



Problem Solving Methodologies

Sl. No.	Title & Scope of The R&D project	Year in which started	Description
1	Paper Mixing Mechanism	2018-19	<p>This project is interconnected to printing industry where challenge is of mixing original and duplicate copies of bill books. At this moment in present days it is carried out laboriously with human efforts, so it leads to delay in delivery and also there is high chance of failure. To dwindle down this kind of failures our team is trying to make an self-activating paper mixing machine with a help of components like compressor, vacuum nozzle, vacuum tubes, AC motor, and many other mores. Today's generation is so advanced and innovative that everyone wants their work to be accomplished as early as possible. So, this variety of machine can help them in many ways, like there can be very minimum chances of errors, quality can be increased compared to human efforts, cost is less, rate of paper mixing is very high, so delivery can be done on time. This machine can help market in increasing their productivity and also its product quality.</p>
2	Hybrid Vehicle	2018-19	<p>A Gasoline and Electric Powered Two Wheeler Hybrid Vehicle is an automobile which relies not only on batteries but also on an internal combustion engine which drives a generator to provide the electricity and also drive a wheel. It has great advantages over the previously used gasoline engine that drives the power from gasoline only. It also is a major source of air pollution. The objective is to design and fabricate a two wheeler hybrid electric vehicle powered by both battery and gasoline and contains a hub motor, generator drives with chain drive, controller, and batteries. In this source of drive we assemble the generator with sprocket and attached with chain drive. When the chain is drive then generator is also drive, it is produce electric current and this electric current we store in battery for drive the vehicle. The combination of both the power makes the vehicle dynamic in nature. It provides its owner with advantages in fuel economy and environmental impact over conventional automobiles. Hybrid electric vehicles combine an electric motor, battery and power system with an internal combustion engine to achieve better fuel economy and reduce toxic emissions.</p>

3	Supercharger in motorcycle with switch operated gear shifting Mechanism	2018-19	<p>Purpose of our study is to obtain more power & torque in lower segment bikes and make easy gear shift for all the users and also for the people who have some disability in their legs who are unable to change the gear by their own leg. There are many issues of power output and torque output in small capacities IC engines used in lower segment bikes. So we are going to use supercharger in lower segment bike with switch operated gear box. In which the supercharger will be controlled by switch. It will increase engine efficiency at low RPM and the enhanced fuel efficiency in turn leads to considerable reduction in harmful emission. The switch operated gearbox will provide smooth gear shifting and increase gear shifter's life. And also we are implanting oil cooling system to prevent from over heating of engine due to excessive power output.</p>
4	Fire fighterno	2018-19	<p>As the name says fire fighterno it defines a two wheeled fire fighting vehicle which is made on an eterno (heavy duty geared scooter). Two wheel fire fighter which could reach the places where a truck couldn't reach, places like narrow roads, small alleys (eg. Poals of ahmedabad and other cities), traffic are the places where a fire fighting truck would face difficulties passing by. Eliminating that problem the fire fighterno is a vehicle including a detachable trolley loaded with 3-4 fire extinguisher (DCP & CO2) making the work of fire fighters more flexible. Along with a detachable trolley the vehicle would have –a first-aid kit ,fire extinguishing blanket ,ropes ,axes etc as some necessary supplies.</p>

SWARNIM INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

START-UP PROJECT DETAILS

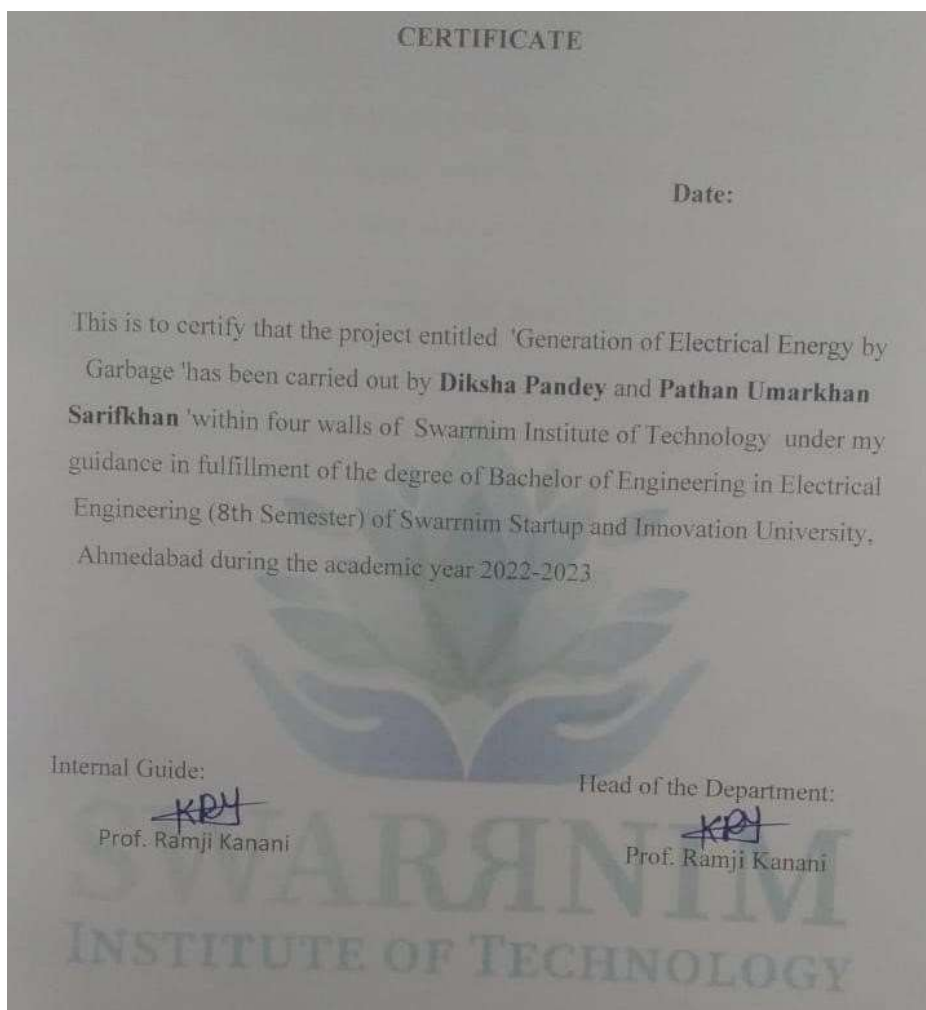
Sr. No.	Department	Startup Details					Remark
		Name of Startup	Main member name	Fund/Grant	Year Process for grant	Current Status	
1	Electrical Engineering	Automatic Cleaning System for Solar Panels	Trivedi Raj	10,000/-	2018-19	Completed	Not scalable for startup
2	Electrical Engineering	E-Rikshaw	Kushwah Niraj	Aprox 72,000/-	2019-20	Completed	
3	Electrical Engineering	Water Vending Machine	Parmar chiragsingh	10,000/-	2019-20	Completed	Not scalable for startup
4	Electrical Engineering	Vertical Gardning	Yadav Suraj	5,000/-	2019-20	Completed	Not scalable for startup

Swarnnim Institute of Technology

Department of Electrical Engineering

Project Detail for B.Tech 4th Year (7th and 8th Sem) - Academic year 2022 -2023

Group No.- 01 (EE -01)
Name of Project :- Electrical Energy Produce by Garbage
Course – B.Tech in Electrical Engineering
Leader Group Member :- Diksha Pandey
Name of Group member:- Diksha Pandey, Pathan umarkhan sarifkhan



Abstract

We are generally use the phenomenon to convert heat energy to electrical energy. Recent years, an increasing concern of environmental issues of emissions, in particular global warming and the limitations of energy resources has resulted in extensive research into novel technologies of generating electrical Power. Thermoelectric power generators have emerged as a promising unconventional green technology due to their divergent Advantages Thermoelectric power generation offer a potential application in the direct conversion of waste-heat energy into electrical power where it is unnecessary to consider the cost of the thermal energy input. The application of this Alternative green technology in converting waste-heat energy unswervingly into electrical power can also improve the overall Efficiencies of energy conversion systems in this paper, background on the basic concepts of thermoelectric power Generation with waste material, their importance and relevant .this technology is also helpful to economically improvement of country we hope this technology creating the green environmental world.



Group No.- 02 (EE -02)
Name of Project :- First Quadrant IGBT- Based Chopper Drive For DC Motor
Course — B.Tech in Electrical Engineering
Leader Group Member :- Lonare Kalash P.
Name of Group member:- :- Lonare Kalash P., Patel Kishan B., Rishikesh Raj Vijay Kumar

CERTIFICATE

Date:

This is to certify that the project entitled **“First Quadrant IGBT- Based Chopper Drive For DC Motor”** has been carried out by **Patel Kishan B., Lonare Kalash P., Rishikesh Raj Vijay Kumar** within four walls of Swarnnim Institute of Technology under my guidance in fulfillment of the degree of Bachelor of Engineering in Electrical Engineering (8th Semester) of Swarnnim Startup and Innovation University, Gandhinagar during the academic year 2022-23.

