

A large industrial factory setting with a high ceiling and a complex network of steel beams. Several yellow robotic arms are positioned along a production line, working on car chassis. The scene is brightly lit, and the overall atmosphere is one of modern industrial automation.

BOLUWATIFE BADRU

AUTOMATION PORTFOLIO

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About Me

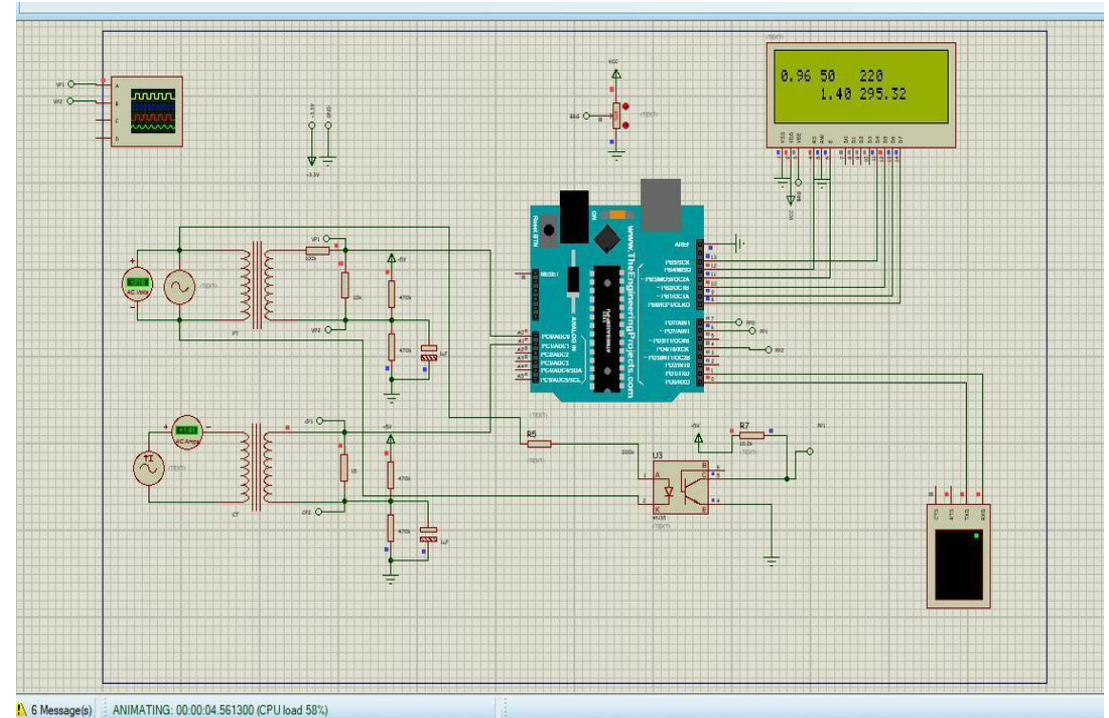
- I am Boluwatife Badru, an Industrial Automation Engineer that has completed multiple projects in his two years as an Automation professional. My expertise lies in the intricate world of PLC programming and SCADA/HMI development, where I revel in crafting code that breathes life into machines.
- For me, automation isn't just lines of code and flashing lights; it's a catalyst for progress. It's about pushing the boundaries of what's possible, streamlining operations, and unlocking the true potential of industrial landscapes. Each project is a puzzle, waiting to be cracked with the perfect blend of precision and ingenuity.

Key Achievements: Highlighted Projects.

- Power quality measurement meter
- Incomplete carton rejection system
- Integration of a Mercury 2+ HMI to HIMA H51q
- Meteorological system upgrade of an FPSO
- Automation of Water treatment Plant

Power quality measurement meter

- The power quality measurement measures the current harmonics distortion, voltage harmonics distortion, current, voltage, power factor and frequency.

