



**DON BOSCO INSTITUTE OF TECHNOLOGY,  
DEPARTMENT OF ELECTRONICS AND  
TELECOMMUNICATION ENGINEERING  
ACADEMIC YEAR: 2023-24**

# **MINI PROJECT 2-B TOPIC**

**FPGA BASED PLC FOR INDUSTRIAL  
AUTOMATION SYSTEM**

---

# TEAM MEMBERS GROUP 8 AND 1

<b>Lovely Varshney (32)</b>	<b>Kshitij Bare (04)</b>
<b>Adarsh Rao (48)</b>	<b>Jignesh Bhandi (07)</b>
<b>Gouresh Sankhe (54)</b>	<b>Aditya Saju (37)</b>
<b>Abhishek Waghmare (68)</b>	<b>Omkar Mundhe (39)</b>

# **OUTLINE OF PROJECT**

- **Objective of the project**
- **Introduction**
- **Block diagram**
- **Applications**
- **Conclusion & Future scope**
- **Reference**

# OBJECTIVE OF PROJECT

---

- **WITH THIS PROJECT WE AIM TO CREATE A WORKING SYSTEM USING PLC WHICH CAN BE USED TO AUTOMATE AND CONTROL A SYSTEM CONTAINING A CONVEYOR BELT TO CONTROL FLOW OF WATER**

# **INTRODUCTION**

---

- **NOWADAYS MACHINES ARE USED IN EVERY SECTOR IN ORDER TO INCREASE WORKRATES AND REDUCE LOAD ON HUMANS TO DO TASKS. ONE SUCH DEVICE IS A PLC.**
- **AN FPGA IS A PROGRAMMABLE DEVICE THAT CAN BE CONFIGURED TO PERFORM SPECIFIC FUNCTIONS USING DIGITAL LOGIC.**
- **THIS ALLOWS THE USER TO DESIGN A CUSTOM HARDWARE ARCHITECTURE THAT IS TAILORED TO THE SPECIFIC REQUIREMENTS OF THEIR INDUSTRIAL AUTOMATION SYSTEM**

# WHAT IS PLC?

**PLC STANDS FOR "PROGRAMMABLE LOGIC CONTROLLER." IT IS A TYPE OF COMPUTERIZED DEVICE USED IN INDUSTRIAL CONTROL SYSTEMS TO AUTOMATE AND CONTROL MACHINERY AND PROCESSES**





