europass

Vadood Hajbani

Phone number: (+39) 3518176308 **Email address:** vadood.hajbani@gmail.com

LinkedIn: linkedin.com/in/vadood-hajbani/

Home: San Giovanni, 27100 Pavia (Italy) (Willing to work full-time and relocate)

ABOUT ME

Experienced in electrical engineering and industrial automation, I excel in areas such as control systems and power electronics. With a solid foundation built on practical experience, I am recognized for my diligence, proactive problem-solving, and strong communication skills by former colleagues and supervisors. Throughout my career, I have pursued continuous learning and initiated various projects, including PLC programming and electronic circuit analysis. Currently pursuing a Master's degree in Industrial Automation and Robotics, I am eager to deepen my expertise and explore new opportunities in this dynamic field. Let's connect to discuss potential collaborations or opportunities in industrial automation and robotics.

WORK EXPERIENCE

Industrial Automation Engineer

Armco Engine Cooling Company [Dec 2021 – Sep 2023]

City: Kaveh Industrial City | **Country:** Iran | **Name of unit or department:** R&D - **Business or sector:** Manufacturing

Executing industrial automation projects involves tasks such as: *programming different PLCs, assembling electrical panels, wiring and cabling, dealing with diverse sensors, AC motors along with their drives, thermal elements, pneumatic and hydraulic setups, and additional tasks.*

Electrical engineering technician

Armco Engine Cooling Company [Aug 2016 – Jun 2020]

City: Kaveh Industrial City | **Country:** Iran | **Name of unit or department:** Technical Unit - **Business or sector:** Manufacturing

The execution of the PM and CM of the radiators, intercoolers, and heaters manufacturing machines and implementing small-scale industrial automation projects involves: PLC programming, installation and configuration of AC drives and their motors, adjusting various sensors, working with thermal elements and adjusting their controller parameters, electrical panel assembly, wiring, and cabling, etc.

Electrical engineering expert

MNG Tobacco Co. [Jul 2020 – Nov 2021]

City: Kaveh Industrial City | **Country:** Iran | **Name of unit or department:** Technical Unit - **Business or sector:** Manufacturing

Performing *preventive maintenance (PM)* and *corrective maintenance (CM)* on the *Focke* and *De Decouflé* cigarette manufacturing machines includes:

- Deriving and applying PM schedules from machinery catalogs due to the novelty of the production line.
- Fine-tuning different sensors based on needs and diagnosing issues, especially during product transitions.
- Operating *Videojet Laser coding* and their settings.
- Repairing and upkeeping electrical parts such as PLCs, controllers, motors and their drives, sensors, solenoid valves, and more.

Research Assistant

Power Electronics Research Group, IAU [Jan 2012 – Jun 2016]

City: Ardabil | **Country:** Iran | **Name of unit or department:** Electrical and Electronics Engineering Department - **Business or sector:** Professional, scientific and technical activities

Design, Simulation, and Implementation of Power Electronic Projects
- Simulation using MATLAB/Simulink
- Circuit and PCB design using Altium Designer
- Electrical panel assembly
- Testing and troubleshooting projects using measurement devices such as multimeters and oscilloscopes

EDUCATION AND TRAINING

Master's degree in Industrial Automation Engineering

University of Pavia [Sep 2023 – Current]

City: Pavia | **Country:** Italy | **Field(s) of study:** Robotics

Master's degree in Electrical Engineering

IA University [2011 – 2014]

City: Ahar | **Country:** Iran | **Field(s) of study:** Electronics | **Thesis:** Nonlinear and Adaptive Control of Single Phase Active Power Filters

Bachelor of Science in Electrical Engineering

IA University [Jan 2007 – Dec 2010]

City: Ardabil | **Country:** Iran | **Field(s) of study:** Electronics | **Thesis:** Design and Implementation of Sonic Telemeter

PROJECTS

[Mar 2022 – Jan 2023]
Automation of Wind Tunnel Test Machine Armco Engine Cooling Company, Kaveh Industrial City , Iran

[2022]
Automation of Hydraulic Intercooler Assembly Machine Armco Engine Cooling Company, Kaveh Industrial City , Iran

[Mar 2013 – Jul 2015]
Performance Improvement of Robust Controller for DC/DC Converters Power Electronics Research Group, IAU, Ardabil, Iran

[2011 – 2014]
Electric Vehicle Power Electronics Research Group, IAU, Ardabil, Iran

LANGUAGE SKILLS

Mother tongue(s): Persian | Turkish | Azerbaijani

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B1

SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B2

Italian (At the moment, I am taking Italian language course)

