

**Profile No.: 1**

**NIC Code: 27104**

## **MANUFACTURING ELECTRICAL AND PLC PANEL BOARD**

### **1. INTRODUCTION:**

Simplification of engineering and precise control of manufacturing process can result in significant cost savings. The most cost-effective way, which can pay big dividends in the long run is flexible automation; a planned approach towards integrated control systems. It requires a conscious effort on the part of plant managers to identify areas where automation can result in better deployment/utilization of human resources and savings in man-hours, down time. Automation need not be high ended and too sophisticated; it is the phased, step-by-step effort to automate, employing control systems tailored to one's specific requirements that achieves the most attractive results. That is where Industrial electronics has been a breakthrough in the field of automation and control techniques. It is required System design and specification, Electrical and mechanical design using industry standard CAD tools and E plan, PL software development Panel manufacture to highest quality Panels and systems can be tested to customer specification and test procedures On-site commissioning using equipments. Diagnostics and troubleshooting Control Panel as the name implies, are used to provide proper control of operations of any electrical equipments. These are also used to protect the electrical equipments from being damaged due to various faults like short circuit, overload and earth leakage etc.

### **2. PRODUCT & ITS APPLICATION:**

A Programmable controller is a solid state user programmable control system with functions to control logic, sequencing, timing, arithmetic data manipulation and counting capabilities. It can be viewed as an industrial computer that has a central processor unit, memory, input output interface and a programming device. The central processing unit provides the intelligence of the controller. It accepts data, status information from various sensing

devices like limit switches, proximity switches, executes the user control program store in the memory and gives appropriate output commands to devices like solenoid valves, switches etc. Input output interface is the communication link between field devices and the controllers; field devices are wired to the I/O interfaces. Through these interfaces the processor can sense and measure physical quantities regarding a machine or process, such as, proximity, position, motion, level, temperature, pressure, etc. Based on status sensed, the CPU issues command to output devices such as valves, motors, alarms, etc. Programmer unit provides the man machine interface. It is used to enter the application program, which often uses a simple user-friendly logic.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Graduate in any discipline, preferably science.

### **4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

With the rapid electrification and industrialization and by virtue of being a functionally integral part of all electrical equipments like Motor, Generator, Transformer, Motor Control Centre, Incinerator etc. the control panel has get immense scope. The phased increase in power generation and transmission has by itself necessitated increased production of electrical equipments thereby creating a good scope for the control panel. In the present industrial world, a flexible system that can be controlled by user at site is preferred. Systems, whose logic can be modified but still, used without disturbing its connection to external world, is achieved by PLC. Utilizing the industrial sensors such as limit switches, ON-OFF switches, timer contact, counter contact etc., PLC controls the total system. The drive to the solenoid valves, motors, indicators, enunciators, etc. are controlled by the PLCs. The above said controlling elements (normally called as inputs of PLCs) and controlled elements (called as outputs of PLCs) exist abundantly in any industry. These inputs, outputs, timers, counters, auxiliary contacts are integral parts of all industries. As such, it is difficult to define where a PLC cannot be used. Proper application of a PLC begins with

conversion of information into convenient parameters to save money, time and effort and hence easy operation in plants and laboratories.

## **5. RAW MATERIAL REQUIREMENTS:**

The major raw materials required are 5 way connectors (30 A Bakelite) , Am meter A Panel Mount, Capacitor, Capacitor, 36 Farade/440 V), CRC steel sheet, (18 gauge) . Fuse unit (15 A), Hinges, (1/2" x 1" size). Indication Lamp Set, Metal coating powder, Overload Relay unit, Packing Material, Push Button Station (on-off), . Screws, Nut and Bolt, Bottom Bush and sticker, Voltmeter, (0 to 300 V Panel Mount), Wires (2.5 sq. mm copper of 5 different colors)

## **6. MANUFACTURING PROCESS:**

The Control Panel is sheet metal fabricated in closure open, semi-enclosed or totally enclosed type, which provide and control electric power to equipment and appliances. Provision for indicating electrical parameters like voltage, current, frequency, power factor etc. will be available on the face of the panel. Regulation of the power supply is also possible with the help of auto transformer switches and circuit breaker. The sheet metal enclosure for the Control Panel is designed and fabricated in the unit. The components are bought out from the reputed sources and fitted at appropriate places on the panel as per manufacturers design. The circuit as per the design is laid out and the control panel is tested for the proper functioning as per relevant specifications.