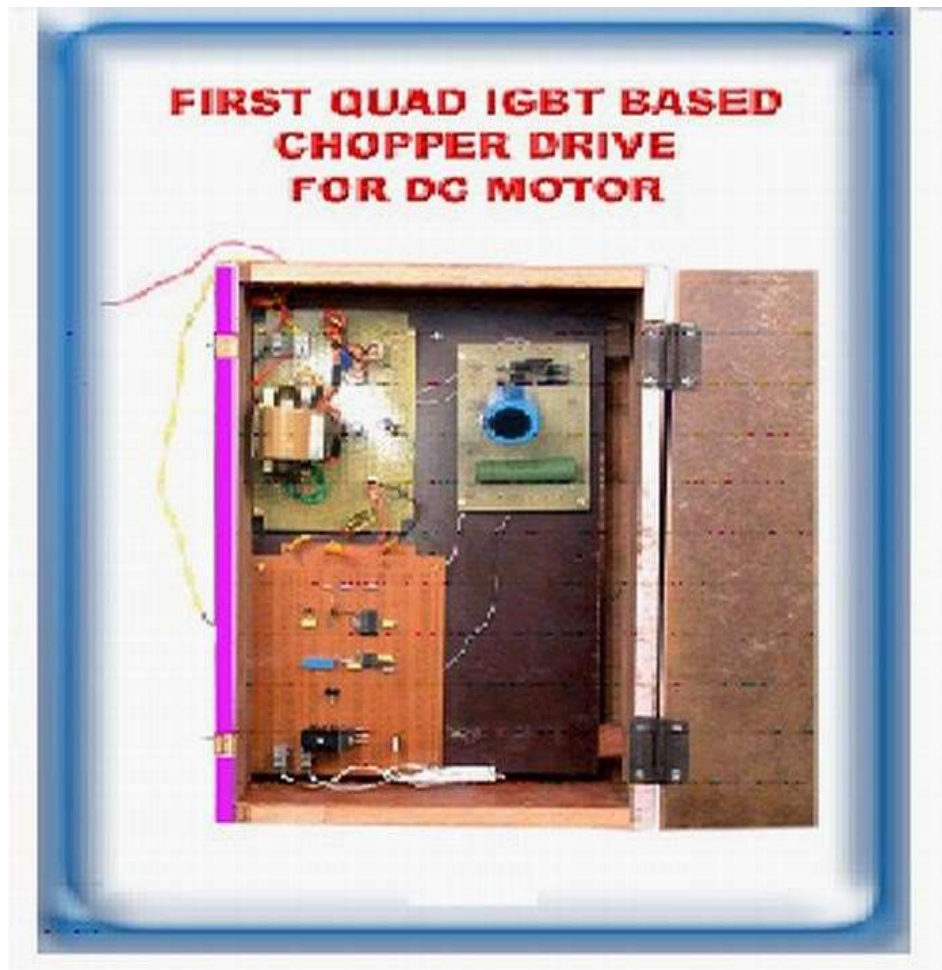
Internal Guide:

Prof. Ramji Kanani

Head of the Department:

Prof. Ramji Kanani

Abstract:- The aim of development of this project is towards providing efficient and simple method for control speed of DC motor using pulse width modulation technique. The speed control of DC motor with conventional power converters such as Thyristor suffered from the drawback of using commutation circuit, which we have eliminated with the use of IGBT.



Group No.- 03 (EE -03)

Name of Project :- Design Of Auto Conveyor Belt System

Course — — B.Tech in Electrical Engineering

Leader Group Member :- Patel Arya S.

Name of Group member:- Patel Arya S., Thakor Karankumar M., Panchal Jay K.

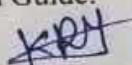
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Date:

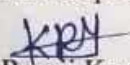
This is to certify that the project entitled **“DESIGN OF AUTO CONVEYOR BELT SYSTEM”** has been carried out by **PATEL ARYA SUMANTBHAI, PANCHAL JAY KIRITKUMAR, THAKOR KARANKUMAR MANAJI** within four walls of Venus International College of Technology under my guidance in fulfillment of the degree of Bachelor of Engineering in Electrical Engineering (8th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2022 - 2023.

SWARNIM
INSTITUTE OF TECHNOLOGY

Internal Guide:


Prof. Ramji Kanani

Head of the Department:


Prof. Ramji Kanani

ABSTRACT

Present world is very much competitive world. Up growing technology is very much responsible in this case. The nation, which has more updated technology, it dominates the world. To survive in the competition technology is very much important. Industry has very much influence on economy for a nation. Where there is industry, there must be production of some products. Technological improvement is very much necessary to industry for better product. Automation is very necessary for industry. Conveyor belt is used to carry this product from one station to another. It is a necessary tool in the production line of an industry. The objects can be sorted in a conveyor belt according to its height. For this purpose, a product will have to be placed on a conveyor belt, which is operated by a motor. Then after checking the height of the product, the exact or lower than that height of the products will be thrown to the product box and the greater than the exact height products will be rejected to the waste box by automatic rejection process and the accepted products will also be counted automatically which is performed by user define rules.

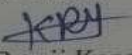
Name of Group member:- Sodha Kuldipsinh H., Arya Yuvraj

CERTIFICATE

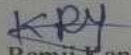
Date:

This is to certify that the project entitled "**Solar power inverter**" has been carried out by Devalpalli Raghuveer Agrajbhai, Sabyasachi Amiya Pal and Thakor Atul Dashrathji within four walls of Swarmim Institute of Technology under my guidance in fulfillment of the degree of Bachelor of Engineering in Electrical Engineering (8th Semester) of Swarmim Startup and Innovation University during the academic year 2023-24.

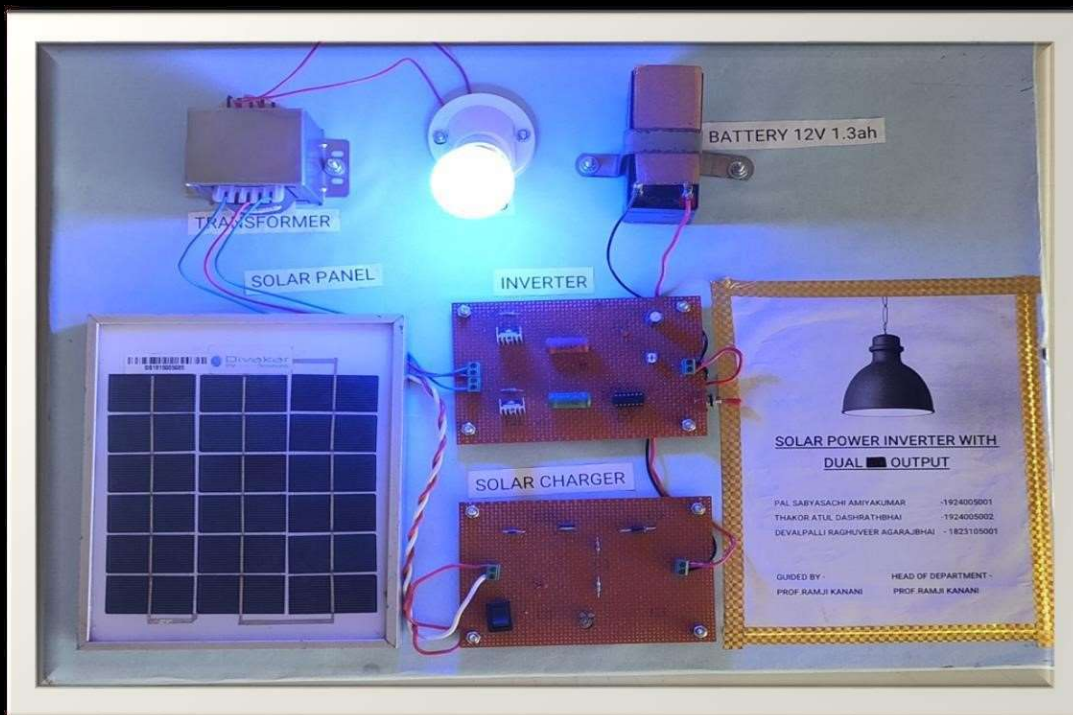
Internal Guide:


Prof. Ramji Kanani

Head of the Department:


Prof. Ramji Kanani

Abstract:- Today's world growing energy and depleting of natural resources such as fossils, coal, oil etc, has a vast impact to our society. We have developed a Solar Power inverter with Dual AC output using solar panel, DC battery, Inverter, Solar Charger output and two AC load.



