way.

2 Software description

When launching the software for operating with the platform the image will appear (see Figure 3).

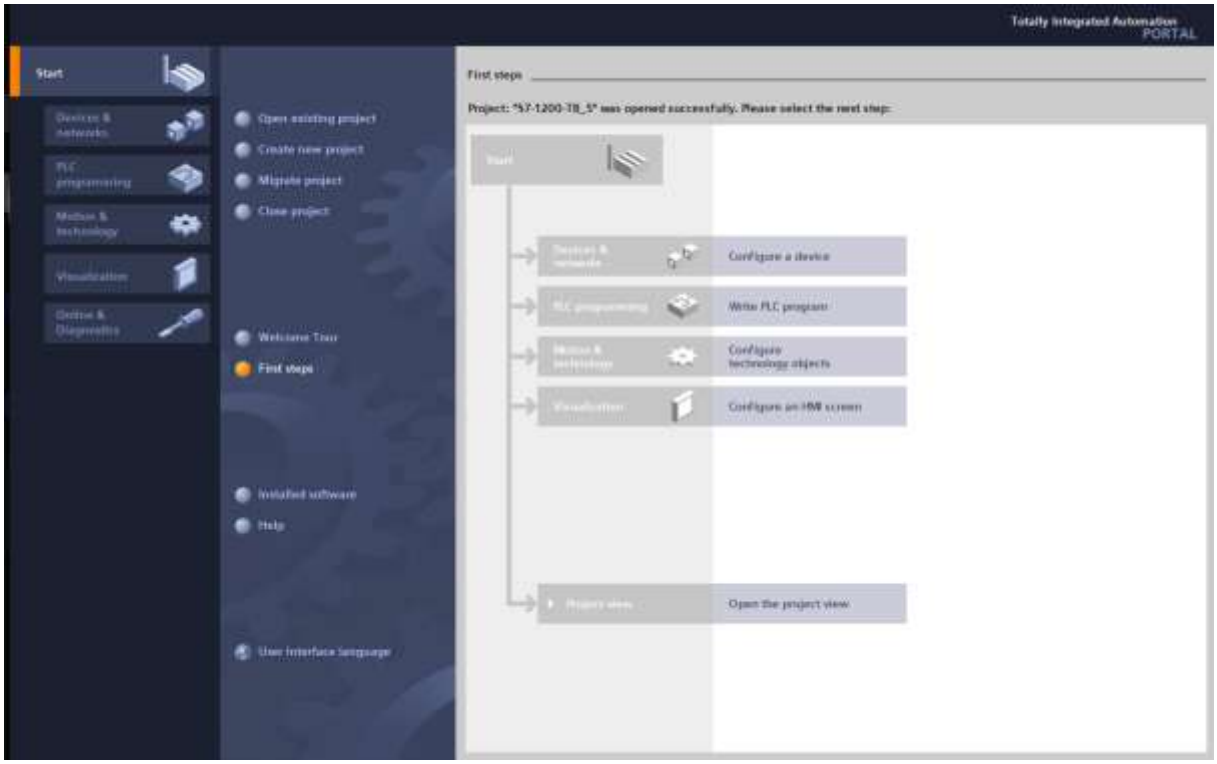


Figure 3. First step view of the Test-Bed_n.2

At this point, click on “open existing project”, and after, click on “Project View”.

When launching the “project View” for operating with the platform the image will appear (see Figure 4).