LISTENING A1 **READING** A1 **WRITING** A1

SPOKEN PRODUCTION A1 **SPOKEN INTERACTION** A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

PLC Programming

SIEMENS - TIA Portal / SIEMENS - Step 7 / SIEMENS - LOGO! / BECKHOFF - TwinCAT 3 / BECKHOFF - TwinCAT 2 / OMRON - CX Programmer / OMRON - NB Designer / DELTA - DOPSoft / DELTA - ISPSoft / KINCO - Builder / KINCO - HMIware

Industrial Drives

LS - IG5A Series / Lenze - i550 CABINET Series

General Software

Microsoft Word / Microsoft Excel / Microsoft Powerpoint

Soft Skills

Continuous Learning / Critical Thinking / Team Work / Emotional Intelligence / Communication / Time Management / Adaptability / Influence

Driving Licence

B

PUBLICATIONS

[2023]

A novel Lyapunov-based robust controller design for LCL-type shunt active power filters using adaptive sliding-mode backstepping approach

Elsevier - e-Prime - Advances in Electrical Engineering, Electronics and Energy · Sep 1, 2023

[2016]

Robust closed loop control of the transformerless DC-DC converters with high step up voltage gain

IEEE - 2016 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT-Europe)

[2016]

Robust control of the DC-DC Ćuk converter in discontinuous conduction mode

IEEE - " 2016 7th Power Electronics and Drive Systems Technologies Conference (PEDSTC),Tehran, Iran

[2015]

Sliding-Mode Control of the DC-DC Flyback Converter in Discontinuous Conduction Mode

IEEE - The 6th Power Electronics, Drive Systems & Technologies Conference (PEDSTC2015)

[2014]

Optimization of the Lyapunov Based Nonlinear Controller Parameters in a Single-Phase Grid-Connected Inverter

Paper printed in JAIEE, Islamic Azad University, Ahar Branch, Ahar, Iran. · Jan 1, 2014

[2014]

Sliding-Mode Control of the DC-DC Cuk Converter in Discontinuous Conduction Mode

Paper printed in JAIEE, Islamic Azad University, Ahar Branch, Ahar, Iran. · Jan 1, 2014

[2013]

Sliding mode control of the DC-DC flyback converter with zero steady-state error

IEEE - Paper presented in PEDSTC, Tehran, Iran, Paper is indexed to IEEE explorer · Jan 1, 2013

[2013]

Two-loop adaptive and nonlinear control of the DC-DC boost converter in Discontinuous Conduction Mode

IEEE - Paper presented in PEDSTC, Tehran, Iran, Paper is indexed to IEEE explorer · Jan 1, 2013

HONOURS AND AWARDS

[May 2014] Sama Technical and Vocational Training College
Selected as the superior lecturer
Ardabil Branch, Ardabil, Iran

[Dec 2012] Electronics-Skills Competition of Vocational Colleges
Selected as a second rank as the supervisor of Ardabil Team Zanjan, Iran

[Dec 2011] Industrial-Electronics Course
Top trainee
By the introduction and implantation of "Automatic Polisher" and "Timer" in Ardabil Technical and Vocational Training Center, Ardabil, Iran

[Dec 2011] IAU
Top student

REFERENCES

Name: **Prof. Mahdi Salimi** | Associate Prof., University of Greenwich, London, England
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Email: m.salimi@greenwich.ac.uk | **Phone number:** (+98) 9141528983

Name: **Prof. Adel Zakipour** | Assistant Prof., Arak University of Technology, Arak, Iran
Linkedin
Email: zakipour@arakut.ac.ir | **Phone number:** (+98) 9141542825

Name: **Eng. Mosayeb Najafi** | Technical Manager at MNG Tobacco Co., Kaveh Industrial City, Iran
Linkedin
Email: mosayeb.najafi2260@yahoo.com | **Phone number:** (+98) 9128417252

Name: **Eng. Hasan Khishaveh** | Technical Manager at Armco Company, Kaveh Industrial City, Iran
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Email: hasan.khishaveh@gmail.com | **Phone number:** (+98) 9354228866

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VADOOD HAJBANI

Contact me:

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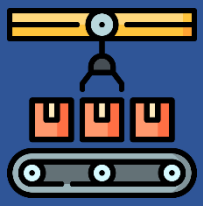
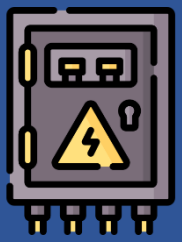


Industrial Automation
- PLC programming
- Setup sensors, drives and actuators

Problem Solving
- Corrective Maintenance (CM)
- Preventive Maintenance (PM)



Electrical Installation
- Wiring
- Cabling
- Electrical enclosure assemble

About me

Dynamic and proficient *in electrical engineering* and *industrial automation*, I bring a wealth of expertise in industrial automation, control systems, and power electronics. My extensive knowledge, coupled with hands-on experience, has positioned me as a linchpin in project execution. Former supervisors and colleagues consistently commend my attributes of resilience, proactive problem-solving, and dedication to meeting project requirements. I thrive in collaborative environments, demonstrating exceptional time management, precision, and effective communication skills.

