

PLC BASED AUTOMATIC SOLDERING MACHINE

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ABSTRACT

This task is to plan and build up an automatic soldering machine. In LUCAS TVS makes starter motor and Alternator. At present they were confronting the soldering issue in the crocodile clip connector. The crocodile clips are connected to the alternator and starter terminal. Through this terminal, they need to give the testing voltage or supply. During the testing time frame the crocodile clip soldering might be free connection. This will lead inappropriate supply or no supply to the testing rig. This will influence the creation, leads to disappointment rate and increment the operating. This venture is planned and creates to beat this issue. In soldering machine, the crocodile clip is put on the transport. The transport carries the clip. The nearness sensor is fixed between the transports. At the point when vicinity sense the clip, the transport motor is started. At that point the clip holder holds the clip. The arm plan is utilized to solder the Crocodile clips. This arm is controlled by the electrical motor. Toward the finish of arm soldering iron and metal detecting sensor is connected .Below the arm, lead is driven by the motor. Metal detector is utilized to detect the clip is accessibility. This signal is feed to the controller (PLC). On the off chance that accessible methods, the arm is goes down, and the pulley motor will start following 10 seconds to solder the crocodile clip. The clip soldered by soldering iron. The soldering iron pushes toward the clip to solder by the electrical motor. The temperature sensor detects the temperature of the soldering iron to look after it. The soldering joints checked by the continuity test. The whole system is controlled by PLC.

1. INTRODUCTION

Man had scarcely figured out how to utilize metals for his motivations when the craving to go along with them emerged [1]. Large numbers of the bits of gems, devices and weapons we know from the Bronze Age were given their utility and excellence by soldering[2]. Today, it is difficult to say who originally found how to "stick" metals. One thing is sure; the goldsmiths of antiquated Egypt realized how to join gold over 5,000

years prior [3]. Their partners in Troy were additionally bosses of soldering some time before the antiquated Teutons could even dream of such handicraft. Soldering "grew up" when tin was found as a soldering metal - and that was 4,000 years prior! [4]. From that point on, the world's soldering innovation was on its way upwards. It originally spread around the Mediterranean. The Cretans showed it to the Etruscans, who at that point instructed it to the Romans, Tunisians and

Spanish, trailed by numerous others, including the less evolved societies of the time - the Swiss, Bohemians, Hungarians, Teutons and Scandinavians [5]. The craft of soldering was improved and sophisticated from one culture to another, age to age. Thinking back, the most amazing accomplishments can be ascribed to the old Romans. They soldered 400 km long water pipes made of lead with seams which could withstand 18 Atm (!), and evoked ovens and tubs made of bronze, also human expressions of their goldsmiths and armorers [6].

The only remaining century, in particular, not just saw an expanded improvement in the specialist's soldering expertise, yet in addition our agreement was refined in regard to the scientific connections which occur during soldering. Subsequently, delicate soldering formed into an autonomous field of creation engineering in the electronics business [7]. It consolidates the controls of mechanics, science, physics and metallurgy, to an equivalent degree. Ernst Sachs, organizer of Ersal (a name involved the starting letters of his first and last names) added to this turn of events. In 1921, over 80 years prior, he built up the principal electric and mass-created soldering iron for industry [8]. Driven by a craving to improve, we have dedicated ourselves to the continuous turn of events and flawlessness of soldering innovation. A "great" lead-free solder joint is

grainy and harsh. The flux in lead-free solder is considerably more dynamic than the rosin (in a real sense pine sap) flux in leaded solder [9]. Likewise, you - must-utilize a great deal of added flux when soldering lead-free solder. Try not to be taking in smoke from any sort of soldering, yet the lead-free flux is considerably more irritating to your eyes and respiratory parcel. What's more, except if you utilize no-spotless flux, the flux should be cleaned from the board or it will erode the metal. Tin hairs! Lead was initially added to solder on account of tin bristles. Nobody is quite certain why they develop, yet they can develop at gigantic rates and cause disappointments. There is no reasonable, repeatable relationship, yet raised temperature, moistness, and voltage appear to have some connection. Tin bristles have been known to develop directly through conformal coatings. This is particularly a danger in present day high thickness, low current circuit boards. The significant worry from solder smoke is the flux, not lead. Lead doesn't tend go into vapor at soldering temperatures. For that, lead mining and smelting are the fundamental pathways, and leaded gasoline for nations that actually permit it. Leaded paint being an ingestion hazard for kids and beginner home renovators. Remembering, obviously, that lead retention is aggregate as it is delayed to leave the body [10].