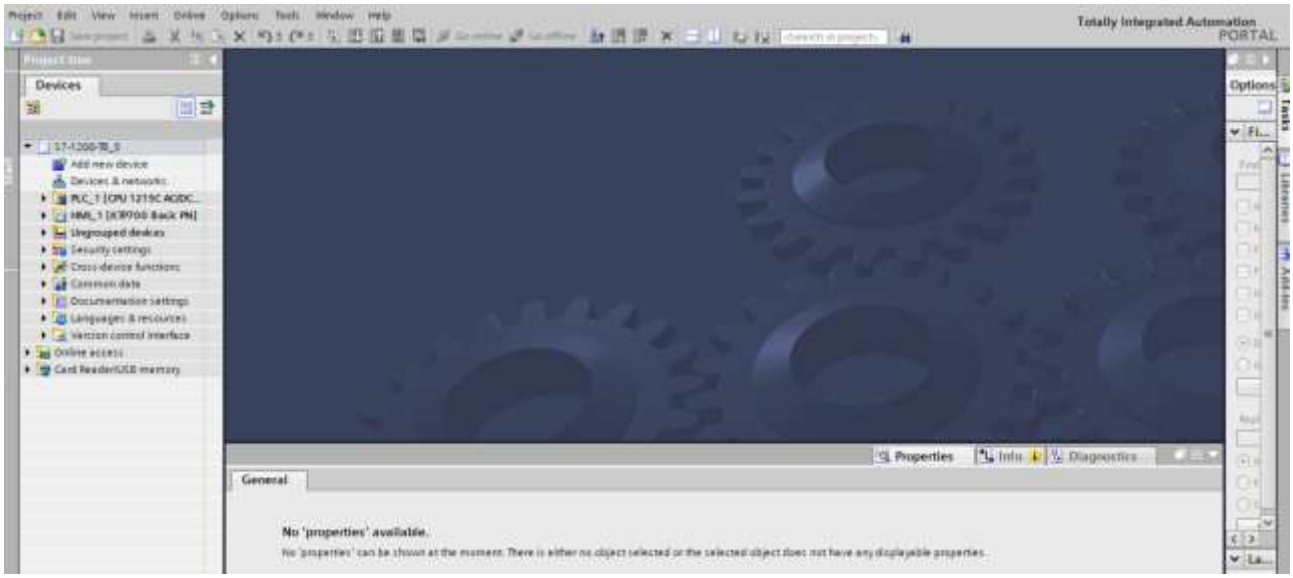


Figure 4. Second step view of the Test-Bed_n.2

At this point, click on “PLC_1”, click on “Program blocks” and after, click on “Main”. This image will appear:

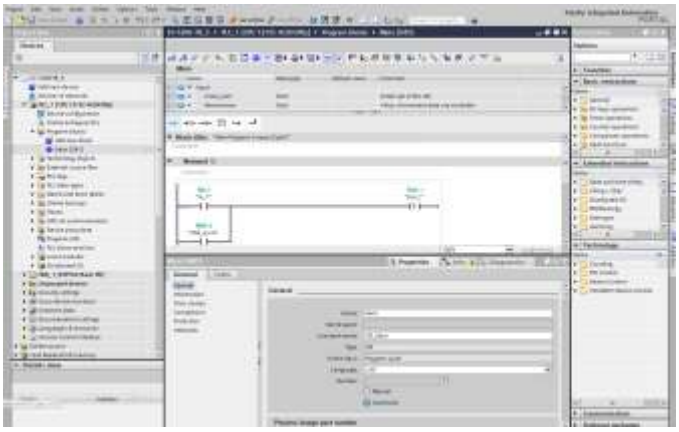


Figure 5. Third step view of the Test-Bed_n.2

At this point, click on “Accessible devices”, to connect the PC with the PLC, the following image will appear:

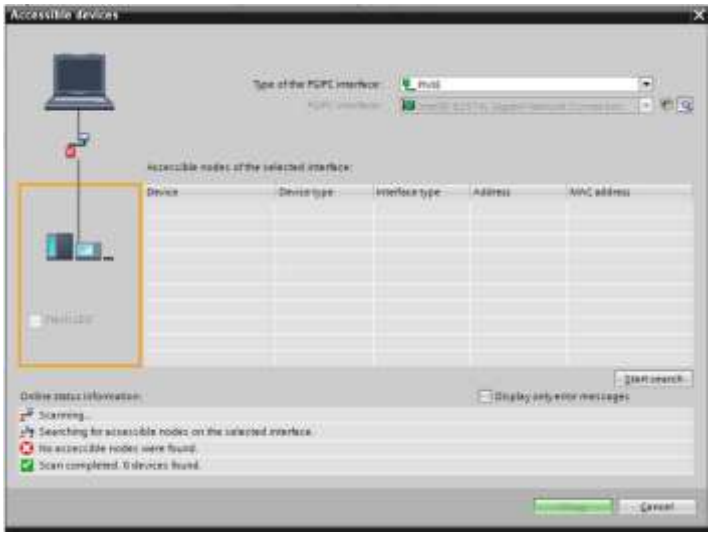


Figure 6. Fourth step view of the Test-Bed_n.2

Now click on “Start Search” and after, click on “Connect”. This image will appear:

At this point, click on “Download to Device  ” in order to download the software on the PLC.

When the connection to the test-bed is established the connection state will change to “Connected”.

At any time, if the user want to exit to the connection, the “GO off-line” 

button must be pushed.

Before to start the application is important to start the PLC, the button “Start CPU”  must be pushed. 

Referring to the image in figure 6, in first row (in the top) the input "%I0.7", is used for indicate the physical Start, *pushbutton*, of the test Bed.

Figure 7. Zoom-in of figure 1 of the Test-Bed_n.2 of the Ladder software.

Additionally, the test Bed can be operated by:

- Physical button
- Physical HMI

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2.1 Operation mode 1: Push Button 1

Some parameters of a can be selected by using the HMI (reported in figure.8-3).

In order to start the test-bed the button indicated with “X” in figure 8, must be pushed.

Figure 8. Subsystem of Test-Bed_n.2.

Procedure:

1. Click on button indicated by the ellipse in figure.

Result:

The pneumatic cylinders will start the movement.

2.2 Operation mode 2: Soft button on HMI

In order to start the test-bed the button named “START from HMI” in figure 9, must be pushed.

Figure 9. Subsystem of Test-Bed_n.2.

Procedure:

2. Click on “START from HMI” button.

Result:

The pneumatic cylinder will start the movement at the maximum velocity