

Monitorizarea Proceselor Industriale

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EVALUARE MATERIE

CRITERII DE EVALUARE	METODE DE EVALUARE	PONDERE DIN NOTA FINALĂ
Corectitudinea rezolvării problemelor specifice noțiuni practice		30%
Laborator		50%
Verificare finală		20 %

Sisteme de monitorizare



GAMA DE PLC-uri MODICON

Performance *

★
Best-in-class
performance



Logic controllers
Modicon M221/M221 Book



Logic controller
Modicon M241



Logic controller
Modicon M251



Motion controller
Modicon M258



Motion controller
Modicon LMC058

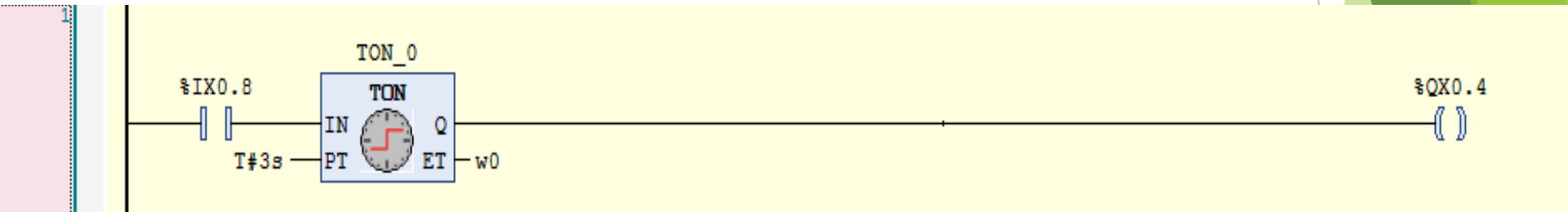
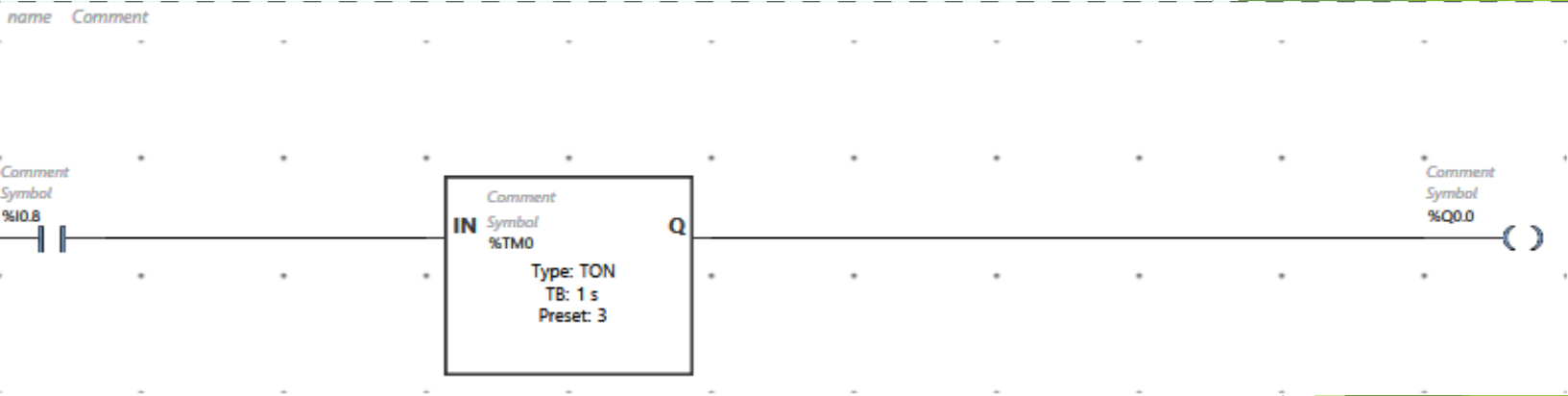