Group No.- 07 (EE -04)

Name of Project :- Automatic Solar Panel Cleaning System

Course – – B.Tech in Electrical Engineering

Leader Group Member :- Sodha Kuldipsinh H.

Name of Group member:- Sodha Kuldipsinh H., Arya Yuvraj

ABSTRACT

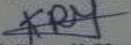
- Accumulation of dust from the outdoor environment on the panels of solar photovoltaic (PV) system is natural. There were studies that showed that the accumulated dust can reduce the performance of solar panels, but the results were not clearly quantified. The objective of this research was to study the effects of dust accumulation on the performance of solar PV panels. Experiments were conducted using dust particles on solar panels with a constant-power light source, to determine the resulting electrical power generated and efficiency. It was found from the study that the accumulated dust on the surface of photovoltaic solar panel can reduce the system's efficiency by up to 30%.
- So it is very important to remove dust from the solar cells. With the help of wiper on the bases of water pump we can remove dust from solar panels and increase the efficiency of solar cells.

CERTIFICATE

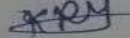
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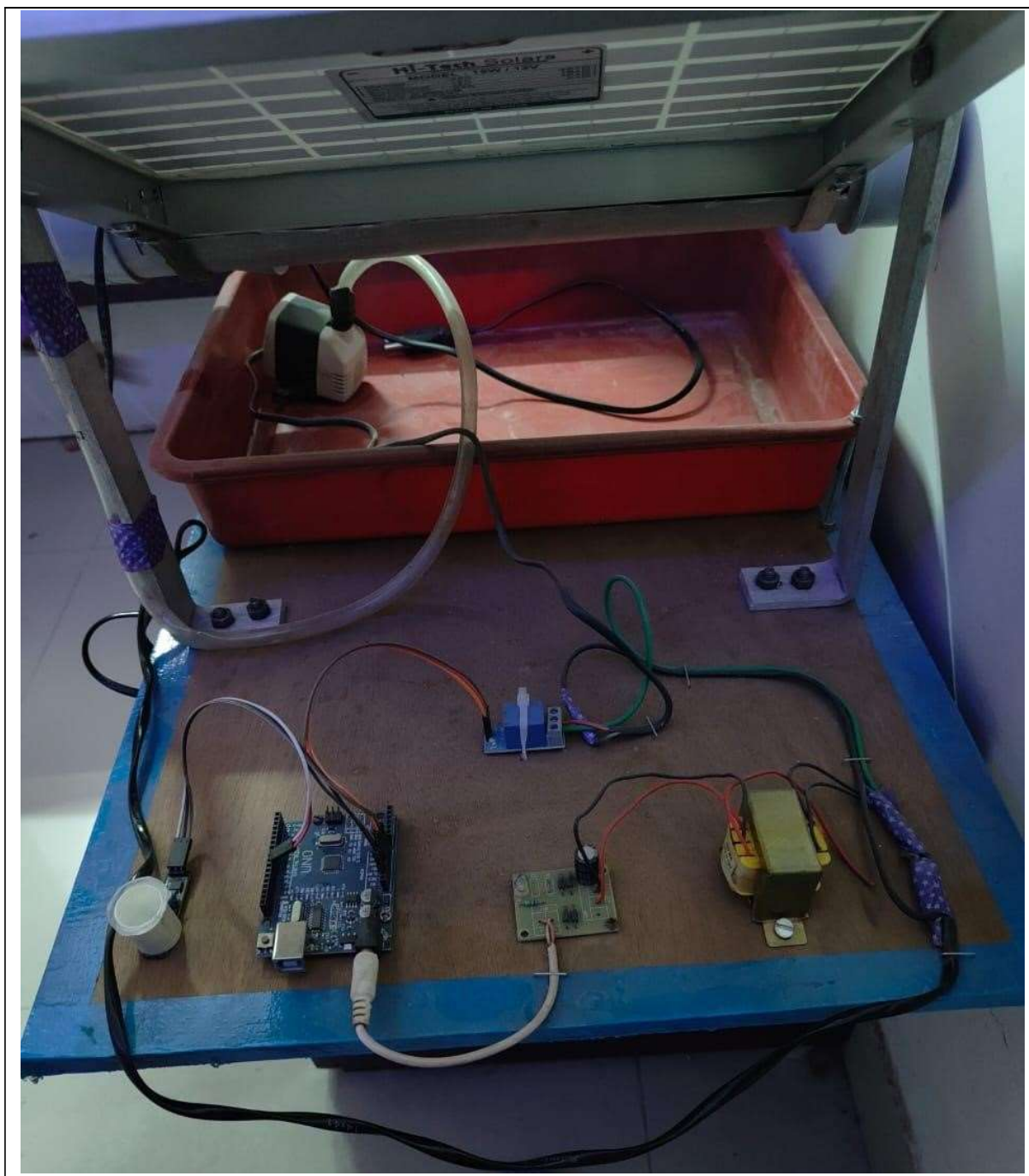
This is to certify that the project entitled **"Solar Panel Auto Cleaning System"** has been carried out by Sodha Kuldipsinh Himmatsinh, Arya Yuvraj within four walls of Swarnim Institute of Technology under my guidance in fulfillment of the degree of Bachelor of Engineering in Electrical Engineering (8th Semester) of Swarnim Startup and Innovation University during the academic year 2023-24.

Internal Guide:


Prof. Ramji Kanani

Head of the Department:


Prof. Ramji Kanani



“Home Automation”

A PROJECT REPORT

Submitted by

Ninama Kirti (2125005001)

Shah Ronak (2125005002)

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Kshatriya Vinitsinh (2125005004)

Chauhan Sandeep (2125005005)

Mahida Bhavesh (2125005006)

In fulfillment for the award of the Bachelor

of

BACHELOR OF ENGINEERING

In

Electrical Engineering



INDIA'S FIRST UNIVERSITY FOR STARTUP

Swarnnim Institute of Technology, Bhoyan Rathod – Gandhinagar

Swarnnim Startup & Innovation University 2023-24

Swarnnim Institute of Technology, Bhoyan Rathod – Gandhinagar

Department of Electrical Engineering

2023-24

CERTIFICATE

Date:

This is to certify that the project entitled **“Home Automation”** has been carried out by **Kirti, Ronak, Sandeep, Vinit, Vijay, Bhavesh** within four walls of Swarnnim Institute of Technology under my guidance in fulfillment of the Bachelor of Engineering in Electrical Engineering (8th Semester) of Swarnnim Startup & Innovation University, Gandhinagar during the academic year 2023-24.

Internal Guide:

Prof. Ramji Kanani

Head of the Department:

Prof. Ramji Kanani

Chapter – 1

PLC based home automation

1.1 INTRODUCTION

Automation and smart home concept was introduced in 1980's by using the latest technologies such as PLC. The concept of the home automation is not new, but the concept is advancing day by day. This home automation has many advantages; it is very much useful for the handicapped people and old age people who can't walk fast. Using different methods such as web service and android app, wireless sensors based on mobile technology, Bluetooth based using Adriano etc. These incur high components etc. Bluetooth based automation using Adriano use components as cell phone, C+ program, microcontroller etc. This project attempts at atomizing any house old instruments. As the functioning of house old instruments are combined with functioning of PLC, the project confirms to be concrete, reliable and more effective than the present available controllers.

1.2 LITERATURE SURVEY

Ashwini.R, Mrs. Pooja Mohnani [1] has presented an international journal on Application of

Wireless Sensor Network in Home Automation. Bluetooth based home automation using Adriano [2] is a concept evolved after the Wi-Fi, here they make use of Bluetooth to make connection between cell phone and microcontroller Bluetooth module. Here we simple concept of Home Automation using PLC and HMI, controlling is carried out by PLC and HMI where the HMI is very complicated network. it is used to central controlling or operation of home appliances are to be controlled through the Rockwell make micro820 Series PLC and Rockwell make HMI.

2.1 PLC in industry

Hydraulic system turnover of work piece by PLC [4]: Work piece turnover is automatic control and maintenance of automation production, assembly, and output lines in the industry. Process control loop for bottle washing machine in industry by PLC [5]: PLC based bottle washing technology is used in Pepsi, coco-cola, beer, slice, beverages industries'. The washing work should be carried out with high speed and accurate manner.

2.2 PLC in agriculture

Moisture and nutrient precise governing system by PLC [6]: First we have checked the content of soil, for better growth of a plant it mainly needs water and nutrients. So this project has integrated with PLC to provide the water and nutrients in correct and sufficient manner.

2.3 PLC in Medical science

PLC is used to determine the content of antigens named by listeriosis in and phosphatidyl-inositol phospholipase [7] which was found in the body of goats, bovines, pigs. ELISA is an antigen which is considered as recombination of above 2 antigens. PLC and SCADA for control of LN2 system for SST [8]: SST (steady state superconducting), where liquid nitrogen is used to control temperature of SST.

