



Tea Machine Automation using Logo Soft Comfort V8 PLC.

¹Shubham B Suryawanshi, ²Aniket Kathe

^{1,2} Maratha Vidya Prasarak Samaj's Karmaveer Adv. Baburao Ganpatrao Thakare College of Engineering

ABSTRACT: -

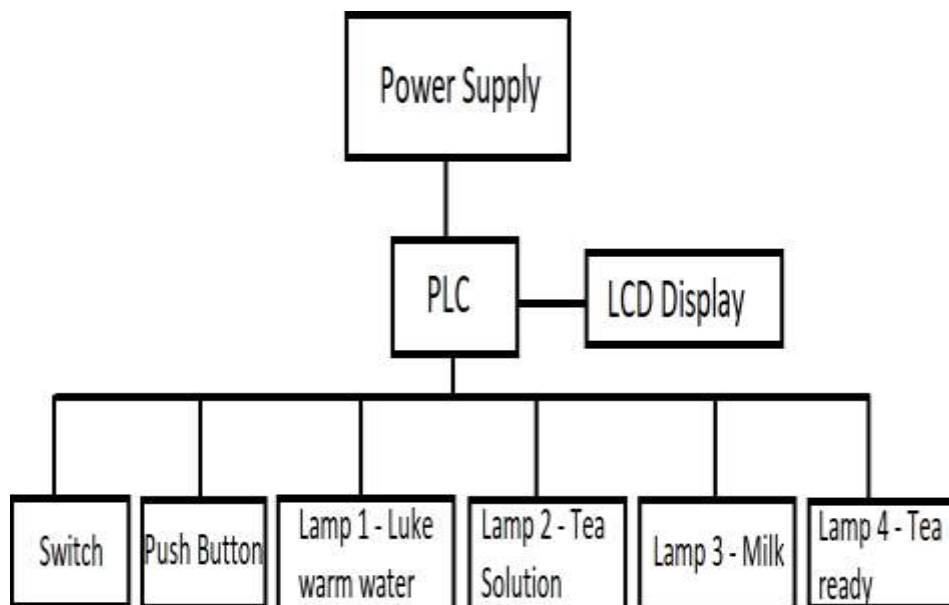
The main aim of this project is to make introduction of automation in tea machines. Bringing automation in any existing system is an update to the traditional system. Automation makes it easy to handle any task and takes responsibility of completing task in a set interval of time with very less percentage of human error, it makes it more advanced and increases productivity, Automation is done to reduce human efforts and boost a system to work beyond its existing capacity. In this research paper we are introducing the logo V8 plc for automation in a traditional tea machine.

Key Words: - logo soft comfort V8 plc, logo soft V8 plc program software, USB cable, Internet. ethernet cable.

1. INTRODUCTION: -

The aim of this project is to prepare tea in just 11 secs. Traditionally Tea was manually prepared and served which took a few minutes. So, we have designed a plc ladder program to automate the process of tea machine and boost tea production to a large extent. We have also introduced FBD ladder diagram.

2. BLOCK DIAGRAM: -



3. BLOCK DIAGRAM INFO; -

Power supply - 24V DC is enough power supply required for logo soft comfort V8 plc.

PLC- The plc used in case in logo soft comfort V8 plc. It was a display and a few control buttons for manual adjustments.

