

Design of Automated Filling Coffee Machine (FCM)

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Introduction

Most industries of food production suffer from problems like the consumption of a lot of time and effort in producing the final product, and inaccuracy problems in the weight required to be filled.

To solve these problems, we have designed a control system in order to control the weight and the selection of bags according to a specific weight. As a result we have a fast production and high precision in the final weight.

Proposed project

In order to solve the time consuming in packaging the coffee, we have decided to design an automated FCM. We have used the modern technology of PLC and touch screen to have a friendly used interface machine. The machine is designed to fill two types of bags for different weights. Figure 1 shows the control box of the FCM.



Figure 1: Control box of FCM

System Design and Implementation:

Figure 3 shows the FCM.



Figure 3: FCM

Project Objectives:

1. Reduce time in packaging coffee powder.
2. Increasing the packaging accuracy.
3. Capability to select different weights, and different bags.
4. Smart control system that measures with high accuracy.
5. Friendly used interface to facilitate dealing with the machine.

Results:

1. Complete control system, with friendly used interface.
2. Achieve our goals
3. The FCM can deliver 3 bags in one minute, with 250g.

Project Block Diagram:

Figure 2 is the general block diagram for a project, as illustrated below, the FCM has three main units. It consist of power supply unit, control unit, and actuator unit.

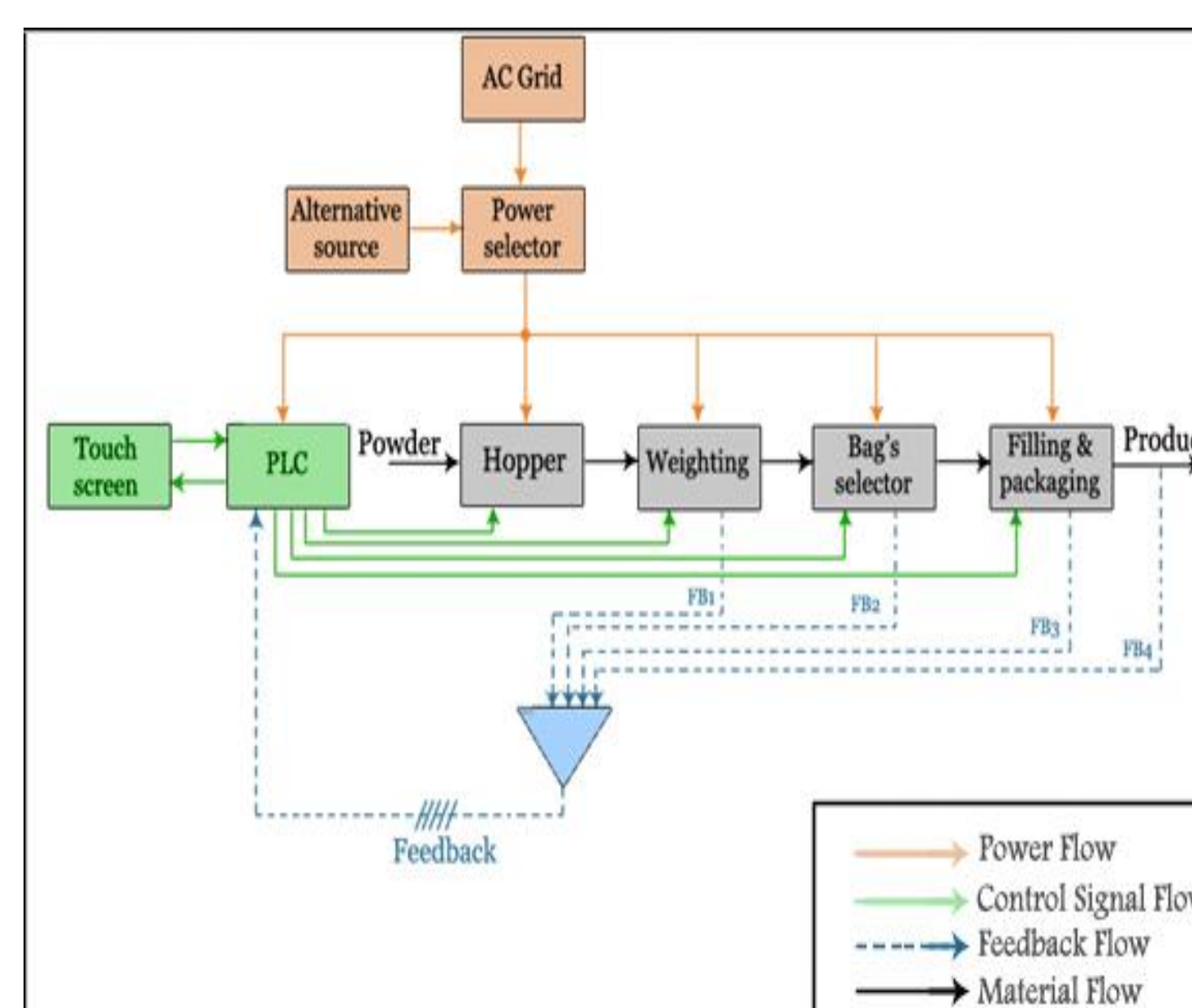


Figure 2 : System General Block Diagram.