Throughout my career journey, I have actively pursued ongoing learning opportunities to enhance my skill set. This drive for continual improvement has propelled me to initiate and successfully execute a myriad of projects, earning recognition for my innovative solutions and attention to detail. My practical experience encompasses *PLC programming, AC motor control, panel assembly, and the design and implementation of analog and digital electronic circuits.*

Driven by a passion for both theoretical knowledge and practical application, I am currently pursuing a Master's degree in Industrial Automation - Robotics at Università di Pavia in Italy. This academic endeavor aims to further deepen my understanding of industrial automation while exposing me to the latest advancements in the field.

EDUCATIONS

Bachelor of Science in
ELECTRICAL ENGINEERING ELECTRONICS
I.A.U.

Master's degree in
INDUSTRIAL Automation ENGINEERING

Master's degree in
ELECTRICAL ENGINEERING ELECTRONICS
I.A.U.

EXPERIENCES

MNG
شرکت بازرگانی میلاد نور گیتی
Electrical
Technical Expert
18 months

I.A.U.
Research Assistant and Laboratory Instructor
5.5 years

Armco
Engine Cooling
Industrial Automation and Electrical Technician
> 5.5 years

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VADOOD HAJBANI

Industrial Automation Engineer

• WIND TUNNEL Radiator test machine

SKILLS

- OMRON PLC and HMI
- LS Industrial Drive
- AC Motors
- PID Controller
- Pressure sensor
- Air velocity and temperature transmitter
- RS232 protocol
- ...

WHAT?

The wind tunnel serves as a laboratory tool to test radiators, heaters, and intercoolers by examining their performance under varying conditions such as temperatures, pressures, air velocity, and water flow rates.

HOW?

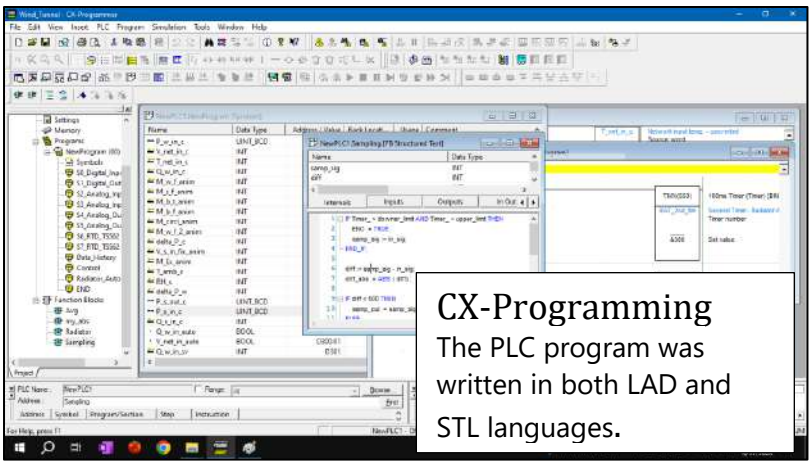
Initially operated manually at Armco Engine Cooling Company, the device required repeated testing and manual data recording. Automation was introduced through a design enabling automatic testing and a closed-loop control system.

RESULTS?

This automation reduced testing time from days to less than an hour by facilitating automatic sampling, data recording, and graph plotting. Additional parts were incorporated to enhance data recording in steady-state mode, further improving the system's performance.

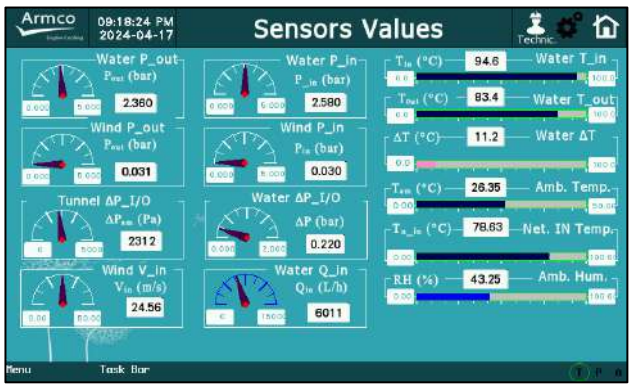
CONTROL ROOM

By removing relay contactors circuits, the operator can initiate the testing process with just a few clicks and simultaneously monitor, control, and record the process through a computer in the control room.



