

11 KV Control and Relay (CRP) Panel

Saurabh S Kulkarni, Shubham S Kute, Suraj W Sirsat, Vishal K Vaidya
Sir Visvesvaraya Institute of Technology, Nashik, Maharashtra, India

Abstract: *A control panel is used to control various activities at the industries and substations. The relay panel is used to protect machines and instruments from various faults like overcurrent, under-voltage, over-voltage, earth fault and also to maintain power factor. However, the manufacturing and testing process can be better understood at the manufacturing industry itself. Here we report the complete process of manufacturing and testing process of any control panel. The steps from fabrication to final ready product are understood during this study project. The study of manufacturing and testing process will definitely result in better knowledge about manufacturing process.*

Keywords: Industrial Panel Wiring, Control Circuit, Relay, Panel line Diagram, Panel Building Process.

I. INTRODUCTION

An electrical control panel is an enclosure, typically a metal box or plastic molding which contains important electrical components that control and monitor a number of mechanical processes. Operators will interact with the control of the panel to operate and plant and Process.

An electrical panel is a metal box with a door, usually built into a well in an out-of-the-way corner of industry. Inside, you will find all your breaker, Switches. Within the electrical panel, you will find a main circuit breaker that control the power to the entire industries.

Electrical Panels Distribute and Control the power of parts of the industry where they are designed to go. If an electrical panel gets damaged or gets worn due to in time and use, it could eventually become too function optimally. A sensitive electrical panel will cause power surge and overloads.

There are 4 different types of electrical panels the main breaker panel, fuse boxes, main lug panel and sub-panels. The main breaker panel is the mother of all panels in industries. It regulates the circuit breakers and the electricity consumption within the home