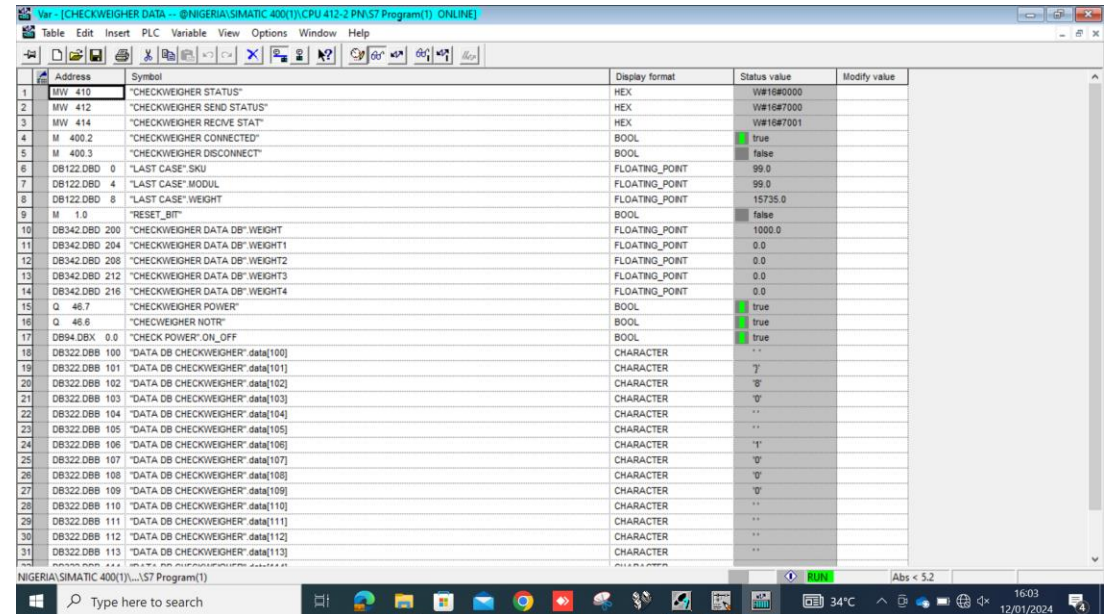


Power quality measurement meter

- This project combines the use of a microprocessor (Arduino), an AC power supply unit, passive elements (resistors, capacitors, inductors), operational amplifiers, and 16x2 LCD.
- For the calculation of harmonics distortion(current and voltage), Fast Fourier transform and other signal processing techniques was implemented on the Arduino.

Incomplete carton rejection system

This project was undertaken for a client operating in the FMCG industry. The client faced challenges in the market with reported instances of incomplete cartons. In order to address and resolve this issue, our team proposed a process optimization of their conveyor system to include a pusher and weighing system- that rejects cartons lower than the agreed weight

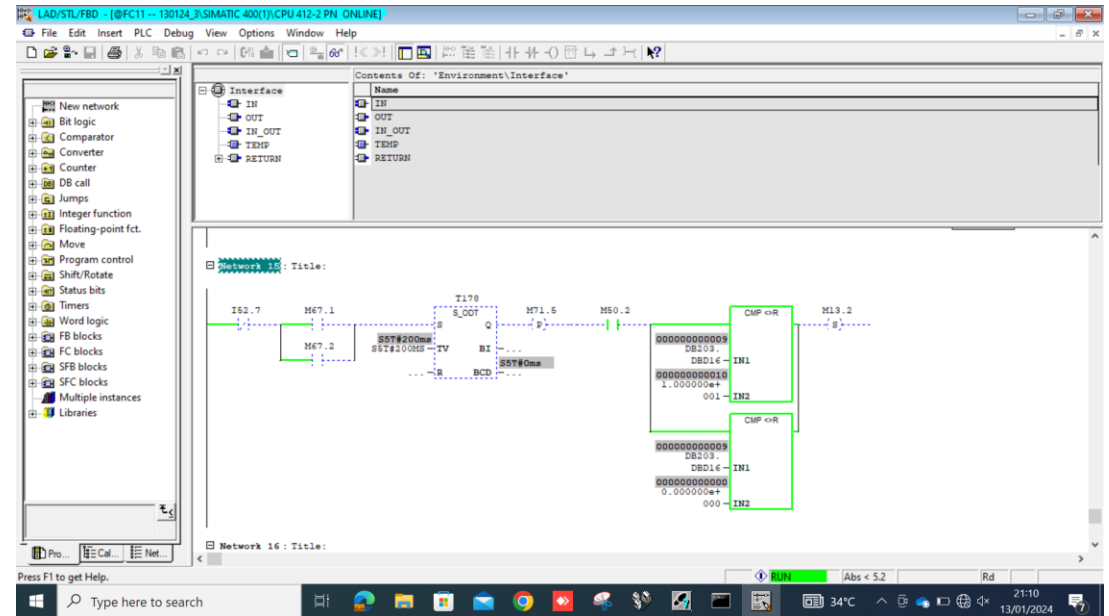
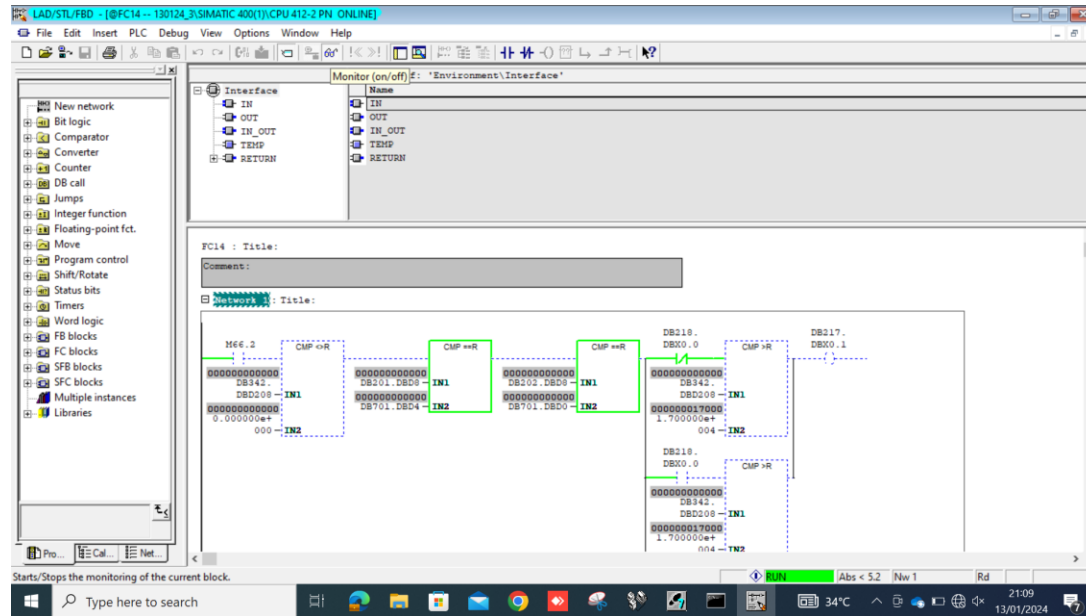