2. Quality Control: The LT Control Panel shall be tested as per IS: 8623-1977 regarding technical aspects.

3. Production Capacity (per annum): LT Control Panel of a short range - 300 Nos. per year.

4. Approximate Motive Power Requirement: 20 KVA

5. Pollution Control Requirement: No Objection Certificate to obtain from DIC level.

6. Energy Conservation Requirement: The product under question itself plays vital role in energy conservation. The suitable tripping devices in case of automatic tripping devices etc. is required to be provided to minimize the unwanted use of electricity.

## 7. MANPOWER REQUIREMENT:

The enterprise requires 16 employees as detailed below:

Sr. No.	Designation of Employees	Monthly Salary ₹	Number of employees required				
			Year-1	Year-2	Year-3	Year-4	Year-5
	<b>Variable Labour / Workers:</b>						
1	Chemist @ 12000	36000.00	3	3	3	3	3
2	Skilled workers @ 8000	80000.00	10	8	10	10	10
	<i>sub-total</i>	116000.00	13	11	13	13	13
	<b>Fixed Staff:</b>						
1	Manager @ 15000	15000.00	1	1	1	1	1
2	Accounts/Sales Asst @12500	12500.00	1	1	1	1	1
3	Office Boy @ 9000	9000.00	1	1	1	1	1
	<i>sub-total</i>	36500.00	3	3	3	3	3
	<b>Total</b>	152500.00	16	14	16	16	16

## 8. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	1.00
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required ( <i>some activities shall run concurrently</i> )	3.00

## 9. COST OF PROJECT:

The project shall cost ₹ 24.46 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	0.00
3	Plant & Machinery	4.96
4	Furniture, Electrical Installations	1.00
5	Other Assets including Preliminary / Pre-operative expenses	0.50
6	Working Capital	18.00
	<b>Total</b>	<b>24.46</b>

## 10. MEANS OF FINANCE

The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	6.11
2	Bank Finance	18.34
	<b>Total</b>	<b>24.46</b>

## 11. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 18.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	9.00	0.25	2.25	6.75
2	Receivables	4.50	0.25	1.13	3.38
3	Overheads	4.50	100%	4.50	0.00
4	Creditors	-		0.00	0.00
	<b>Total</b>	<b>18.00</b>		<b>7.88</b>	<b>10.13</b>

## 12. LIST OF MACHINERY REQUIRED:

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value
					(₹ in Lacs)
	<b>Plant &amp; Machinery / equipments</b>				
<b>a)</b>	<b>Main Machinery</b>				
i.	shearing machine	NOS.	1	70000	0.70
ii.	Hand operated sheet bending m/c	Nos	1	25000	0.25
iii.	Drilling machine	Nos	2	18000	0.36
<b>IV</b>	Bench grinder, Arc welding transformer, gas welding hand shearing, Saw, Compressor, etc.	Nos	1	100000	2.60
V	Installation, erection electrification.			50,000	0.50
VI	taxes and transportation			50000	0.50
	<i>sub-total Plant &amp; Machinery</i>				<b>4.96</b>
	<b>Furniture / Electrical installations</b>				
a)	Office furniture	LS	1	50000	0.50
b)	Stores Almira	LS	1	0	0.00
c)	Computer & Printer	L. S.	1	50000	0.50
	<i>sub total</i>				<b>1.00</b>
	<b>Other Assets</b>				
a)	preliminary and preoperative				0.50
	<i>sub-total Other Assets</i>				0.50
	<b>Total</b>				<b>6.46</b>

### 13. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	54.00	63.00	72.00	81.00	90.00
3	Raw Materials & Other direct inputs	₹. In Lacs	44.35	51.74	59.14	66.53	73.92
4	Gross Margin	₹. In Lacs	9.65	11.26	12.86	14.47	16.08
5	Overheads except interest	₹. In Lacs	5.10	5.42	6.06	6.25	6.38
6	Interest@ 10 % on 2.20 lakhs	₹. In Lacs	1.83	1.83	1.22	0.92	0.73
7	Depreciation	₹. In Lacs	3.47	2.48	1.74	1.24	1.12
8	Net Profit before tax	₹. In Lacs	<b>-0.76</b>	<b>1.52</b>	<b>3.84</b>	<b>6.06</b>	<b>7.85</b>

### 14. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 44.24 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	90.00
2	Variable costs	₹. In Lacs	73.92
3	Fixed costs incl. interest	₹. In Lacs	7.11
4	BEP = $FC/(SR-VC) \times 100 =$	% of capacity	44.24%