Motion controller
Modicon LMC078

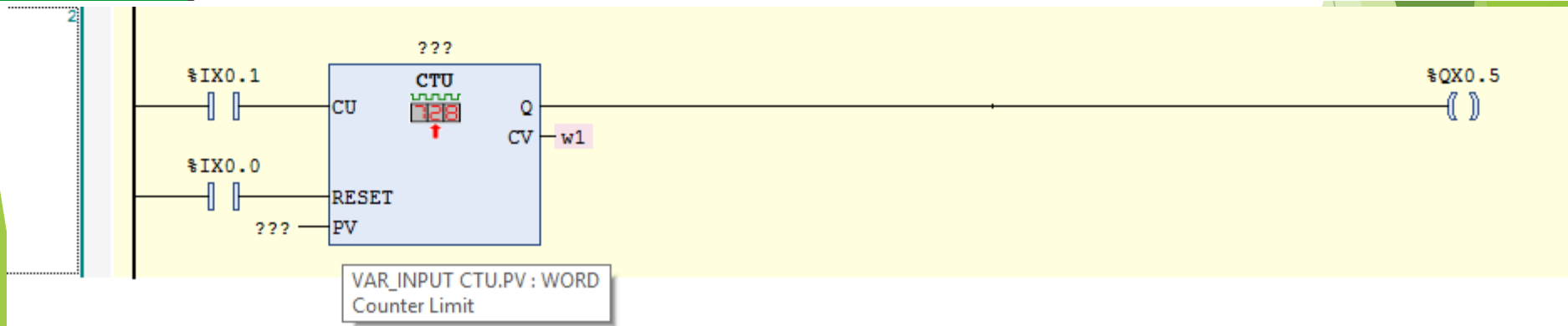
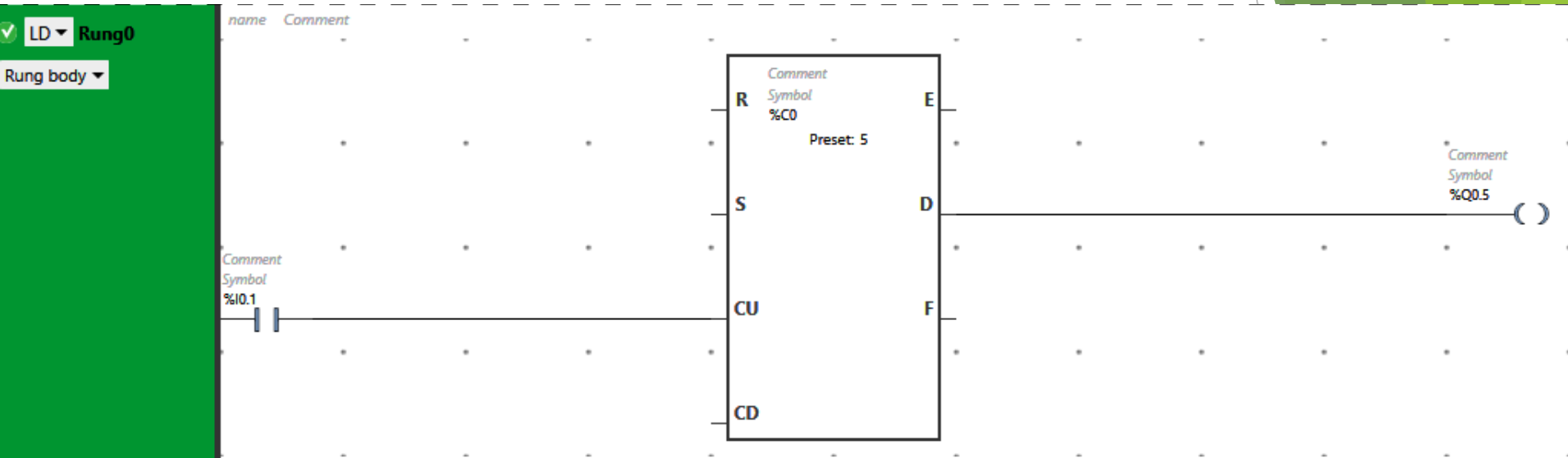
From logic to motion control, the Modicon range offers flexibility and scalability to suit your needs