The screenshot displays the 'Variable Declaration' table within the SIMATIC Manager software. The table lists various variables used in the PLC program, including their addresses, symbols, display formats, status values, and modify values. The variables are organized into a table with columns for Address, Symbol, Display format, Status value, and Modify value.

Address	Symbol	Display format	Status value	Modify value
MW 410	"CHECKWEIGHER STATUS"	HEX	W#16#0000	
MW 412	"CHECKWEIGHER SEND STATUS"	HEX	W#16#7000	
MW 414	"CHECKWEIGHER RECIVE STAT"	HEX	W#16#7001	
M 400.2	"CHECKWEIGHER CONNECTED"	BOOL	true	
M 400.3	"CHECKWEIGHER DISCONNECT"	BOOL	false	
DB122.DBD 0	"LAST CASE".SKU	FLOATING_POINT	99.0	
DB122.DBD 4	"LAST CASE".MODUL	FLOATING_POINT	99.0	
DB122.DBD 8	"LAST CASE".WEIGHT	FLOATING_POINT	15735.0	
M 1.0	"RESET_BIT"	BOOL	false	
DB342.DBD 200	"CHECKWEIGHER DATA DB".WEIGHT	FLOATING_POINT	1000.0	
DB342.DBD 204	"CHECKWEIGHER DATA DB".WEIGHT1	FLOATING_POINT	0.0	
DB342.DBD 208	"CHECKWEIGHER DATA DB".WEIGHT2	FLOATING_POINT	0.0	
DB342.DBD 212	"CHECKWEIGHER DATA DB".WEIGHT3	FLOATING_POINT	0.0	
DB342.DBD 216	"CHECKWEIGHER DATA DB".WEIGHT4	FLOATING_POINT	0.0	
Q 46.7	"CHECKWEIGHER POWER"	BOOL	true	
Q 46.8	"CHECKWEIGHER NOTR"	BOOL	true	
DB94.DBX 0.0	"CHECK POWER".ON_OFF	BOOL	true	
DB322.DBB 100	"DATA DB CHECKWEIGHER".data[100]	CHARACTER	..	
DB322.DBB 101	"DATA DB CHECKWEIGHER".data[101]	CHARACTER	7	
DB322.DBB 102	"DATA DB CHECKWEIGHER".data[102]	CHARACTER	8	
DB322.DBB 103	"DATA DB CHECKWEIGHER".data[103]	CHARACTER	9	
DB322.DBB 104	"DATA DB CHECKWEIGHER".data[104]	CHARACTER	..	
DB322.DBB 105	"DATA DB CHECKWEIGHER".data[105]	CHARACTER	..	
DB322.DBB 106	"DATA DB CHECKWEIGHER".data[106]	CHARACTER	..	
DB322.DBB 107	"DATA DB CHECKWEIGHER".data[107]	CHARACTER	..	
DB322.DBB 108	"DATA DB CHECKWEIGHER".data[108]	CHARACTER	..	
DB322.DBB 109	"DATA DB CHECKWEIGHER".data[109]	CHARACTER	..	
DB322.DBB 110	"DATA DB CHECKWEIGHER".data[110]	CHARACTER	..	
DB322.DBB 111	"DATA DB CHECKWEIGHER".data[111]	CHARACTER	..	
DB322.DBB 112	"DATA DB CHECKWEIGHER".data[112]	CHARACTER	..	
DB322.DBB 113	"DATA DB CHECKWEIGHER".data[113]	CHARACTER	..	