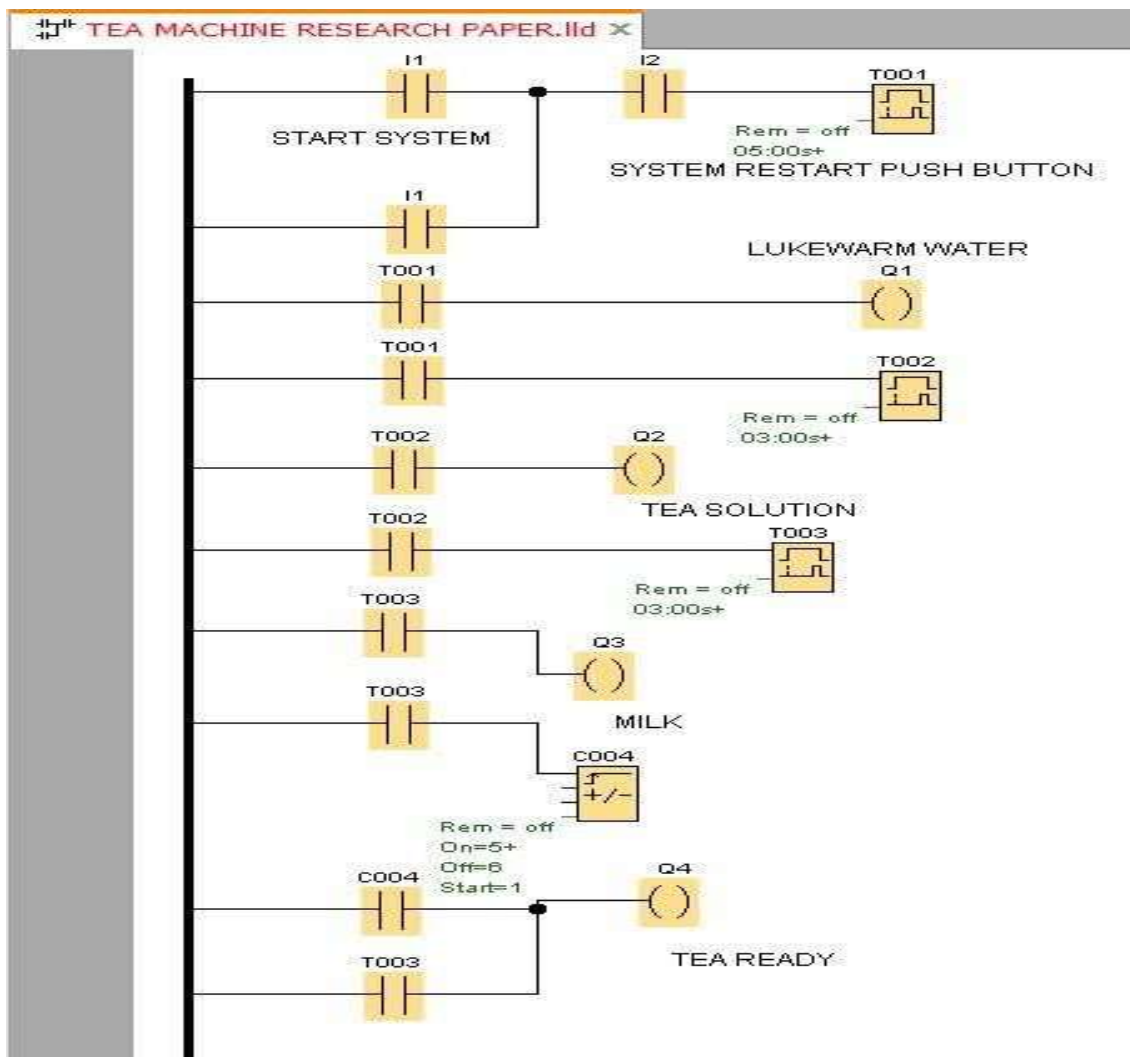
LCD – It displays logo settings, programs, time, date etc. They are switches used in this program

1- ON/OFF switch (0/1)- The purpose of the on/off switch is to initiate the program saved in plc.

2- Push button- Its purpose is to restart the program without shutting the system

Indications- There are 4 indications used. These indications are in the form of rice LED lights. The lights glow in sequence after a set interval in the program indicating process done.