As a symptom of lead-free solder, substantially more forceful fluxes should be utilized, and in a lot more prominent amounts. In my numerous long periods of soldering, I've once in a while added flux when utilizing leaded solder, yet - consistently wind up adding flux for lead-free joints. Regardless, the smoke is extremely terrible for you and ought to be forcefully taken out. I've discovered the normal tabletop smoke fan is an immense misuse of cash. I have a 200mm fan that is in a flex arm light instead of the amplifying focal point. It resembles a small scale smolder hood. With respect to skin retention, I've generally utilized void solder wick moves to hold the solder I'm utilizing. Also, wash my hands prior to doing whatever else.

A huge number of applications actually expect joints to be soldered exclusively: Cables, plugs, uncommon development segments and modules with a couple of solder joints. A further application is the utilization of unique components, for example plugs and pin through-opening on SMT boards. Frequently single point soldering is required due to get together, for example on the off chance that a total prepared PCB is embedded into a lodging and must be connected with plugs or different parts by soldering. Automation of these single point soldering modern electronics producing it cannot manage without

mechanized single point soldering. Robotized soldering with hot iron isn't just perhaps the most applied soldering techniques, it is likewise a universally handy strategy. Because of the great accuracy of the robot the soldering tip is continually working at a similar position. The boundaries are set reproducibly.

This venture is to plan and build up an automatic soldering machine. In LUCAS TVS produces starter motor and Alternator. At present they were confronting the soldering issue in the crocodile clip connector. The crocodile clips are connected to the alternator and starter terminal. Through this terminal, they need to give the testing voltage or supply. During the testing time frame the crocodile clip soldering might be free connection. This will lead inappropriate supply or no supply to the testing rig. This will influence the creation, leads to disappointment rate and increment the operating. This undertaking is planned and creates to defeat this issue.

In soldering machine, the crocodile clip is put on the transport. The transport carries the clip. The vicinity sensor is fixed between the transports. At the point when closeness sense the clip, the transport motor is started. At that point the clip holder holds the clip. The arm course of action is utilized to solder the Crocodile clips. This arm is controlled by the electrical motor. Toward the finish of arm

soldering iron and metal detecting sensor is connected. Beneath the arm, lead is driven by the motor. Metal detector is utilized to detect the clip is accessibility. This signal is feed to the controller (PLC). In the event that accessible methods, the arm is goes down, and the pulley motor will start following 10 seconds to solder the crocodile clip. The clip soldered by soldering iron. The soldering iron advances toward the clip to solder by the electrical motor. The temperature sensor detects the temperature of the soldering iron to look after it. The soldering joints checked by the continuity test. The whole system is controlled by PLC.

2. Methodology:

The figure 1 shows the overview of proposed methodology.

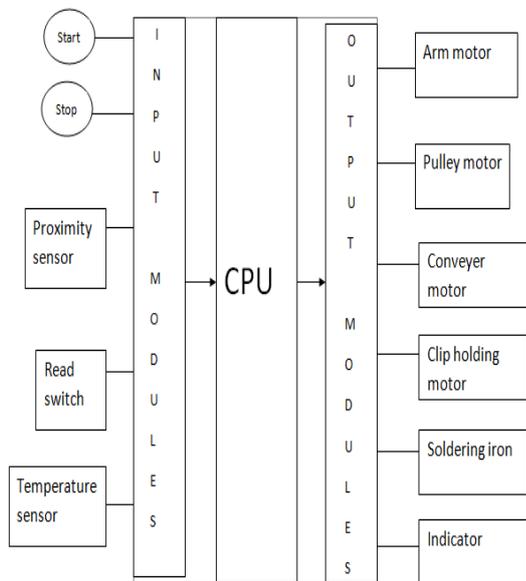


Figure 1: Block diagram

The input devices are press catches, Reed sensors, limit switches. The all the devices are worked by +24 V in particular. One finish of

the input devices are connected to the +24V supply terminal. Another end is connected to PLC terminals. These connections are as demonstrated in fig 2. The PLC itself indicates the situation with the input devices. On the off chance that the LED will be ON methods input signal is available. In any case LED is OFF methods no input signal. So it is exceptionally helpful to the client. It will indicate disappointment notification of input devices.