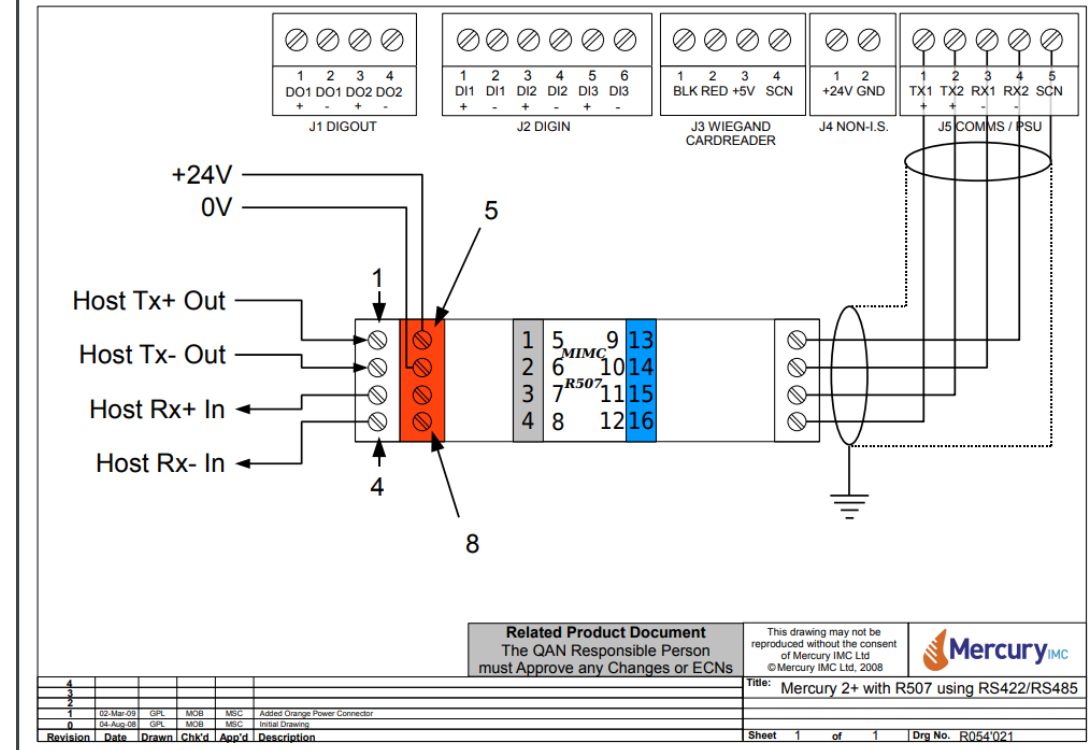
The project included modification of the logic in the S7-400PLC, using Simatic step7.

Incomplete carton rejection system



Integration of a Mercury 2+ HMI to HIMA H51q

The task involved configuring Modbus and mapping data between the H51q dual processor and the Human-Machine Interface (HMI). Utilizing the PLX31-MBTCP-MBS4 module enabled successful communication between the controller and HMI, each using ModbusTCP and Modbus serial types within the Modbus protocol. Additionally, modifications to existing function blocks for the DCS.