Dezvoltare aplicații utilizând blocuri de funcții EcoStruxure Machine Expert – Basic versus SoMachine V4.3

LD Rung0
Rung body

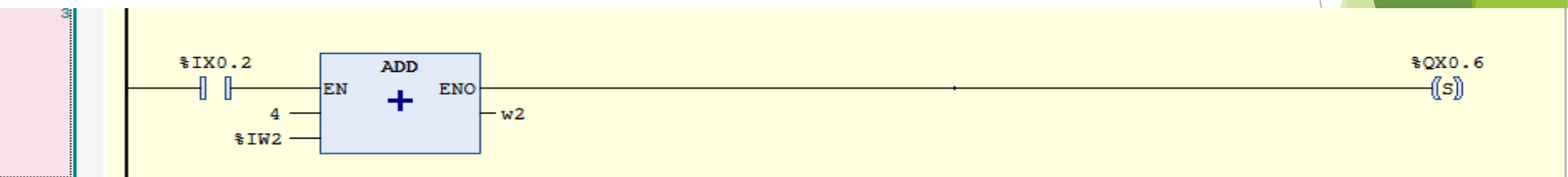
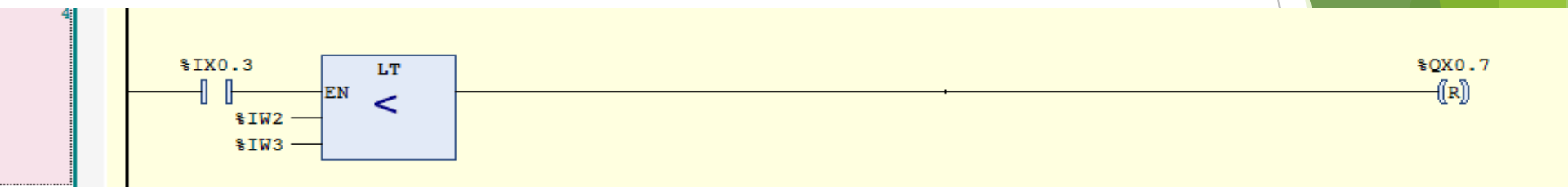
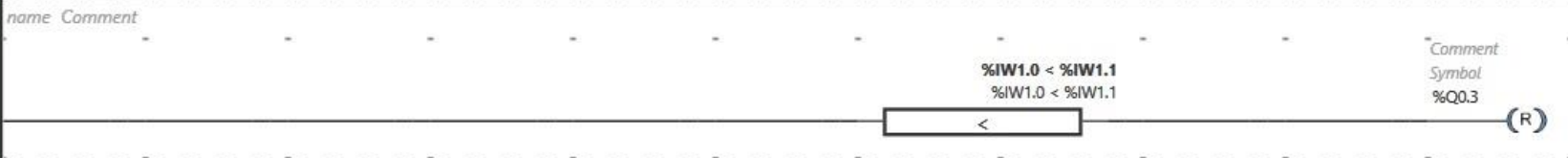


Dezvoltare aplicații utilizând blocuri de funcții EcoStruxure Machine Expert - Basicversus SoMachine V4.3



Dezvoltare aplicații utilizând blocuri de funcții EcoStruxure Machine Expert - Basic versus SoMachine V4.3

LD Rung4
Rung body



Cuprins

Ecranul HMI-ului

The image displays the Siemens SIMATIC Manager interface. On the left, the 'Navigator' window shows the project structure for 'Demo stand_M221_CSaracin_lan2018'. The 'HMISTU' folder is expanded to show 'Graphical Panels', which contains 'Base Panels'. The 'Base Panels' folder lists nine panels: '1: Start', '2: HMI_panel', '3: M221_panel', '4: Senzor_panel', '5: M221_imagine_analog_IN', '6: M221_imagine_DIO', '7: M221_imagine_analog_OUT', '8: M221_trend_AI', and '9: M221_alarms'. The '1: Start' panel is currently selected.