CX-Programming

The PLC program was written in both LAD and STL languages.



Sensors Values

All measured values are represented by analogue meters.

KROHNE

OPTIFLUX 4300

Electromagnetic flowmeters

HK INSTRUMENTS

User-friendly measuring devices

DPT2500 - R8

Differential Pressure Transmitter

sauermann

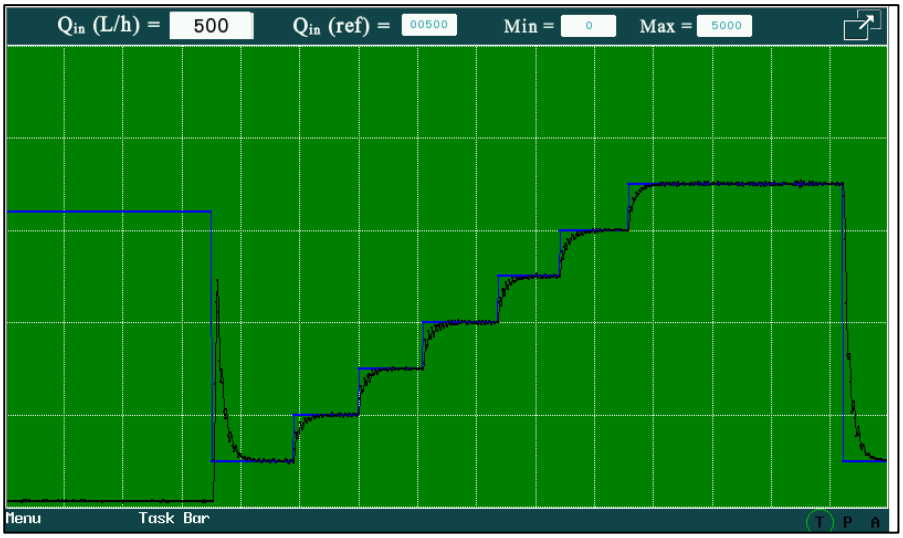
CTV 210-R

Air velocity and temperature transmitter

VADOOD HAJBANI

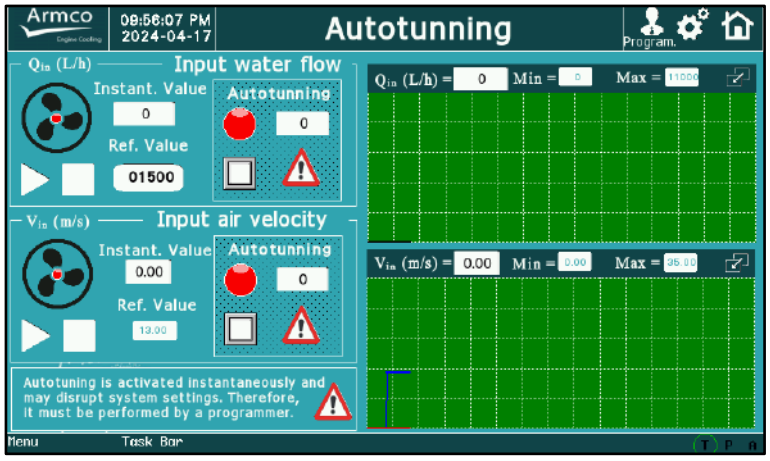
Industrial Automation Engineer

• WIND TUNNEL Radiator test machine



CLOSED-LOOP CONTROL

Speed control and water flow rate are performed in a closed loop using a linear PID controller. Various values are provided by the operator before starting the test, stored in a table in HMI. This allows the controller to automatically conduct the test for different water flow rates and wind speeds (for radiator testing) and record the results.

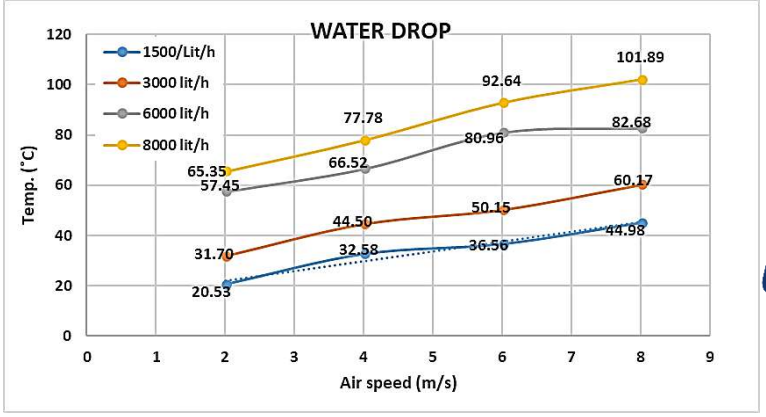


ATUTUNNING

Because the device is utilized across a broad spectrum of products, ranging from small heaters to heavy vehicle radiators, the preset coefficients for the PID controller have struggled to provide consistent responses, occasionally resulting in instability and necessitating recalibration. Consequently, the auto-tuning capability of the PID controller was employed to enhance stability and optimize performance.