# **WHAT IS FPGA?**

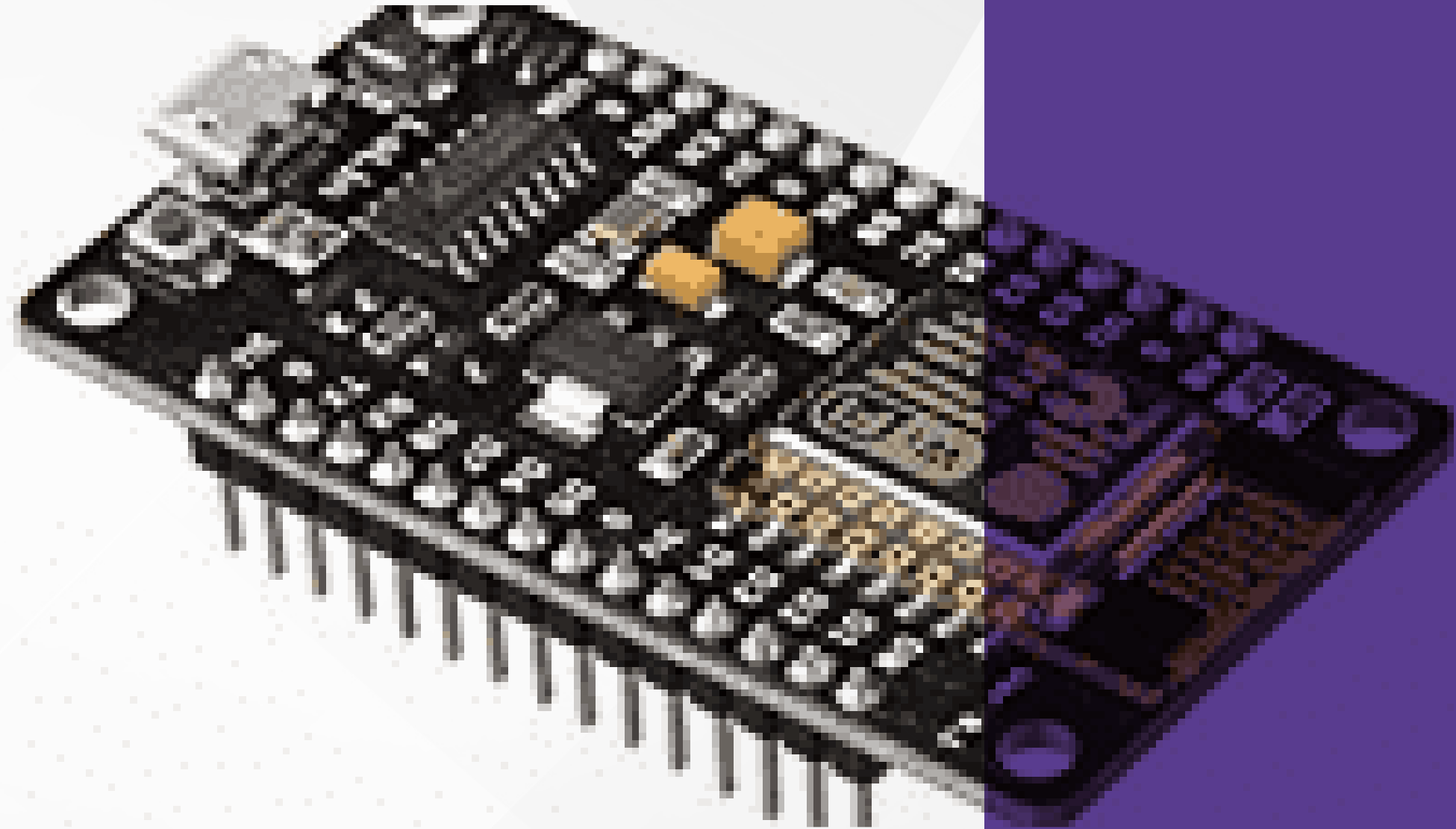
**FPGA STANDS FOR  
FIELD-PROGRAMMABLE GATE ARRAY,  
WHICH IS AN INTEGRATED CIRCUIT  
THAT CAN BE PROGRAMMED AND  
CONFIGURED BY A USER AFTER  
IT HAS BEEN MANUFACTURED.**



**IT CONSISTS OF AN ARRAY OF PROGRAMMABLE LOGIC  
BLOCKS AND INPUT/OUTPUT BLOCKS, WHICH ALLOW  
IT TO IMPLEMENT A WIDE VARIETY OF DIGITAL CIRCUITS.**