On the right, the 'HMISTU - Variable Editor' window shows the graphical design of the '1: Start' panel. The panel features the text 'Schneider Electric Automation' in green. Below this, there are three columns of images representing hardware components: 'Modicon M221' (a rack-mounted PLC), 'HMISTU855' (an HMI panel), and 'Senzori i' (three different types of sensors). At the bottom of the panel, the text 'Facultatea de Inginerie-Electrica BUÇURESTI' is displayed.

Schimbarea ferestrelor prin funcția Enable Touch Animation

The screenshot displays the HMISTU software interface with the 'Animation Properties' dialog box open. The dialog is configured to enable touch animation and set the 'Special' function to 'Change Panel' with the target panel '3: M221_panel'.

Animation Properties

Position Touch Visib.

Enable Touch Animation

Function	Operation	Condition
1 Special	Panel: M221_panel	Always

Function Setting

Function: Special

Previous Panel

Change Panel

3: M221_panel

Restart Runtime

Change Language (Runtime system)

Exit Runtime

Change Language (User application)

Configuration

PlaySound

StopSound

Configure

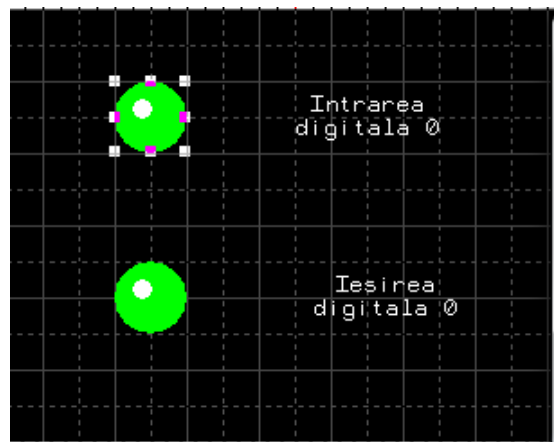
OK Cancel

Property Inspector

Image	
Name	Image02
Top	73
Left	24
Width	90
Height	62
File Name	C:\Users\cristina\Desktop\D
File Size	6 KB

Declararea unei variabile de ieșire digitale

The image shows a sequence of configuration windows for a digital output variable. The background window is 'New Variable' with tabs for 'Basic Properties', 'Data Details', 'IO Settings', 'Data Scaling', and 'Alarm'. The 'Data Type' is set to 'BOOL'. Overlaid on this is a 'Modbus (RTU)' dialog box with the following settings: Address: %Qi, Offset (i): 0, Bit (i): (empty), and Preview: %Q0. A second 'Modbus (RTU)' dialog box is also overlaid, showing 'Field' settings: Rack: 1, Module: 2, Channel: 3, and Preview: 0.0.0.



The 'Lamp Settings' dialog box has tabs for 'General', 'Color', 'Label', and 'Visibility'. The 'General' tab is active, showing the following settings: Name: Lamp01, Category: Primitive, Variable: DIO, State: [Off], and Style: 10001. The 'Style' dropdown shows a green circle with a white center.

Lista completă cu variabilele de intrare respectiv ieșire digitale de pe platformă

The screenshot displays the HMISTU Variable Editor interface. A 'Variable Properties' dialog box is open, showing the configuration for a variable named 'IC'. The dialog has several tabs: 'Basic Properties', 'Data Details', 'IO Settings', 'Data Scaling', and 'Alarm'. The 'Basic Properties' tab is active, showing the following fields:

- Variable Name: IC
- Description: (empty)
- Data Type: BOOL
- Array Dimension: 0
- Data Source: External (selected)
- Sharing: Read / Write (selected)
- ScanGroup: ModbusEquipment01
- Device Address: %I0.0.0
- Indirect Address: (unchecked)

Below the dialog box, a table lists the digital input and output variables for the platform:

Scan Group	Device Address
odbusEquip...	%I0.0.0
odbusEquip...	%I0.0.1
odbusEquip...	%I0.0.2
odbusEquip...	%I0.0.3
odbusEquip...	%I0.0.4
odbusEquip...	%I0.0.5
odbusEquip...	%I0.0.6
odbusEquip...	%I0.0.7
odbusEquip...	%I0.0.8
odbusEquip...	%Q0.0.0
odbusEquip...	%Q0.0.1
odbusEquip...	%Q0.0.2
odbusEquip...	%Q0.0.3
odbusEquip...	%Q0.0.4
odbusEquip...	%Q0.0.5
odbusEquip...	%Q0.0.6

Asocierea variabilelor de intrare respectiv ieșire digitale HMI-ului

The screenshot illustrates the configuration of digital input and output variables for an HMI. The main workspace shows a green panel with two sections: 'DIGITAL IN' (I0-I16) and 'DIGITAL OUT' (Q0-Q6). A 'Lamp Settings' dialog is open, showing the configuration for 'Lamp01'. The 'Variable' field is set to 'I0', and the 'State' is set to '[Off]'. An 'Expression Editor Pad' is also open, showing the variable list with 'I0 [%I0.0.0]' selected.

General | Color | Label | Visibility

Name: Lamp01 | Category: Primitive

Variable: I0

State: [Off]

Expression Editor Pad

Expression: I0

Variable List

- HMISTU
 - _IPAddressStatus
 - I0 [%I0.0.0]
 - I1 [%I0.0.1]
 - I2 [%I0.0.2]
 - I3 [%I0.0.3]
 - I4 [%I0.0.4]

Vijeo

OK | Cancel | Help

Asocierea variabilelor de intrare analogice HMI-ului

The image displays the SIMATIC Manager software interface, specifically the 'Variable Editor' window for an HMI project. The main window shows a graphical representation of the HMI screen with two analog input indicators. The left indicator is labeled 'ANALOG IN' and shows a value of 123. The right indicator also shows a value of 123. Below the indicators, there are two buttons labeled 'HOME' and 'TREND', and two buttons labeled 'BACK' and 'Analog OUT'. The 'Variable Editor' window is open, showing the 'Bar Graph Settings' for the variable 'AI1'. The settings include:

- Name: AI1
- Category: Primitive
- Plate Style: 00026
- Data Type: Integer (selected)
- Variable: analog_in_0
- Min Value: 4000
- Max Value: 20000
- Scale: Major 10, Minor 2

The 'Expression Editor Pad' is also open, showing the expression 'analog_in_0' and a list of variables available for selection:

- HMISTU
- _IPAddressStatus
- _ScreenSnapshot
- analog_in_0 [%MW0]
- analog_in_1 [%MW1]
- analog_in_2 [%MW2]
- analog_in_3 [%MW3]