PANELS

All necessary equipment has been set up across the two new panels. One specifically handles the control of the matrix heating elements, and the rest of the equipment housed in the main panel.



Radiator Test Output Graph

LS IS

iG5A

AC Drive

OMRON

CJ Series

PLC

NB Series

HMI

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Industrial Automation Engineer

Armco

• JIK Heater Assembly Machine

WHAT?

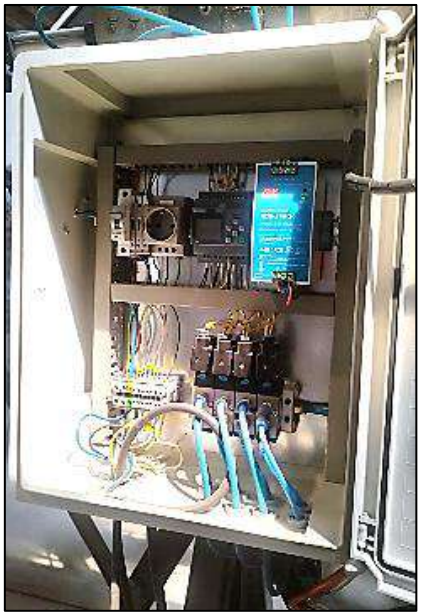
JIK Heater Assembly Machine is a semi-automatic tool used to assemble car heaters under operator guidance.

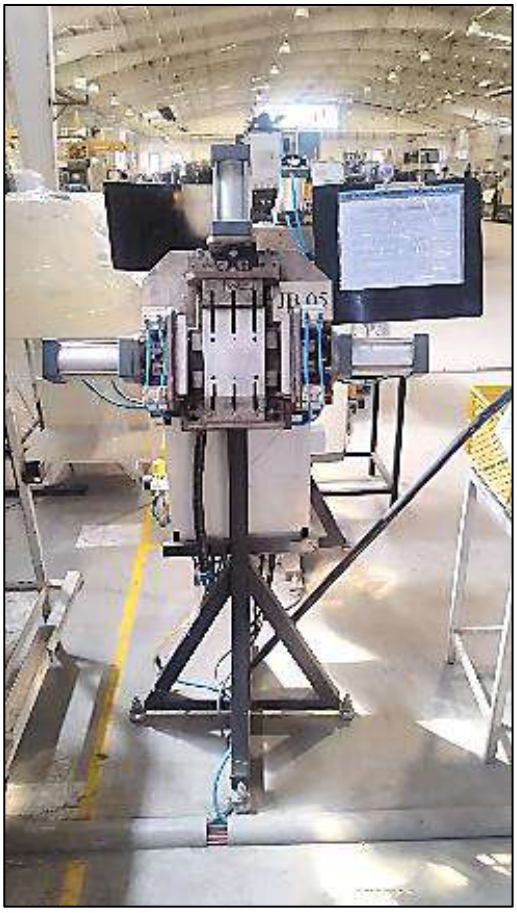
HOW?

Developed and built by Armco Company, it features three Pneumatic Cylinder that cycle through specific states, aiding the operator in the assembly process. The programming incorporates a sequential process using a shift register.

RESULTS?

Continuous cycling is achieved by repeated *Automatic Button* at operator panel. Manual control is also added to address Pneumatic Cylinders.