# WHAT IS ESP8266?

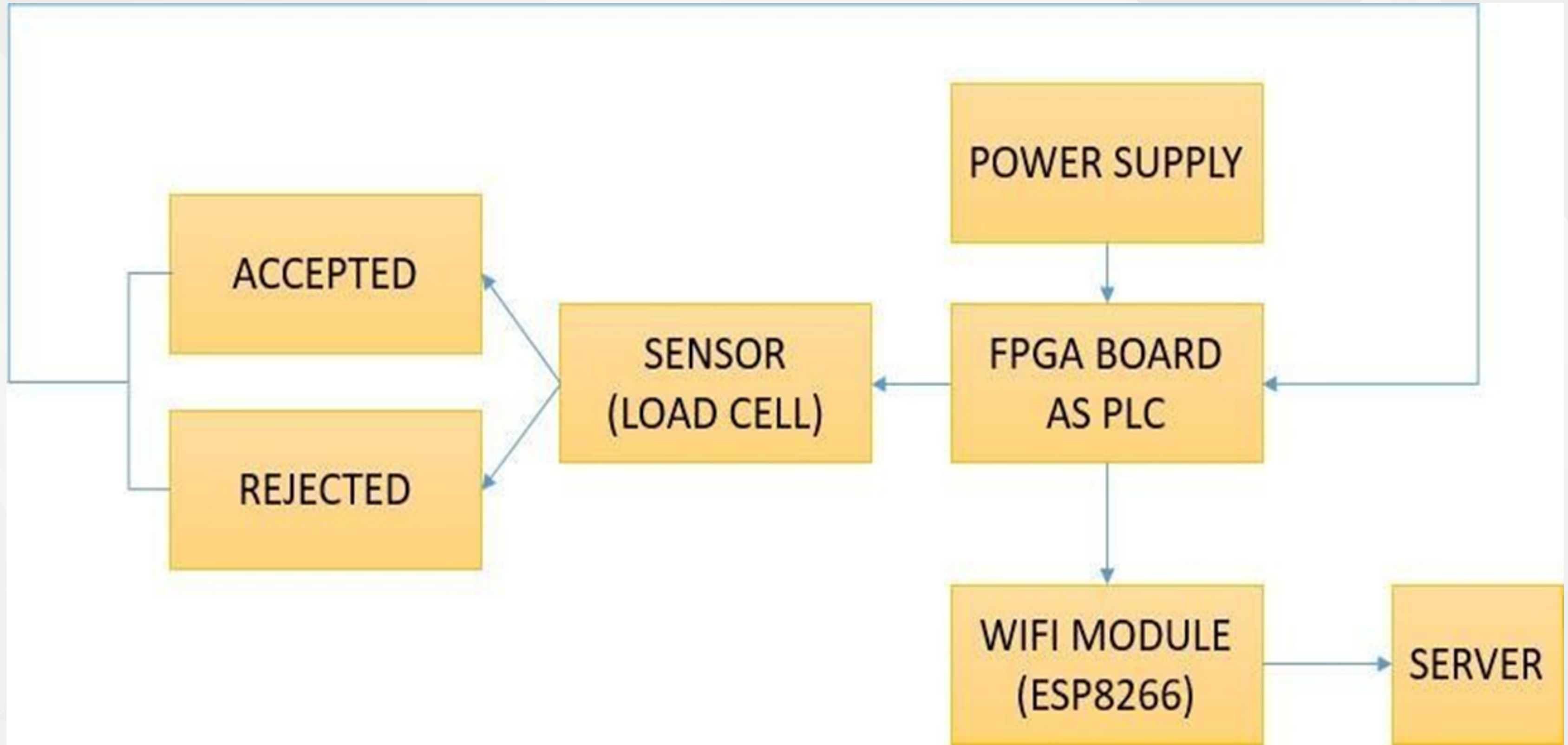
**ESP8266 IS A WIFI SOC  
(SYSTEM ON A CHIP) PRODUCED  
BY ESPRESSIF SYSTEMS . IT IS AN  
HIGHLY INTEGRATED CHIP  
DESIGNED TO PROVIDE FULL  
INTERNET CONNECTIVITY IN A  
SMALL PACKAGE.**





# BLOCK DIAGRAM

**HERE WE ARE USING  
ARDUINO UNO AS PLC**



# **APPLICATIONS**

- **It is used in car wash stations**
- **It is used in cement manufacturing**
- **It is mainly used production industries too**
- **It is used in glass industries also**

# CONCLUSION

- **In conclusion, Programmable logic controllers (PLCS) are essential components of industrial automation systems. They provide a reliable and efficient way to control and monitor complex processes in manufacturing, production, and others industrial applications.**

# **FUTURE SCOPE**

- **Integration with the internet of Things (IOT)**
- **Artificial Intelligence**
- **Edge Computing**
- **Cybersecurity**
- **Cloud Computing**

## **REFERENCE**

- 1.) [HTTPS://LINUXHINT.COM/ARDUINO-AS-PLC/#:~:TEXT=YES%2C%20ONE%20CAN%20SAY%20THAT,BEGINNERS%20AND%20SMALL%20SCALE%20APPLICATIONS](https://linuxhint.com/arduino-as-plc/#:~:text=YES%2C%20ONE%20CAN%20SAY%20THAT,BEGINNERS%20AND%20SMALL%20SCALE%20APPLICATIONS).**
- 2.) [HTTPS://WWW.PANTECHSOLUTIONS.NET/ESP8266-WIFI-INTERFACE-WITH-XILINX- SPARTAN-FPGA](https://www.pantechsolutions.net/esp8266-wifi-interface-with-xilinx-spartan-fpga)**
- 3.) [HTTPS://WWW.XILINX.COM/PRODUCTS/SILICON-DEVICES/FPGA/WHAT-IS-AN- FPGA.HTML](https://www.xilinx.com/products/silicon-devices/fpga/what-is-an-fpga.html)**
- 4.) [HTTPS://WWW.WIA.IO/THINGS/ESPRESSIF-ESP8266#:~:TEXT=THE%20ESP8266%20WIFI%20MODULE%20IS,FUNCTIONS%20OF ROM%20ANOTHER%20APPLICATION%20PROCESSOR](https://www.wia.io/things/esp8266/#:~:text=THE%20ESP8266%20WIFI%20MODULE%20IS,FUNCTIONS%20OF%20ROM%20ANOTHER%20APPLICATION%20PROCESSOR).**

thank you!