Meteorological system upgrade of an FPSO

This project we upgraded functional and non-functional parts such as:

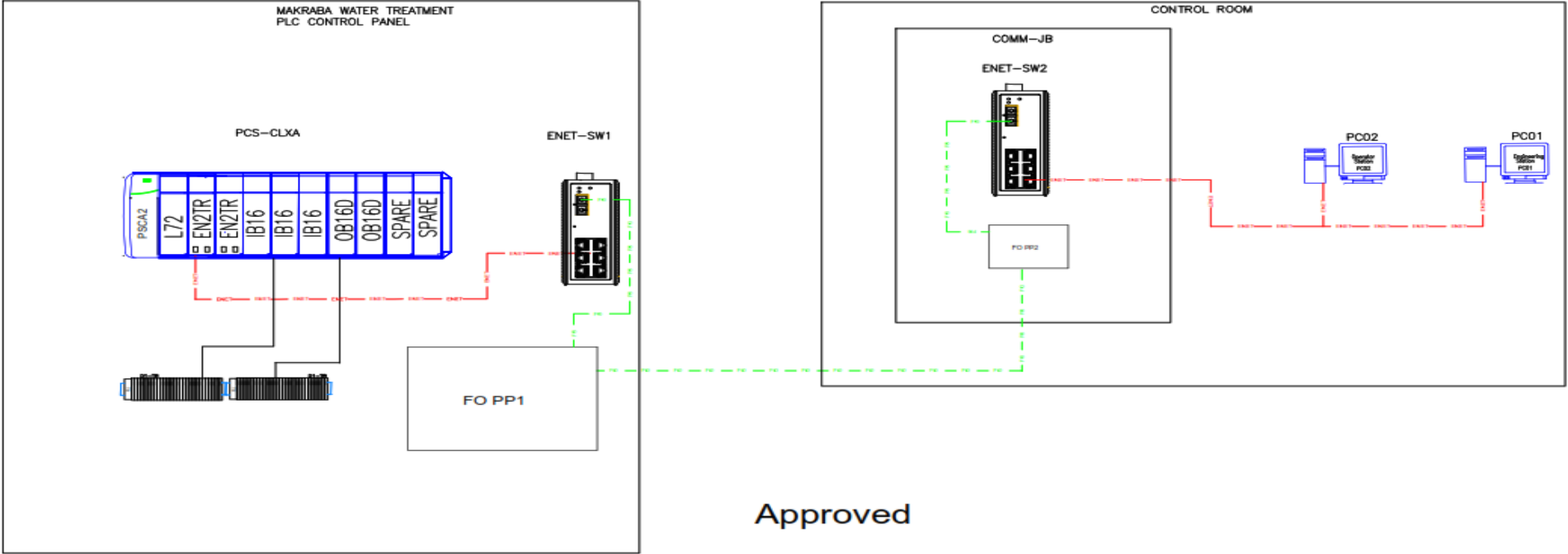
- Wave monitoring system(WaMos)
- Current direction and speed
- Precipitation sensor
- PSI unit
- Air temp and Humidity sensor

The Learning curve of this project was the proper understanding of serial communication and use of Putty

Makaraba Water treatment Plant Upgrade

- The automation of a water treatment plant involves the integration of advanced control systems and technology to optimize the operation, efficiency, and reliability of the water treatment processes. This transformation brings numerous benefits, addressing key challenges and enhancing overall system performance.
- This project involves programming of an Allen Bradley ControlLogix PLC, with Studio5000, HMI/SCADA development with Intouch.

MAKARABA PRODUCTION PLANT – Control System Architecture



Approved

LEGEND:
- - - - - Ethernet Network
- - - - - Fibre Optic
- - - - - Hardware

NOTES:
1.
2.

S/N	REFERENCE DRAWINGS	REV	DESCRIPTION	DATE	DRAWN BY	CHK. BY	APP'D BY	SCALE	NTS	REV	K05	SHEET NO: 1 of 1	DWG. NO:	GA-CHL-MWRB-200002-BLK-ARCH
1			REVISED FOR THE ADDITION OF THE FOLLOWING EQUIPMENT:											
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10			REVISED FOR THE ADDITION OF THE FOLLOWING EQUIPMENT:											

CONTRACTOR:

CLIENT:

Skills

- Programming and coding skills: Ladder logic, Functional block diagram, Structured text, Python and C.
- Hardware: PCS7, and ControlLogix.
- HMI development: Aveva Wonderware, Studio5000 view, and WinCC.
- Control Systems Design
- Actuators and sensors integration
- Simulation tools: MATLAB and Proteus
- Adaptability and Continuous Learning