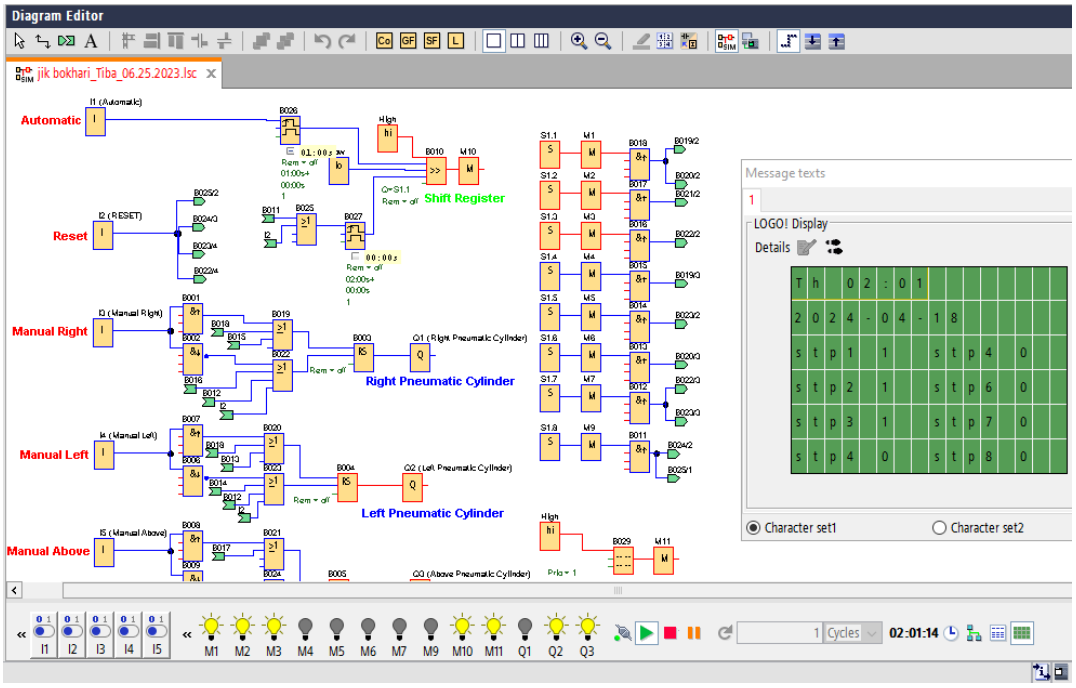


SKILLS

- SIEMENS LOGO!
- Pneumatic Cylinder
- Sequencing Method

Logo! Soft Comfort

The PLC program was written in FBD language. Also, the Step of the sequences was presented in the Logo Display.



SIEMENS

LOGO! 8

PLC

HPC PNEUMATICS

HPC Series

Pneumatic Cylinder

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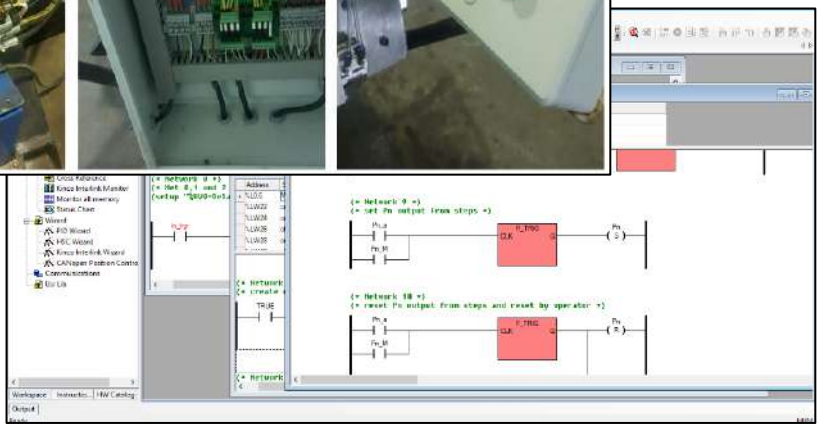
Industrial Automation Engineer

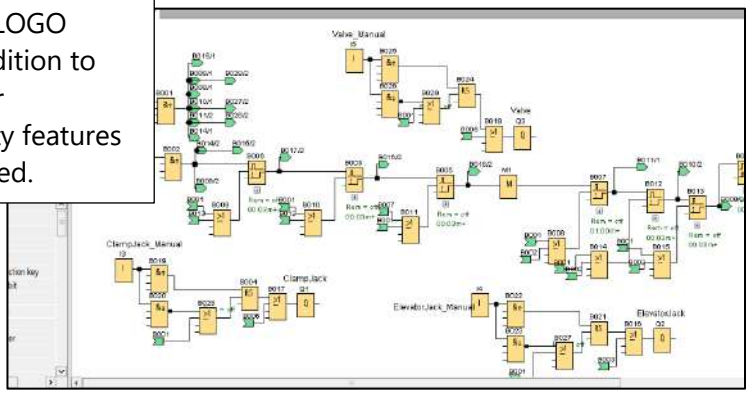
Armco • Hydraulic Intercooler Assembly Machine



The hydraulic intercooler assembler is a partially automated machine operated by a operator, designed for manufacturing items associated with large vehicles. Because of the size and weight of these items, hydraulic cylinders replaced were used. Kinko PLC was utilized to manage both the motor pump and the machine's regular operations concurrently. Consequently, this equipment could produce products that previous models couldn't manufacture.