2.4 PLC in Electrical Engineering

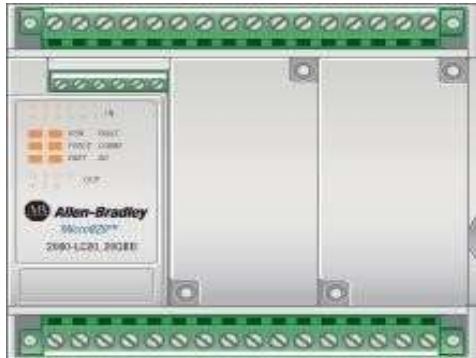
PLC and fuzzy PID Simulink combined circuit for AVR system [9]: The main objective is to control the voltage below the given range. Fuzzy and PLC are combined to betterment of the control. Communication of power line and HVDC bus in renewable energy system by PLC

[10]: The power generated by renewable source's such as wind, solar, hydro, etc. are transferred to HVDC bus, from here the power is supplied to all local stations.

2.5 PLC in Mechanical Engineering

PLC governed single cylinder diesel engine [11], the concept is evolved to convert mechanical injection engine into electrically controlled 2-port system. Here from one port is provided with injector and other port with diesel. All injectors (port) are controlled by PLC.

PLC



1.3 Background

The first PLC was introduced in the late 1960s. A programmable logic controller is an industrial computer. It is designed to help in the control of manufacturing processes. The automobile sector was the first industry to deploy PLCs into its operations. HMI is short for Human Machine Interface. We use HMIs in industry to control and monitor machines. A very common HMI that you all encounter on a regular basis would be an ATM machine. The screen and pushbuttons allow you to operate the machine to dispense a certain amount of money, or to deposit money.

1.4 Objectives of the work

The main aim of the This project with PLC and HMI based home automation there is main objective is optimization of maintenance of individual electric switch board even multi location of cable laying it easily modified the logic of programing.

1.5 Problem Identification and Proposed Solution

Main concern of logic development in side the PLC of required operation of house electrical devices and its controlled, appliance equipment's as well.

Secondary concern for HMI graphics development based on the connected devices which are connected with this panel.

1.6 Project Planning

Plc based home automation project is not simple project which more timing consumable project even high cost project

Step by step project planning

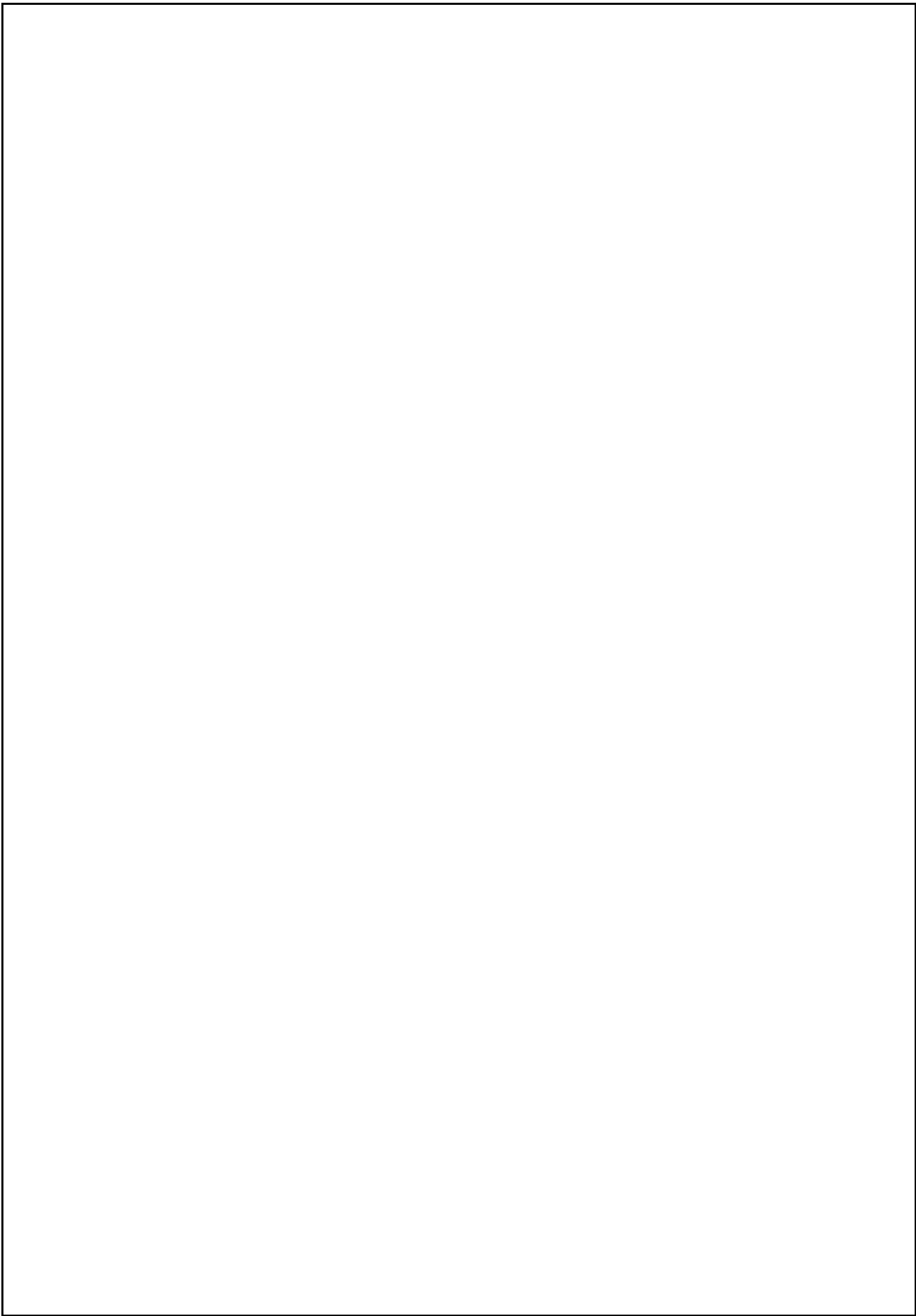
1. Preparation BOQ based on required PLC input and output count with analog and digital I/O.
2. Vendor/supplier to be contacted for procurement of PLC and HMI.
3. Vendor to be contacted for control panel manufacturing with safety protection of control panel and PLC and HMI.
4. Program logic development of PLC.
5. Graphics design of HMI.
6. Testing of logic function which is working properly or not if not than correction of logic.

Chapter – 2

My Innovation – PLC based automation

Studying this course will enable the B-Tech pass outs to plan, design, estimate and execute for PLC base automation project. Dick Morley who invented the first PLC, the Modicon 084, for General Motors in 1968, is considered the father of PLC.

The system is automatically controlled, energy-efficient and highly scalable to smart home with basic features that save energy and the residents comfort. This system consists of home appliances such as garden light, outside light, pump motor, garden motor and room heater which is controlled using PLC and relays with our predefined schedule. A Logo PLC system (Model-0AB3) is used as a central controller. Ladder diagram is used to design the main program for PLC. This PLC is capable to storing instructions, sequencing, timing and processing. We have used wired x10 technology which is a protocol for communication among electronic devices for home automation (domestics). It primarily uses power line wiring for signaling and control. As a result, we make a schedule based on a whole day to control the loads which depend on real time as user selected time. Finally the operation of the system has been successful as we expected.



Chapter – 3

Concept of PLC based home automation

3.1 PLC based home automation project Previous project to do

The PLC is programable logic controller the central operation of entire house with single controlled system the simplification of the home automation is FAN, LAMP, AC etc. operation through the single location. be connected to the internet and may incorporate facial recognition technology.

3.2 Describe of PLC based home automation project

A PLC based home automation control system is a simple automation.the whole house controlled from single location instead of multiple area for control. Here we have implemented PLC and HMI based home automation project.

3.3 Advantages, Disadvantages and applications

Application

At project wild and majority project or automation executed through the PLC ,HMI or SCADA based. House, offices, mall, supermarkets, manufacturing equipment.