We take feedback from each stage from the process of the machine in order to control the operation successfully.

The general flow chart diagram controls the operation of the FCM as shown in figure 4.

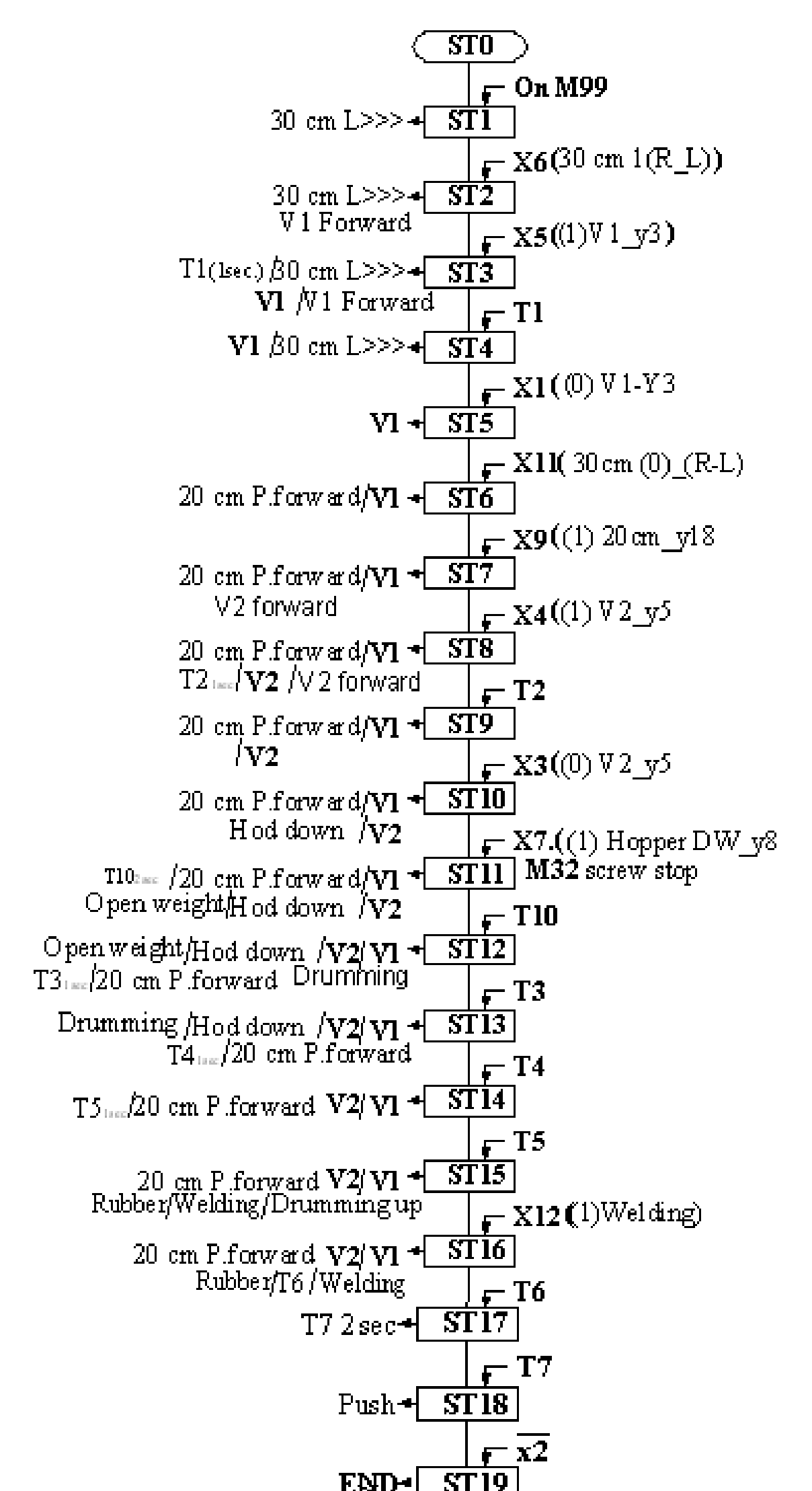


Figure 4: The sequence of FCM operation