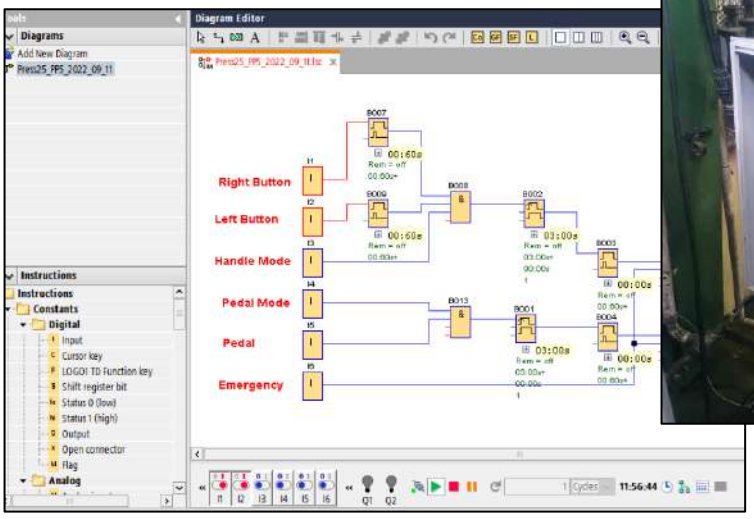
Armco • Automation of Industrial Cutter

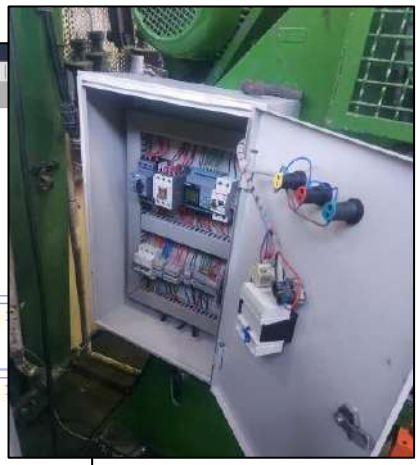
In this project, the outdated relay and contactor circuits were replaced with a LOGO controller. In addition to the typical cutter operations, safety features were implemented.



Armco • Automation of Crank Press

In this project, the previous relay and contactor setups were substituted with a LOGO controller. Safety measures were included alongside the standard press functions to ensure operator safety. Moreover, current and voltage protection circuits were integrated into the system for added security.





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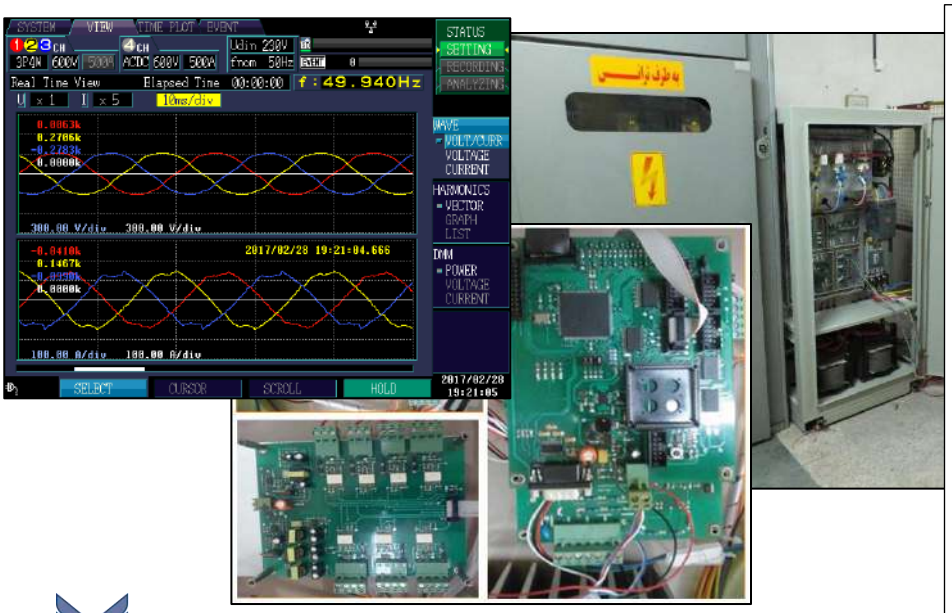
VADOOD HAJBANI