Advantage

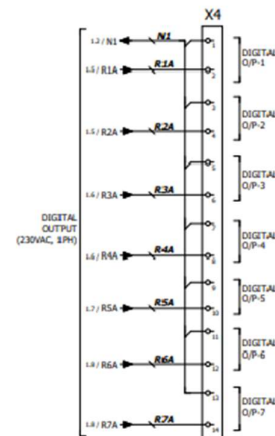
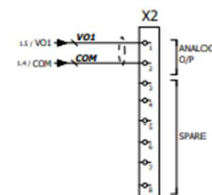
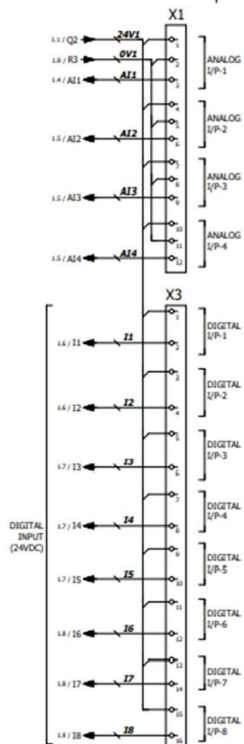
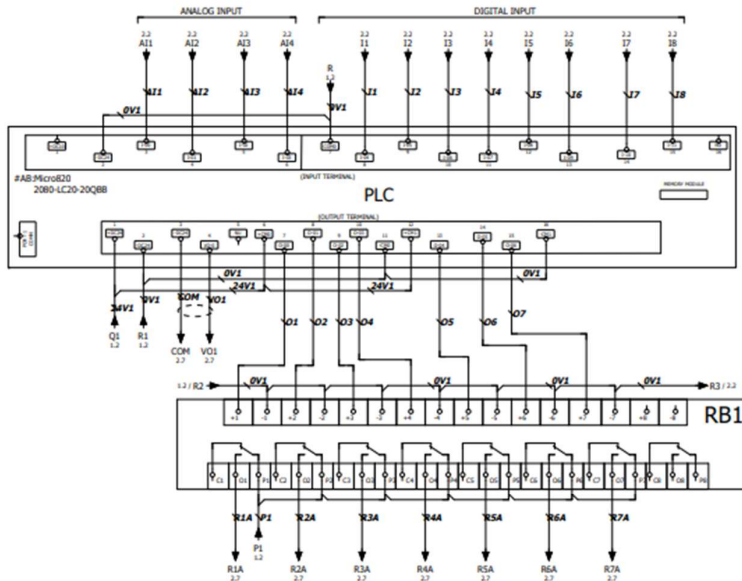
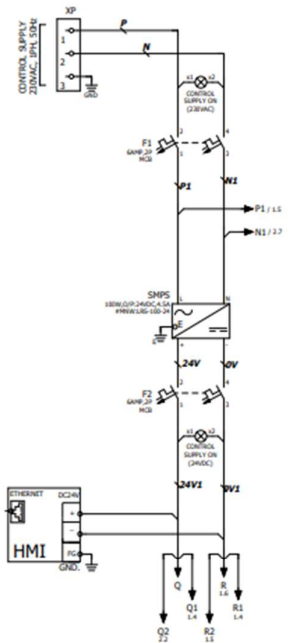
- a) Single operation/control points
- b) Controlling temperature, level etc...
- c) Looking different as per routine practices

Disadvantage

- a) If system failed entire house not functioning
- b) Efficiency is only about 90%.
- c) Cost is higher

Chapter – 4

Describe home automation wiring diagram



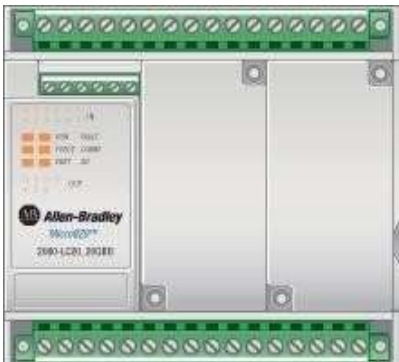
Hardware details with Logic PLC:

Micro820

Micro820 Device Configuration

Controller

Overview

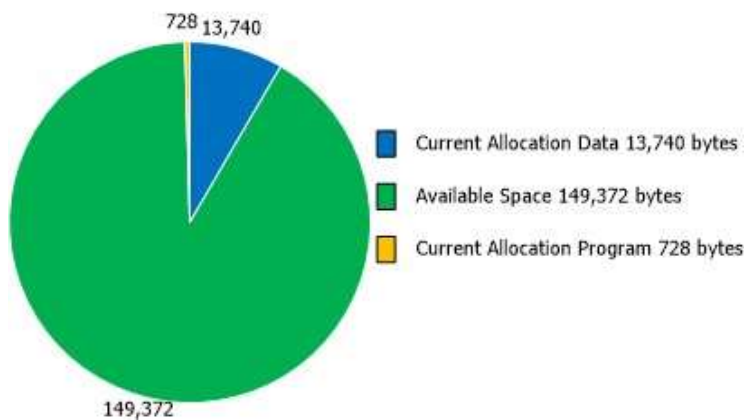


General

Name	Description	Vendor Name	Catalog ID	Product Lifecycle	Controller Project Version	Download Source Code
Micro820		Allen-Bradley	2080- LC20-20QBB	Active	12	Yes

Memory

Memory Statistics



Name	Allocated	Used	Free
Embedded Project	348,160 bytes	38,424 bytes	309,736 bytes
Temporary Variables	8,264 bytes	72 bytes	8,192 bytes
Retentive Memory (bytes)	400 bytes	0 bytes	400 bytes

Retentive Memory (blocks)	400 blocks	0 blocks	400 blocks
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Page

Mode Behavior	Fault Override	Memory Card	Hard Fault
Retain previous power-down mode	Do not clear fault	Memory Card	Stop controller

Serial Port

Common Settings

Driver	Baud Rate	Parity	Station Address
CIP Serial	38400	None	1

Remote LCD is configured to overwrite the serial port parameters.

Ethernet

Port Settings

Port State: Enabled

Auto-Negotiate Speed and Duplex Mode: Enabled

Internet Protocol (IP) Settings

Startup Configuration	IP Address	Subnet Mask	Gateway Address	Detect duplicate IP address
Static	192.168.0.11	255.255.255.0	0.0.0.0	Enabled

EtherNet/IP

Inactivity Timeout: 120 sec

Modbus TCP

Modbus TCP Server state: Disabled

Real Time Clock

Allow real time clock to be changed in run mode: Disabled

Embedded I/O

Input Filter

Inputs	0-1	2-3	4-5	6-7	8-9	10-11
Input Filter	Default (DC 8ms)	Default (DC 8ms)	Default (AC 8ms)	Default (AC 8ms)	Default (AC 8ms)	Default (AC 8ms)

Startup/Faults

Gain & Offset

Input	0	1	2	3
Gain	100	100	100	100
Offset	0	0	0	0

Output	0
Gain	100
Offset	0

Memory Card

Memory Card Settings

Load on power up	Include Project & Logical values upon Backup/Restore
Disabled	False

Remote LCD

Hardware Settings

Enable Push Button Key Read	Backlight Mode	Time Value	Contrast
True	Interval	30 sec	50%

Startup Message

Display Time	Font Size	Max Size	Message
3 sec	Large (8x16 pixel)	96 Characters (24 columns x 4 rows)	2080-REMLCD

Global Variables

Name	Alias	Data Type	Dimension	Initial Value	Project Value	Comment	Direction	Retained	String Size
_IO_EM_DO_00		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_01		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_02		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_03		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_04		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_05		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DO_06		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_00		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_01		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_02		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_03		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_04		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_05		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_06		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_07		BO OL			FALSE		VarDirectly Represente d	Fals e	
_IO_EM_DI_08		BO OL			FALSE		VarDirectly Represente d	Fals e	

_IO_EM_DI_09	BO		FALSE	VarDirectly	Fals
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Name	Alia s	Data Type	Dimension	Initial Value	Project Value	Comment	Direction	Retained	String Size
		OL					Represented	e	
_IO_EM_DI_10		BO OL			FALSE		VarDirectly Represented	Fals e	
_IO_EM_DI_11		BO OL			FALSE		VarDirectly Represented	Fals e	
_IO_EM_AI_00		WO RD			0		VarDirectly Represented	Fals e	
_IO_EM_AI_01		WO RD			0		VarDirectly Represented	Fals e	
_IO_EM_AI_02		WO RD			0		VarDirectly Represented	Fals e	
_IO_EM_AI_03		WO RD			0		VarDirectly Represented	Fals e	
_IO_EM_AO_00		WO RD			0		VarDirectly Represented	Fals e	
Resettimer		BO OL					Var	Fals e	
START_FAN		BO OL					Var	Fals e	
START_LIGHT		BO OL					Var	Fals e	
START_AC		BO OL					Var	Fals e	
START_HEATER		BO OL					Var	Fals e	
START_REFRI		BO OL					Var	Fals e	
START_TV		BO OL					Var	Fals e	
START_WATER_PURIFY		BO OL					Var	Fals e	
Upper_Tank_Water_Level		REAL					Var	Fals e	
Lower_Tank_Water_Level		REAL					Var	Fals e	
TON_SP		DINT					Var	Fals e	

