

**ANNA UNIVERSITY: CHENNAI
600025**

BONAFIDE CERTIFICATE

Certified that this project report “**IOT BASED INDUSTRIAL POLLUTION MONITORING SYSTEM**” is the bonafide work of “**GAUTHAM GANESH R. (Reg.No.: 912819106002), SANTHIYA JINTHAN P. (Reg.No.: 912819106014) AND TAMIZHARASAN R. (Reg.No.: 912819106019)**”

who carried out the project work under my supervision.

SIGNATURE

Dr. G. MAHENDRAN, M. E., Ph. D.,

HEAD OF THE DEPARTMENT

DEPARTMENT OF ECE,
SYED AMMAL ENGG.COLLEGE,
RAMANATHAPURAM- 623502.

SIGNATURE

Mr. J. SAKUBAR SADIQ, M.E.,
Ph.D.,

SUPERVISOR

ASSOCIATE PROFESSOR,
DEPARTMENT OF ECE,
SYED AMMAL ENGG.COLLEGE,
RAMANATHAPURAM- 623502.

Submitted for the project viva-voce held on:

INTERNAL EXAMINER

EXTERNAL EXAMINER

ACKNOWLEDGEMENT

We express our heartfelt thanks to **ALMIGHTY** who provided us such a valuable project to serve the people of our society.

We acknowledge our indebtedness and heartfelt thanks to our **CORRESPONENT AND MANAGEMENT** for having provided with excellent facilities and infrastructure.

We express our most sincere thanks to our beloved Principal, **Dr. M. PERIYASAMY, M.E., Ph.D.**, for his constant encouragement and support throughout the project.

We are deeply indebted and thankful to our Head of the Department **Dr. G. MAHENDRAN, M.E., Ph.D.**, for his expert guidance, valuable help and constant encouragement by providing us necessary resources throughout this tenure to make our project a wonderful one.

We sincerely thank our project guide **Mr. J. SAKUBAR SADIQ, M.E., Ph.D.**, for giving the knowledge about the project and for her expert guidance.

We take this golden opportunity to thank our parents and our family member for their support and encouragement in all steps that we have kept forward. We acknowledge with gratitude to our friends, who had been with us to complete this project.

ABSTRACT

The IoT-based Industrial Pollution Monitoring System is a system that uses Internet of Things (IoT) technology to monitor and track industrial pollution. The main goal of this project is to monitor and control the levels of various pollutants released into the environment by industries, and to ensure that they comply with environmental regulations and standards. The system typically consists of various IoT sensors that are deployed at different locations in and around the industrial area.

These sensors collect real-time data on different parameters such as air quality, water quality, soil quality, and noise levels. This data is transmitted to a central server through the internet, where it is analyzed and processed to determine the level of pollution in the area. The server also has an interface that allows authorized personnel to access and view the pollution data, as well as to set alarms and notifications based on the level of pollution. This can help identify areas where pollution is reaching unacceptable levels and prompt action to reduce or eliminate the pollution.

The IoT-based Industrial Pollution Monitoring System can play a critical role in promoting sustainable development and protecting the environment. By providing real-time data on pollution levels, it helps to raise awareness about the impact of industrial activities on the environment, and to promote responsible industrial practices. Additionally, it helps to ensure that industries comply with environmental regulations, which can help to reduce the negative impact of industrial activities on the environment.

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	ABSTRACT	IV
	LIST OF TABLES	IX
	LIST OF FIGURES	X
	LIST OF ABBREVIATION	XII
1	INTRODUCTION	1
2	EXISTING METHOD	3
	2.1 Proposed System	4
3	ARDUINO UNO	7
	3.1 Introduction	7
	3.2 Modules	8
	3.3 Specification	10
	3.4 Application	12
4	NODE MCU	13
	4.1 Introduction	13
	4.2 Features	14
	4.3 History	15
	4.4 Wi-Fi Module	15
	4.5 Application	15
5	GAS SENSOR	17
	5.1 Introduction	17
	5.2 Specification	18
	5.3 Working Principle	18

6	SOUND SENSOR	20
6.1	Introduction	20
6.2	Pin Configuration	21
6.3	Working principle	21
6.4	Features	22
6.5	Specifications	22
6.6	Applications	23
7	TDS SENSOR	24
7.1	Introduction	24
7.2	What is TDS and why should you care	24
7.3	Applications	25
7.4	Specifications	25
7.5	Hardware Overview	26
8	DISPLAY & BUZZER	27
8.1	Liquid Crystal Display	27
8.2	Buzzer	30

9	POWER SUPPLY	32
9.1	Introduction	32
	9.1.2 Applications	33
9.2	Transformer	34
	9.2.1 Introduction	34
	9.2.2 Principle	34
	9.2.3 Characteristics	34
	9.2.4 Applications of Transformer	36
9.3	Linear Power Supply	36
9.4	Bridge Rectifier	37
9.5	Regulator	40
10	ARDUINO IDE	42
10.1	Introduction	42
10.2	Benefits	43
11	BLYNK	44
11.1	Introduction	44
11.2	Types	44
11.3	Application	45
12	IOT BASED INDUSTRIAL POLLUTION MONITORING SYSTEM	46

	12.1 Project description	47
13	RESULT	48
	CONCLUSION	50
14	APPENDIX	51
	REFERENCES	62

LIST OF TABLES

TABLE NO:	TITLES	PAGE NO:
3.3	ARDUINO SPECIFICATIONS	10
8.1	LCD SPECIFICATION	29

LIST OF FIGURES

FIG NO:	TITLE	PAGE NO:
1.1	REPRESENTATION OF IOT	2
2.1	EXISTING BLOCK DIAGRAM	3
2.2	PROPOSED SYSTEM	5
3.1	ARDUINO UNO BOARD	8
3.2	ARDUINO UNO PARTS	8
4.1	NODE MCU	13
5.1	CIRCUIT DIAGRAM OF MQ2	17
5.2	MQ2 SENSOR	19
6.1	SOUND SENSOR	21
7.1	WATER QUALITY	25
7.5	TDS SENSOR SPECIFICATION	26
8.1.1	LCD DISPLAY UNIT	27
8.1.2	INTERNAL WORKING OF LCD UNIT	28
8.2	BUZZER	30
9.1	CIRCUIT DIAGRAM OF POWER BOARD	33
9.4.1	BRIDGE RECTIFIER	38
9.4.2	SMOOTHING	39
9.4.3	POWER SUPPLY CIRCUIT	39
9.5	REGULATOR	41
10.1	ARDUINO IDE	42
11.2	BLYNK SERVER DIAGRAM	45

12.1	BLOCK DIAGRAM	46
13.1	PROJECT MODULE	48
13.2	PROJECT KIT WITH BLYNK APP	48
13.3	BLYNK OUTPUT	49

LIST OF ABBREVIATIONS

NODE MCU	Node Microcontroller Unit
TDS	Total dissolved solids
IoT	Internet of Things
Wi-Fi	Wireless Fidelity
SRAM	Static Random-Access Memory
EEPROM	Electrically Erasable Programmable Read Only Memory
LCD	Liquid crystal display
AREF	Analog Reference
PWM	Pulse Width Modulation
USB	Universal Serial Bus
MOSFET	Metal-Oxide Semiconductor Field Effect Transistor
LPG	Liquefied Petroleum Gas