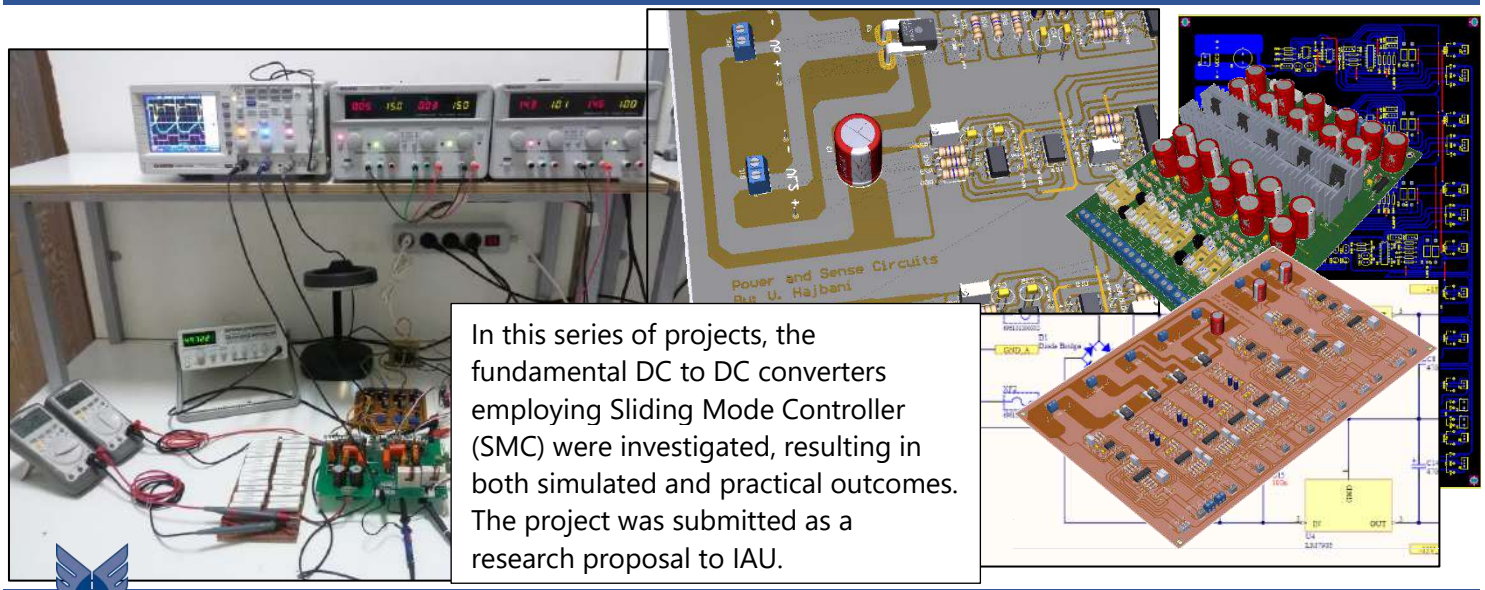
Industrial Automation Engineer

• Adaptive Controller of Grid Connected 3Ø APF



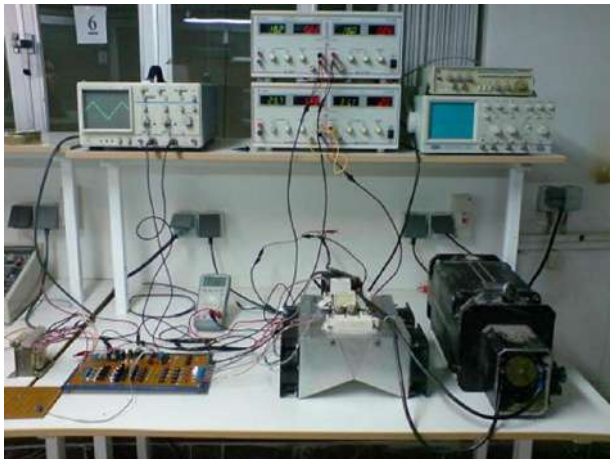
In this project, we developed and installed a three-phase parallel active power filter linked to the grid. To regulate this converter, we employed a nonlinear adaptive controller. The design process involved utilizing MATLAB/Simulink for theoretical modeling, while Altium Designer was used to design the power switches drive, measurement, and control circuits. All components were assembled onto a panel alongside power switches and isolated transformers. Ultimately, the designed converter successfully eliminated excess harmonics from the grid.

• Robust Controller for DC-DC Converters



In this series of projects, the fundamental DC to DC converters employing Sliding Mode Controller (SMC) were investigated, resulting in both simulated and practical outcomes. The project was submitted as a research proposal to IAU.

• Electric Vehicle



This project involved connecting a DC motor to a battery via an H-Bridge converter, allowing for simultaneous battery charging through solar cells. The motor's power output was integrated into the vehicle's propulsion system, with adjustable speed achieved by tuning the controller's reference value.