TON_ACC	DIN T	Var	Fals e
WaterTON	TI ME	Var	Fals e

WATERACC	TI ME	Var	Fals e
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Name	Alias	Data Type	Dimension	Initial Value	Project Value	Comment	Direction	Retention	Striding Size
Water_Full		BO OL					Var	Fals e	
__SYSVA_CYC LECNT		DIN T			1116391	Cycle counte r	VarGlobal	Fals e	
__SYSVA_CYC LEDATE		TI ME			T#45m12s366ms	Times tamp of the in	VarGlobal beginn ing of cycle conds (ms)	Fals e	
__SYSVA_KVB PERR		BO OL			FALSE	Kernel variab le g cing ction	VarGlobal bindin produ error (produ error)	Fals e	
__SYSVA_KVB CERR		BO OL			FALSE	Kernel variab le bindin g consu ming error (consu mptio n error)	VarGlobal	Fals e	
__SYSVA_RES NAME		ST RIN			'CONTROLLER\MI CRO820\MICRO82	Resou rce	VarGlobal	Fals e	

	G	0'	name (max length =255)		
__SYSVA_SCA NCNT	DIN T	1116395	Input scan counte r	VarGlobal	Fals e
__SYSVA_TCY CYCTIME	TI ME	T#0s	Progra mmed	VarGlobal	Fals e

Name	Al ia s	Dat a Typ e	Dime nsion	Ini tial Val ue	Project Value	Com ment	Direction	Ret aine d	Str ing Siz e
						cycle time			
__SYSVA_TCY CURRENT		TI ME			T#3ms	Curre nt cycle time	VarGlobal	Fals e	
__SYSVA_TCY MAXIMUM		TI ME			T#5ms	Maxi mum cycle time since last start	VarGlobal	Fals e	
__SYSVA_TCY OVERFLOW		DIN T			0	Numb er of cycle overfl ows	VarGlobal	Fals e	
__SYSVA_RES MODE		SIN T			3	Resou rce execut ion mode	VarGlobal	Fals e	
__SYSVA_CCE XEC		BO OL			FALSE	Execu te one cycle when applic ation is in cycle to cycle mode	VarGlobal	Fals e	

__SYSVA_REM OTE		BO OL		FA LS E	TRUE		Remot e status	VarGlobal	Fals e
__SYSVA_SUS PEND_ID		UIN T		0	0		Last Suspe nd ID	VarGlobal	Fals e
__SYSVA_TCY WDG		UDI NT		200 0	2000		Softw are Watch dog	VarGlobal	Fals e
__SYSVA_MAJ _ERR_HALT		BO OL		FA LS E	FALSE		Major Error Halted status	VarGlobal	Fals e
__SYSVA_ABO RT_CYCLE		BO OL		FA LS E	FALSE		Aborti ng Cycle	VarGlobal	Fals e
Name	Al ias	Dat a Typ e	Dime nsion	Ini tial Val ue	Project Value		Com ment	Direction	Ret aine d ing Siz e
__SYSVA_FIRS T_SCAN		BO OL		TR UE	FALSE		First scan bit	VarGlobal	Fals e
__SYSVA_USE R_DATA_LOST		BO OL		FA LS E	FALSE		User data lost	VarGlobal	Fals e
__SYSVA_POW ERUP_BIT		BO OL		TR UE	FALSE		Power -up bit	VarGlobal	Fals e
__SYSVA_PRO J_INCOMPLET E		UDI NT		0	0		Projec t Incom plete	VarGlobal	Fals e

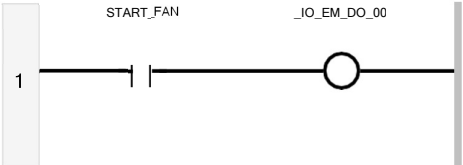
Programs

Prog1

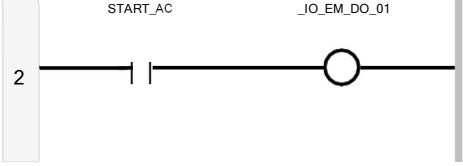
Local Variables

Name	Alias	Data Type	Dimension	Initial Value	Project Value	Comment	Direction	Retained	String Size
TON_1		TON			Var	False	