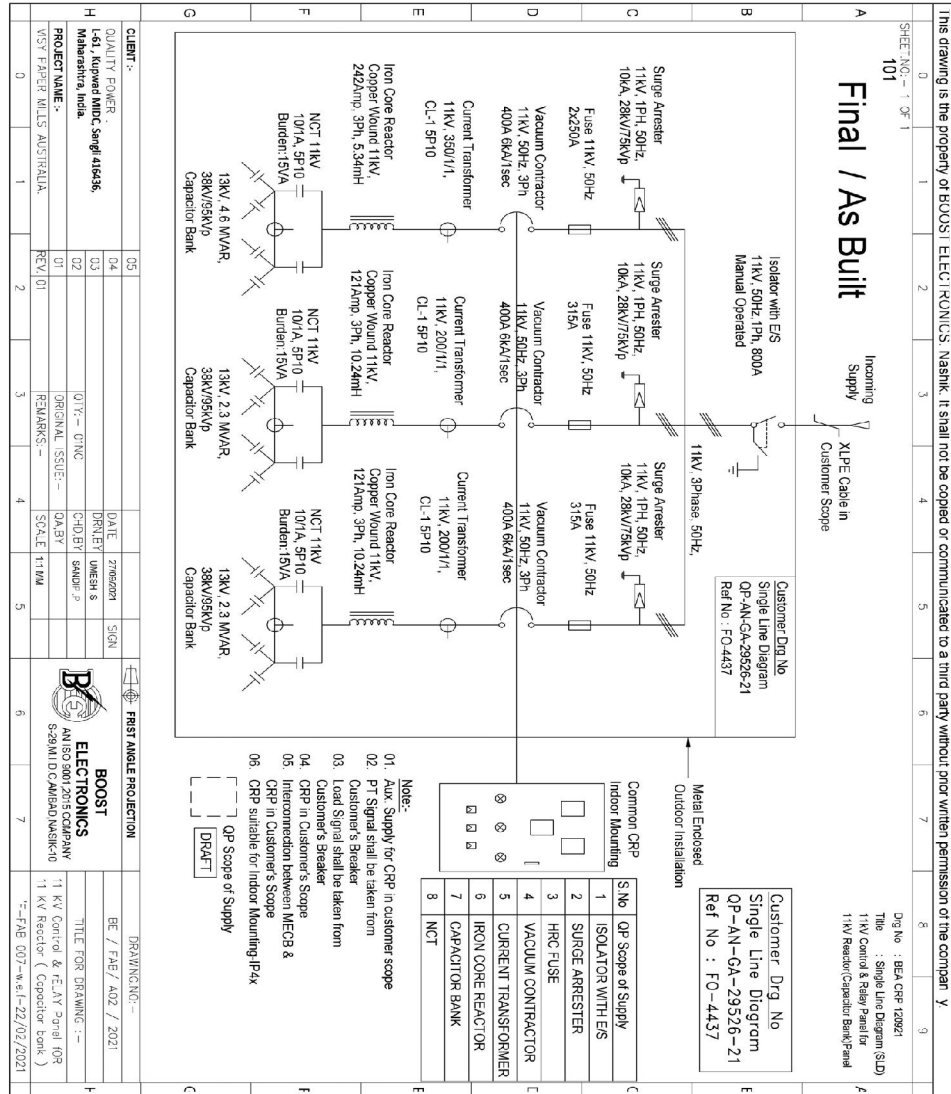


Fig.No.1 Single line Diagram for CRP panel

II. METHODOLOGY

The steps for manufacturing of any control panel is as follows FABRICATION

1. Assembly starts from fabrication department.
2. All the door cutouts, welding is done as per the dimensions provided by the customer.
3. After completion of job cabinet is offer to the quality team for checking of dimensions and other observations.
4. After inspection cabinet is sent for the powder coating process.

ASSEMBLY

1. Customer gives clearance for assembly and provides all necessary data such as dimensions of cabinet, schematic, etc. to the industry and assembly works starts.

COMPONENT MOUNTING

2. After powder coating process fitter makes arrangement of PVC duct for wire routing, din rails for component mounting and bus bar for earthing connections.
3. After all fitting arrangement all required components are
4. mounted in panel by wireman as per general arrangement given by customer.



Fig. No. 2 Mounting

WIRING

1. After mounting of all components connections are carried out for each as per schematic.
2. Labels and marking is provided for all the components which helps further process at customer premises for maintenance, etc.



Fig. No. 3 Wiring

TESTING

After completion of wiring, the following test are carried out by Quality Inspector.

1. Continuity test
2. High voltage test
3. Insulation Test
4. Power on test
5. Visual Inspection

CLEANING

After all quality inspection, cleaning process is carried out in which all the dirt, small particles of wires, etc. get removed.

PACKING & DISPATCH

At last proper packing is done to the panel to avoid any wear and tear during transportation.

After packaging, the cabinet is dispatched to the customer along with all test reports and other documents.



III. CONCLUSION

The inspection of 11kv CRP panel will definitely result in better knowledge about industrial process. There are three main types of inspection carried out i.e. receiving inspection, in-process inspection and final inspection respectively. This inspection method improves the quality of product and simultaneously the reputation of industry.

ACKNOWLEDGEMENTS

Our thanks to the whole team of Boost Electronics which is panel manufacturing industry since 1991, who have guided and supported us to understand the process of the panel manufacturing.

People are in need of a healthy lifestyle. A healthy lifestyle consists of healthy food, healthy physical activities, weight management and stress management etc. It is feasible for people to maintain a healthy life easily by healthy physical activities. But due to the lack of free time in their daily routine, most people prefer to do exercises on their own with the use of an instruction manual or guides that could be found online. Many people work out and perform these exercises regularly but do not maintain the proper form (pose) and this could lead to a hazardous lifestyle.

Personal trainers at the gym are definitely a good option, but post COVID, most of the gyms have shut down and many people have started preferring home workout over gyms. So, the next option is remote training, where usually people interact with their personal trainer by sending recorded workout sessions. This approach lacks real-time feedback. Also, people might not be comfortable sharing their videos.

Exercises such as squats, deadlifts, and shoulder presses are beneficial to health and fitness, but they can also be very dangerous if performed incorrectly. The heavy weights involved in these workouts can cause severe injuries to the

muscles or ligaments. Many people work out and perform these exercises regularly but do not maintain the proper form (pose). This could be due to a lack of formal training through classes or a personal trainer, or could also be due to muscle fatigue. Therefore, it is mandatory to have good guidance for people. A proper guidance will lead to gain many benefits from exercises and improve the health of a person.

REFERENCES

1. Quality manual of Boost Electronics
2. Standard operating procedure of Boost Electronics
3. ISO 9001:2015 standards