



DEPARTMENT OF ROBOTICS & MECHATRONICS ENGINEERING
UNIVERSITY OF DHAKA

Course code : RME 3212

Course name : Manufacturing Process with CNC Programming Lab

Experiment no : 05

Experiment name : Altering the ladder diagram for the distribution station of the FESTO MPS (Modular Production System).

Group no : 06

Group members: 1. Rabeya Akter (SK-092-015)
2. Tahmid Yusuf (FH-092-019)
3. Safaeid Hossain Arib (FH-092-020)
4. Ujan Samadder (SH-092-045)

Prepared by: Name: Ujan Samadder

Roll no: SH-092-045

Submitted to: Dr. Shamim Ahmed Deowan

Assistant Professor

Department of Robotics & Mechatronics Engineering

University of Dhaka

Date of experiment: 15 September, 2022

Date of submission: 06 November, 2022

Objective:

To get acquainted with the basics of the MPS station, and to observe a change in its working process by modifying its ladder diagram code.

Theory:

The MPS stands for modular production system, developed by a German multinational industrial control and automation company specializing in controlled pneumatics. The MPS stations are linearly arranged stations automating various stages of a simple industrial process through pneumatics. Each station has its own focus. Two stations are sufficient to represent a simple, industrially-relevant process for basic training in automation technology: distributing and sorting. This simplest of all combinations provides numerous basic functions of automated production: separating, feeding, identifying, sorting. Each additional station adds new learning objectives. These individual stations are controlled by Siemens PLCs, and the ladder diagram behind the PLCs can be modified using their SIMATIC Field PG programming device software.



Equipment:

- The MPS station
- A computer with the Siemens PLC software installed on it
- ethernet cables for connection.

Procedure:

1. Turn the MPS station on.
2. Observe the normal working process before making any modifications to the code.
3. Open the Siemens PLC software on our PC.
4. Make a change to the ladder diagram of a particular station.
5. Upload the modified code to our PLC using ethernet cables.
6. Observe if our modifications to the code have properly affected/changed the working process of the MPS stations, and take a note if the physical changes in the working process intuitively reflect the changes we made in the PLC code.

Result:

The “#NextStationFree” contact was changed from normally open, to normally closed. As a result, objects were transferred to the next station without checking if it was free. This resulted in a significant disruption in the workflow chronology – objects got transferred to the measuring station in the middle of its working process and jammed into each other. So, we observed that our code changes were intuitively reflected physically in the MPS.

Discussion:

The Siemens PLC software has a lot of ladder diagrams and block diagrams, so properly pin-pointing which section of the code relates to which part of our physical process in the MPS station was a bit tricky. But once that was done, the experiment was performed without a hitch, and we could observe our code changes physically altering the working process of the MPS stations, establishing a concrete relationship between the PLC ladder diagrams and our automated physical processes.

Reference:

1. <https://www.festo-didactic.com/int-en/learning-systems/mps-the-modular-production-system/mps-the-modular-production-system-from-module-to-learning-factory.htm?fbid=aW50LmVuLjU1Ny4xNy4xOC41ODUuNzYzMQ>

Experiment name -

Altering the Ladder diagram for the distribution station of the ↓ MPS (Modular Production System)
FESTO

- 1) Abdul Monaf Chowdhury (FH-092-001)
- 3) Md. Sameerz Iqbal Chowdhury (FH-092-002)
- 3) Mikdam-al-maad Ronoue (FH-092-003)
- 4) Tapas Biswas (JN-092-004)
- 5) Rabeya Akter (SK-092-015)
- 6) Sarfaeid Hossain Arbib (FH-092-020)

Date - 04/08/2022

[Signature]
04.08.2022

Altered code :