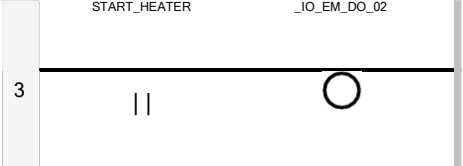
Rung1 Diagram



Rung2 Diagram



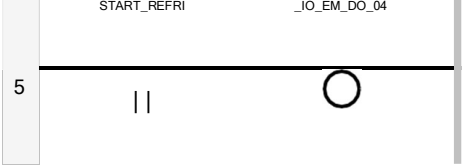
Rung3 Diagram



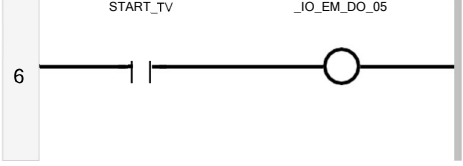
Rung4 Diagram



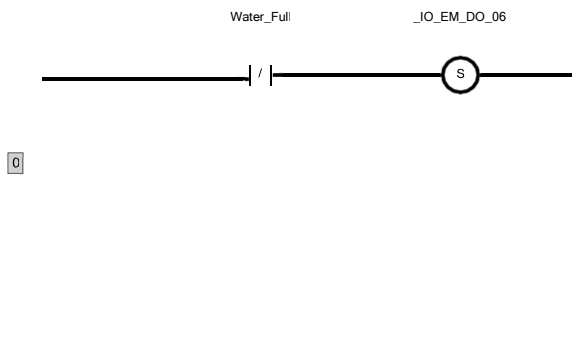
Rung5 Diagram



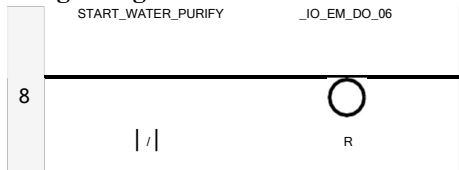
Rung6 Diagram



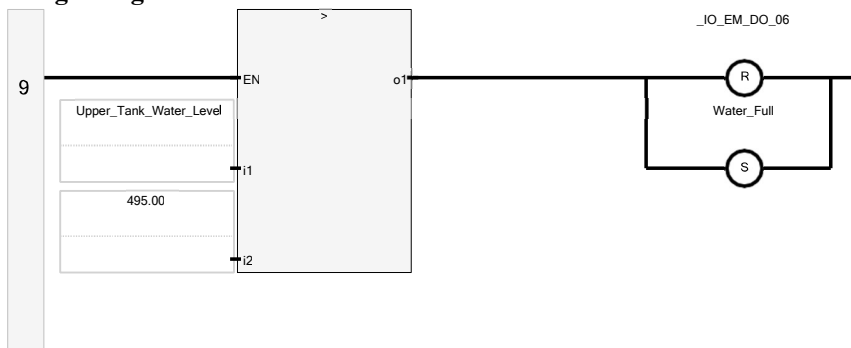
Rung7 Diagram



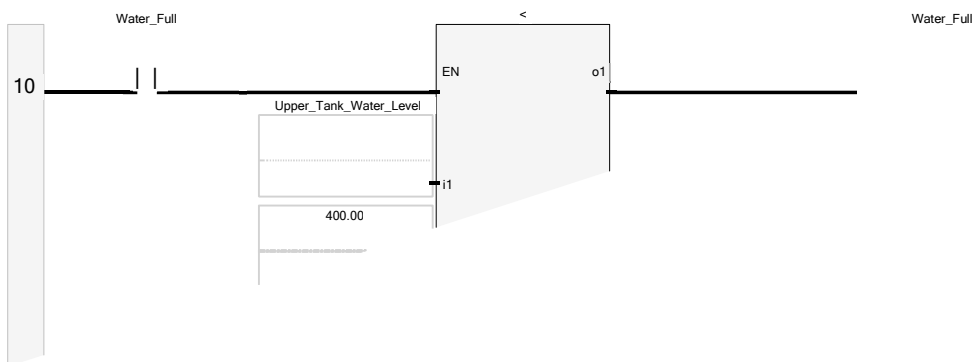
Rung8 Diagram

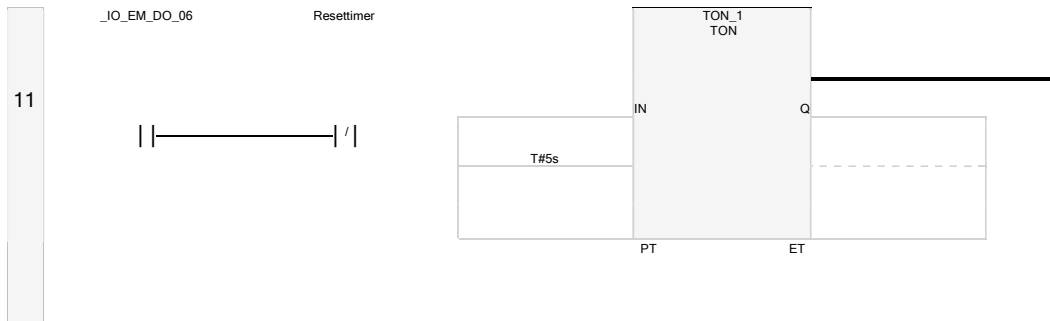


Rung9 Diagram



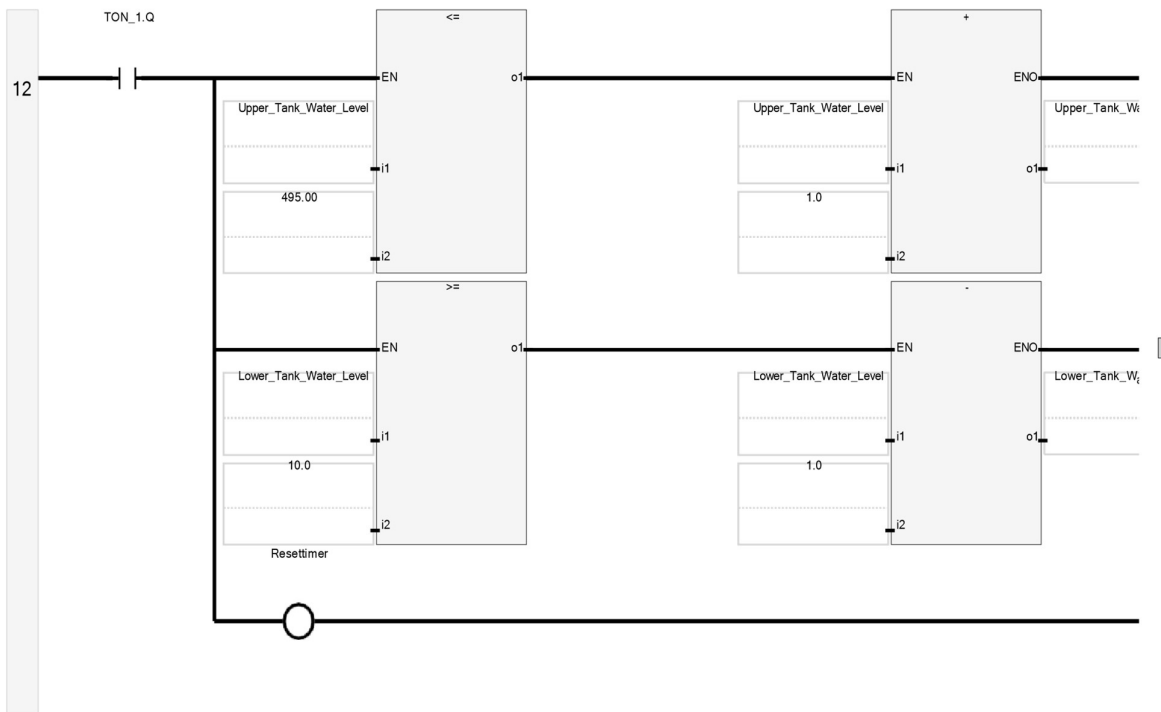
Rung10 Diagram





Rung11 Diagram

Rung12 Diagram



HMI PV800 configuration

TAG REPORT External

Tags

Name	Data Type	Address	Controller	Description	Data Entry		Access	Update Rate	Scaling	Raw		Scaled	
					Min	Max				Min	Max	Min	Max
FAN	Boolean	START_FAN	PLC-1	-	-	-	Read/Write	50	False	-	-	-	-
LIGHT	Boolean	START_LIGHT	PLC-1	-	-	-	Read/Write	50	False	-	-	-	-
AC	Boolean	START_AC	PLC-1	-	-	-	Read/Write	50	False	-	-	-	-

	an						te						
HEATER	Boole an	START_HEATER	PLC-1	-	-	-	Read/Wri te	50	False	-	-	-	-
REFRI	Boole an	START_REFRI	PLC-1	-	-	-	Read/Wri te	50	False	-	-	-	-
TV	Boole an	START_TV	PLC-1	-	-	-	Read/Wri te	50	False	-	-	-	-
WATER_PU RI	Boole an	START_WATER_PURIFY	PLC-1	-	-	-	Read/Wri te	50	False	-	-	-	-
Upper Tank Water Level	Real	Upper_Tank_Water_L evel	PLC-1	-	- 99999 99	99999 99	Read/Wri te	500	False	-	-	-	-
Lower Tank Water Level	Real	Lower_Tank_Water_L evel	PLC-1	-	- 99999 99	99999 99	Read/Wri te	500	False	-	-	-	-
Motor_ON	Boole an	_IO_EM_DO_06	PLC-1	-	-	-	Read/Wri te	500	False	-	-	-	-

Memory Tags

No Memory Tags

GlobalTags

Source Tag	System Tag	Destination Tag	Access
-	Acknowledge All Alarms	-	Write
-	Clear All Alarms	-	Write
-	Clear All Alarms Status	-	Read
-	Current Screen Number	-	Read/Write
-	Current User	-	Read
-	Free Application Memory	-	Read
-	Free Storage Memory	-	Read
-	Idle Timeout	-	Read/Write
-	Language	-	Read/Write
-	LCD Brightness	-	Read/Write
-	Long Date	-	Read

-	Print Mode	-	Write
-	RAM Size	-	Read
-	Screen Saver Control	-	Write
-	Short Date	-	Read

-	System Clock - Day	-	Read/Write
---	--------------------	---	------------

-	System Clock - Hour	-	Read/Write
-	System Clock - Minute	-	Read/Write
-	System Clock - Month	-	Read/Write
-	System Clock - Second	-	Read/Write
-	System Clock - Year	-	Read/Write

SCREEN REPORT

Screen List Report

Name	Number	Description	Rights
Screen_1	1	-	-
LIGHT_FAN	2	-	-
Refri	3	-	-
Heater	4	-	-
TV	5	-	-
Water Tank	6	-	-
AC	7	-	-
Welcome	8	-	-
Diagnostics	1001	-	-
Alarm Banner	1002	-	-

4.2 Working of circuit

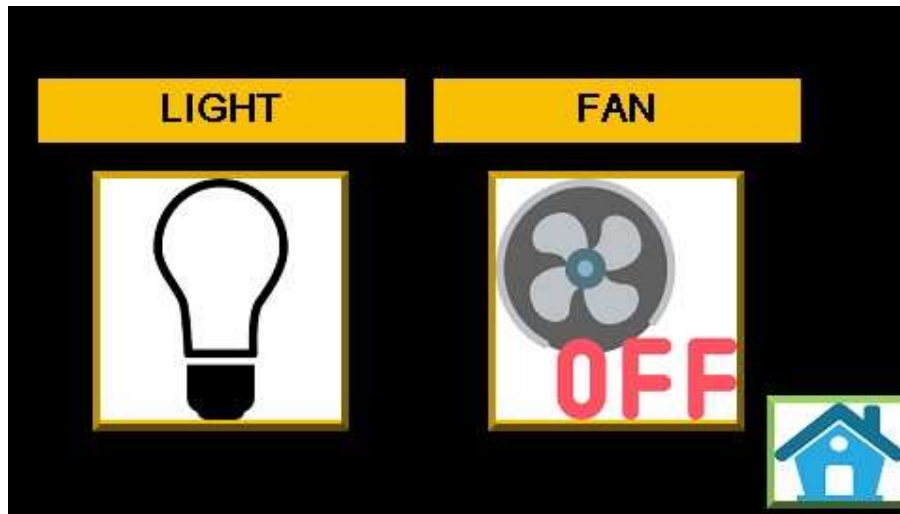
Welcome Screen



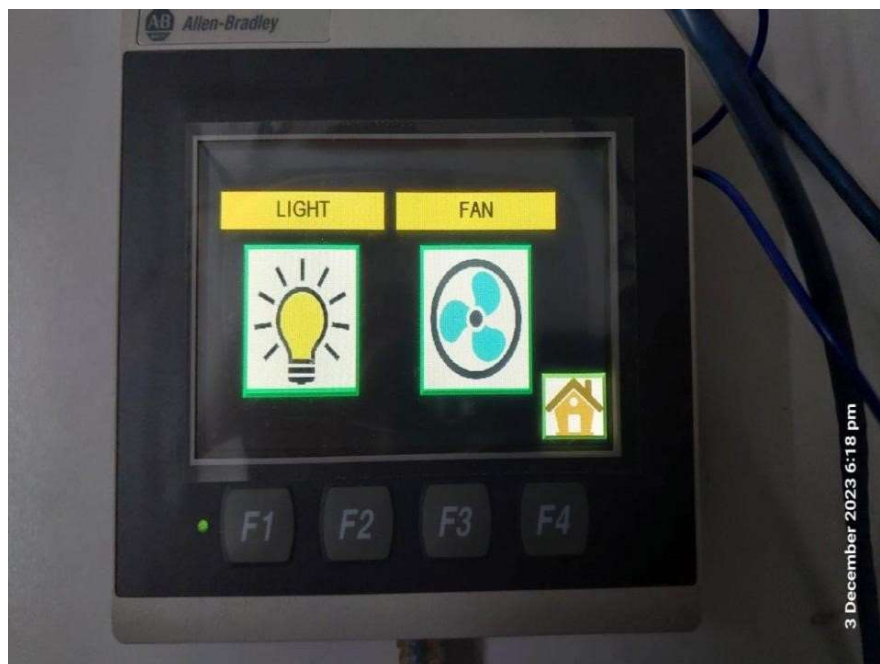
Press Home button following screen will be opened