Sistem de achiziții de date în rețelele de comunicație industrială

Astăzi: Fieldbus Măine: Ethernet

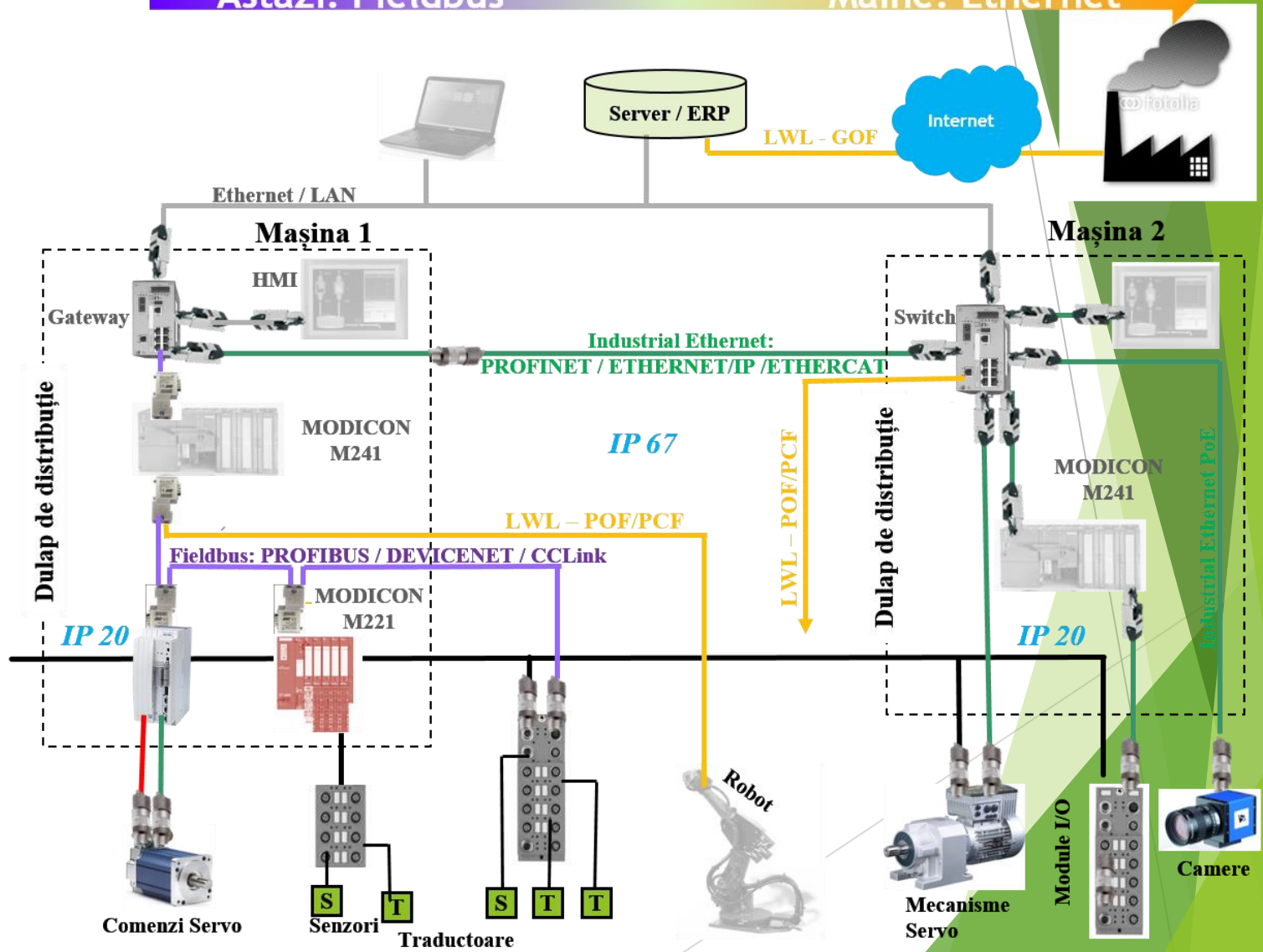
Rețea de birou
UNITRONIC LAN
HITRONIC

Fieldbus
UNITRONIC BUS/

Industrial Ethernet
ETHERLINE
EPIC DATA

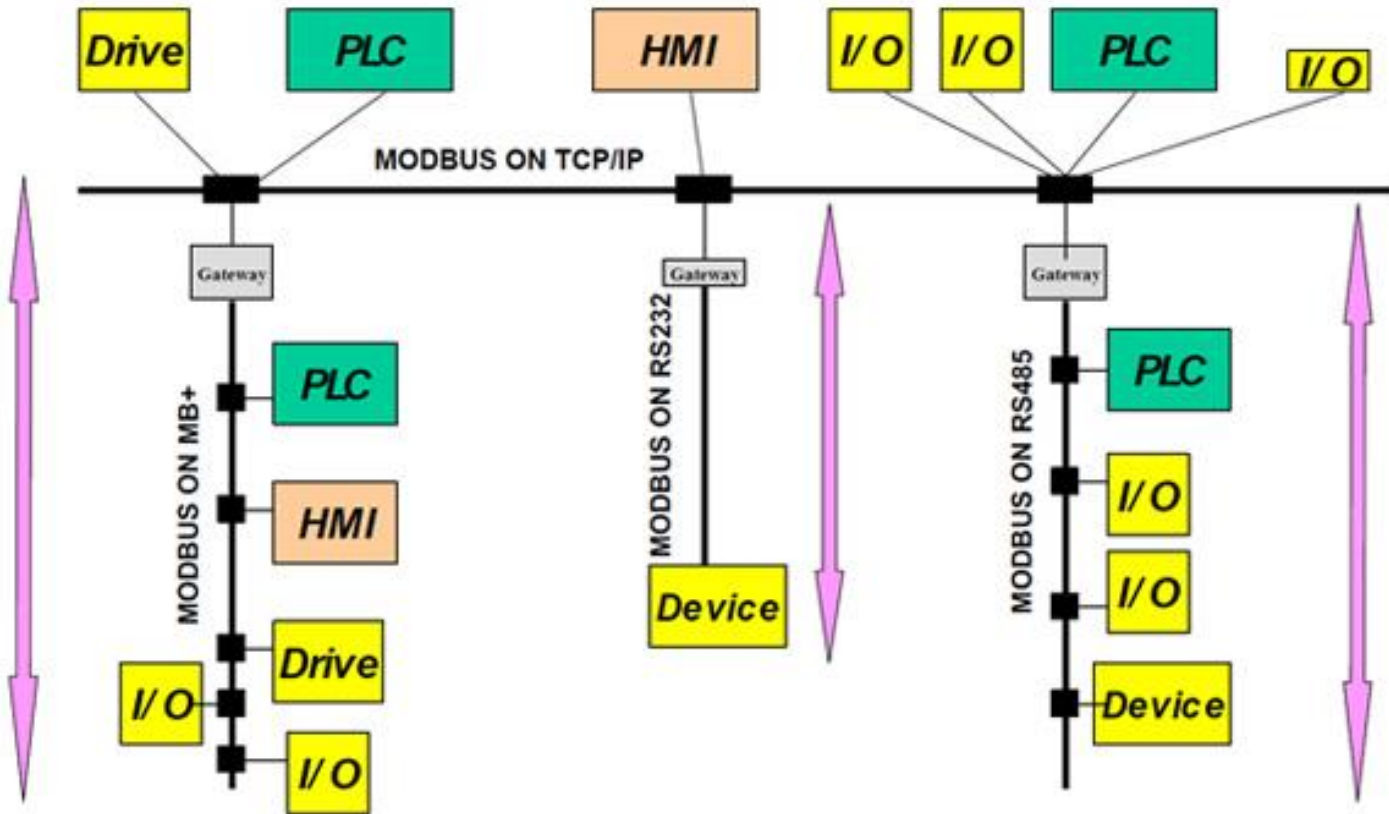
Alimentări
ÖLFLEX

Senzori / Traductoare
ETHERLINE
UNITRONIC S/A
ÖLFLEX Servo



MODBUS

MODBUS COMMUNICATION



Modbus RTU (Remote Terminal Unit) - rețea de dispozitive distribuite geographic care utilizează comunicații seriale

Modbus TCP/IP - extensie Ethernet a Modbus RTU

Rezultate Curs

- Cunoașterea elementelor fundamentale privind sistemele inteligente hardware-software de măsurare și control;
- Cunoașterea structurii procesului industrial utilizat pentru achiziția de date
 - ❑ Obținerea de cunoștințe privind automatele programabile prezente în procesele industriale
 - ❑ Obținerea de cunoștințe privind noțiunea de redundanță în procesele industriale
 - ❑ Obținerea de cunoștințe privind interfețele om-mașină prezente în procesele industriale

Rezultate Laborator

- ❑ Obținerea unor cunoștințe privind automatele programabile (Schneider, Honeywell);
- ❑ Obținerea unor cunoștințe din punct de vedere al utilizării software-ului dedicat programării automatelor;
- ❑ Obținerea unor cunoștințe din punct de vedere al utilizării software-ului dedicat programării interfețelor cu utilizatorul (HMI)
- ❑ Obținerea informațiilor privind schimbul dinamic de date (sisteme redundante);

Laborator Monitorizare Procese Industriale