2.1 PLC TO OUTPUT DEVICES CONNECTION

In this venture, the output devices are LEDs, Siren and transport motor. LED's are indicating the situation with the length. In this system comprises of three LEDs. First LED indicates the right length of the item. Second LED is indicating resilience Value of the length of the item. Last LED is indicating surpass length or beneath the reference esteem. This LED is fault indication. .

One finish of the output devices is connected to the PLC output terminal. Another end is connected to supply terminal or normal point. The PLC itself indicates the situation with the output signal. On the off chance that the LED will be ON methods output signal is stream to the output devices. In any case LED is OFF methods no output signal stream to the output devices. Along these lines, it is exceptionally valuable to the

client and it will distinguish disappointment of output devices. The connection diagram and stream graph of the work process is appeared in figure 2 and 3.

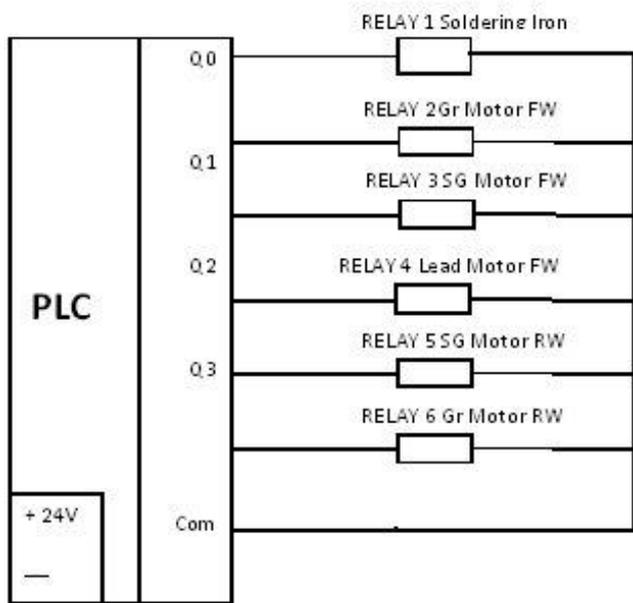


Figure 2: Connection of PLC to output Devices Flow Chat

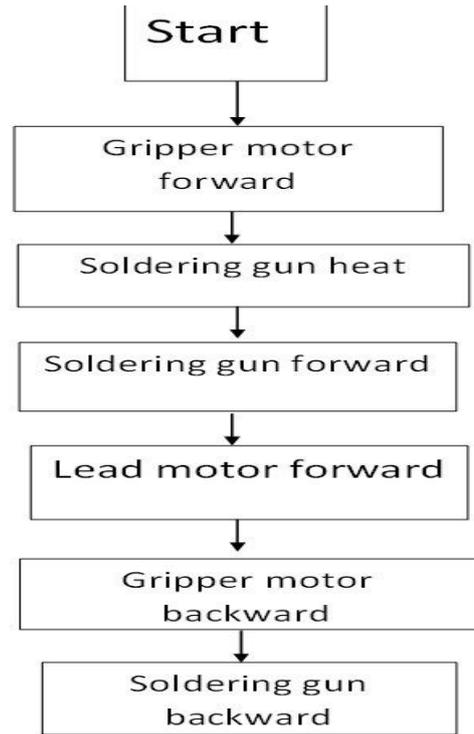


Figure 3: Flow chart of proposed methodology.

3.CONCLUSION

Through this task we improved our knowledge skillfully. At last we distinguished soldering deformity of the item without seeing any eye. This leads to decrease time and increment nature of the item. We took in the means to do the task that were continued in industry. We realized what are all the parts require to do the task. Additionally we took in the disadvantages in the electrical circuit board. This task additionally causes us in future. Indeed we on account of our aides among this venture.

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