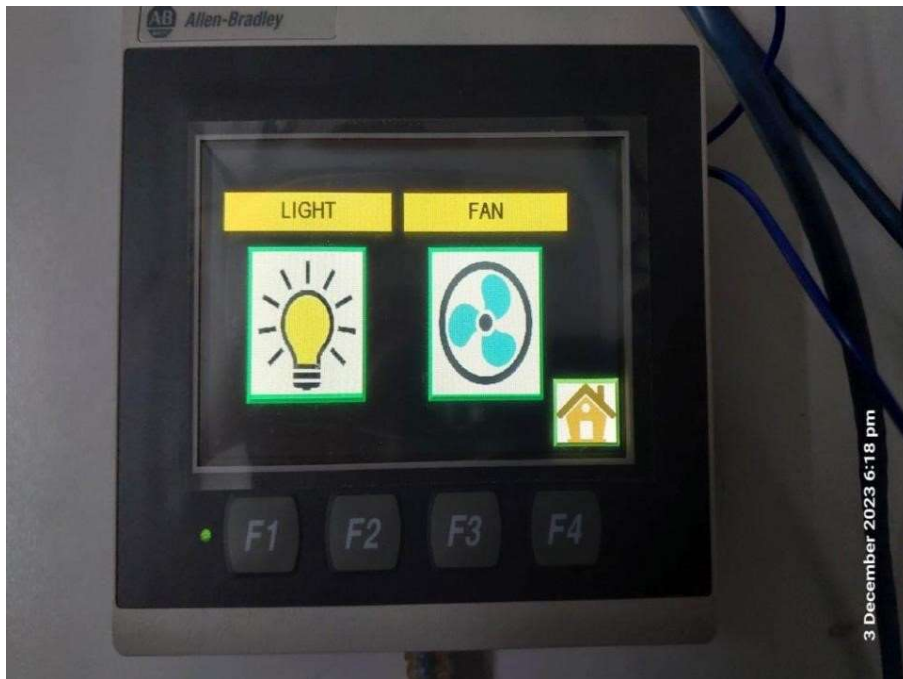
Press Light button following screen will be opened



Touch on the lamp image



Same procedure need to performed for FAN ON requirement



For AC off condition



For AC on condition



For Heater on/off condition



Heater ON condition



Refrigerator off condition



Refrigerator ON condition



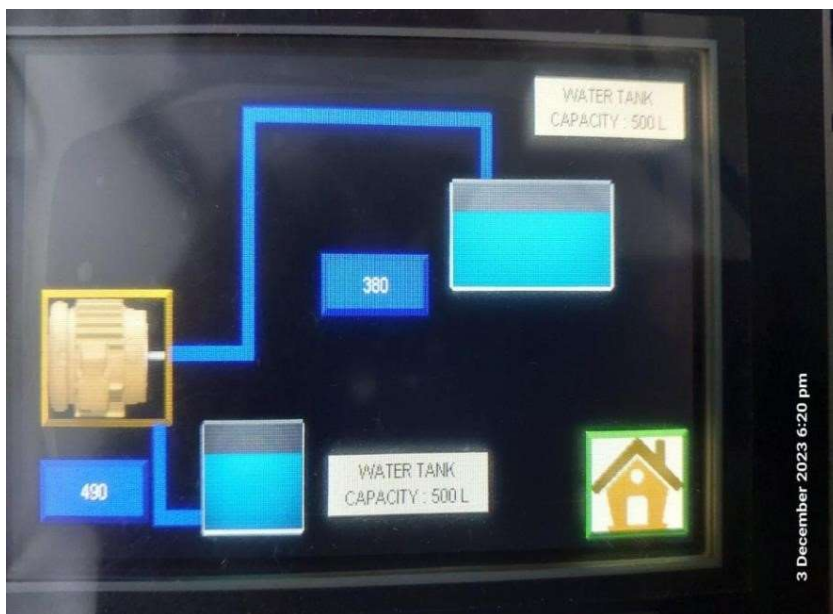
TV off condition



TV ON condition



In addition here overhead water tank has been controlled through this HMI and PLC based logic control.



Chapter – 5

Result and Analysis of Home automation Project

5.1

Resu

Its

In this project we have accomplished the assembly of PLC based home automation with objectives of economically inexpensive, reliable and compatible. Simulation is carried out in WPL software by which we can visualise the actual working of all sensors, timers, counters and outputs (fan, AC, motor, and gas) The analysis was carried out to calculate the amount of energy saved (in Joules), amount of water saved and amount of electricity saved. To make understand easily to everyone graphs has been plotted

5.2 Analysis of the results

You should be able to analyze the results obtained from your work and try to show that the work is superior to the work that is being done in present. At least you must be able to prove that your project is up to the mark for being considered as an undergraduate level project. You can analyze the results by comparison with some other results or some other methods or type of hardware being used in other circuits.

Chapter – 6

Conclusion and Future Scope of work

6.1 Conclusion

Graphs has been plotted to easily understand the amount of energy saved as the time decreases, even water and electricity can be saved. PLC program has been written using the ladder diagram, which makes the programming part easy. Compared to C programming the PLC programming is so easy, as it in terms of diagram. Debugging the PLC program is not as complicated as C programming.

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Swarnim Startup & Innovation University, Gadhinar
Swarnim Institute of Technology
Details of Innovative Best Practices AY 2020-21



Sr. No.	Name of the Department	Name of Faculty	Name of Innovative Practice	Time Period	Academic Year	Remarks
1	Electrical Engineering	Prof.Ramji Kanani /Priyen Patel/Nayan Patel	To expand technical Understandings under guidance of faculty members our students made - E - Rickshaw Project and Use in campus Visit.	June - 21 - May - 2022	2020-2021	
	Prepared by					Varified by



Swarnim Startup & Innovation University, Gadhinagar
Swarnim Institute of Technology
Details of Innovative Best Practices
AY 2021-22



Sr. No.	Name of the Department	Name of Faculty	Name of Innovative Practice	Time Period	Academic Year	Remarks
1	Electrical Engineering	Prof.Ramji Kanani	To expand technical Understandings under guidance of faculty members our students made - Home Automation VIA Bluetooth Project and impliment in machine lab.	June - 21 - May - 2022	2021-22	



Swarnim Startup & Innovation University, Gadhinagar
Swarnim Institute of Technology
Details of Innovative Best Practices
AY 2022-23



Sr. No.	Name of the Department	Name of Faculty	Name of Innovative Practice	Time Period	Academic Year	Remarks
1	Electrical Engineering	Prof. Ramji Kanani and Prof. Nayan Patel	To expand technical Understandings under guidance of faculty members our students made - Electrical Energy E bike speed control, Produce by Garbage, Design Of Auto Conveyor Belt System, Solar Power Inverter, Automatic Solar Panel Cleaning System, Electric welding Inverter system, Automatic Visitor Counter Projects	June - 22 - May - 2023	2022-23	

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Details of Innovative Best Practices
AY 2023-24



Sr. No.	Name of the Department	Name of Faculty	Name of Innovative Practice	Time Period	Academic Year	Remarks
1	Electrical Engineering	Prof.Ramji Kanani and Prof.Nayan Patel	To expand technical Understandings under guidance of faculty members our students made -HMI and PLC based Home Automation.	June - 28 - June - 2023	2023-24	
2						

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Details of Innovative Best Practices
AY 2023-24



Sr. No.	Name of the Department	Name of Faculty	Name of Innovative Practice	Time Period		Academic Year	Remarks
1	Mechanical & Automobile Engineering	Prof. Jitendra Prajapati	Practical Session on Two wheeler EV	02-03-2023	02-03-2023	2023-24	
2	Mechanical & Automobile Engineering	Prof. Prashant Parmar & Prof. Jugal Bhatt	We place a live object and the top view and front view of this object are drawn by the students.	January'23	May'23	2023-24	
3	Mechanical & Automobile Engineering	Prof. Abrar Khan Pathan	Live Demonstration on Boiler, Accessories, Mountings, Two Stroke & four Stroke Engine, Linkages, gears, Brakes, Clutch Etc..	August'23	December'23	2023-24	
4	Mechanical & Automobile Engineering	Prof. Jugal Bhatt	Sardar Sarovar Dam,			2023-24	