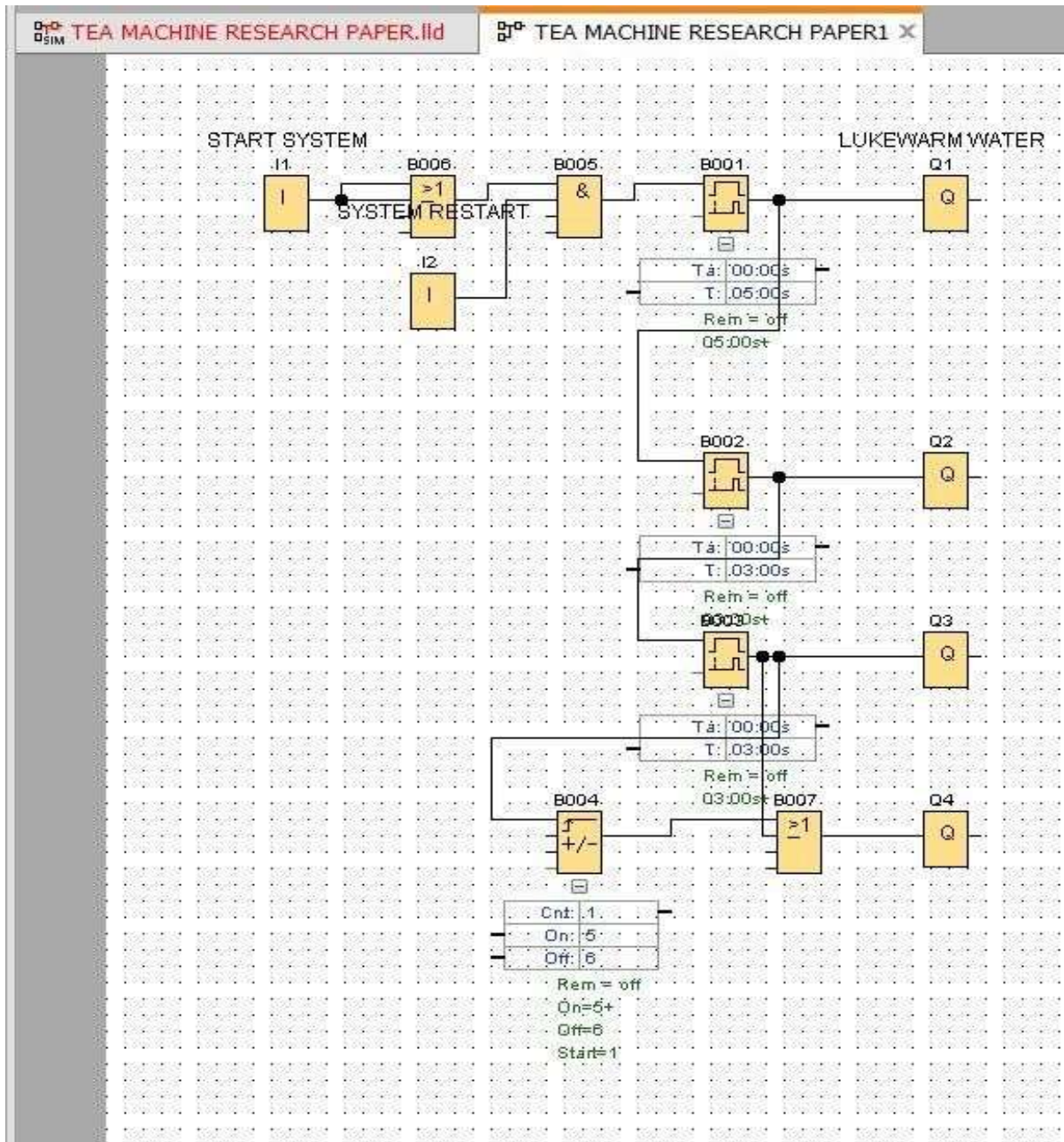
PLC program-



PLC output-



FBD Diagram-



Ladder diagram working-

In this project we used two switches, I1 and I2. I1 is an on/off switch working on a logic of 0/1.

I2(PUSH BUTTON) is a push button which restarts the entire system without shutting it down so that there is no need to I1 (ON/OFF) Switch. The timer T001 has a delay of 5 seconds. When I1 (switch button) is pressed the ladder program logic is initiated. And after the delay of 5 sec in T001 timer Q1 (lukewarm water) led lights are switched on which indicates that lukewarm water is added to the small teacup. The timer T002 starts as soon as the indication Q1 (lukewarm water) is ON. The timer T002 is set to be delayed by 3 seconds. After 3 seconds of delay Q2 (Tea solution) gets ON which indicates tea solution is added in the cup. The timer T003 is set to a delay of 3 seconds as soon as the indication Q2 (tea solution) is switched on the timer T003 starts and after the delay of 3 seconds the indication Q3 (milk) gets on indicating that milk is added in the cup.

As indication Q3 is on at counter 1 indication Q4 (tea ready) and Q3 get ON. Q4 indicates that the tea is ready. So, the attempt of making tea in 11 seconds can be achieved.

Conclusion-

The automation in tea machine was successfully implemented by plc ladder programming on PLC logo soft comfort v8. And after simulation the product output was achieved after 11 sec.

Future scope-

1. In future this plc can be interfaced with SCADA AND HMI.
2. By use of IOT the entire tea machine be automatically controlled by phone , laptop in future.

References-

- [1]. "Sample programs for PLC Training" by Rexroth Bosch Group.
- [2]. <https://realpars.com/plc-programming-languages/>
- [3]. <https://www.electrical4u.com/programmablelogic-controller>
- [4]. <http://www.boschrexroth.com/en/xc/>
- [5]. <http://www.dsu.edu.in/index.php/innovation-labs/>