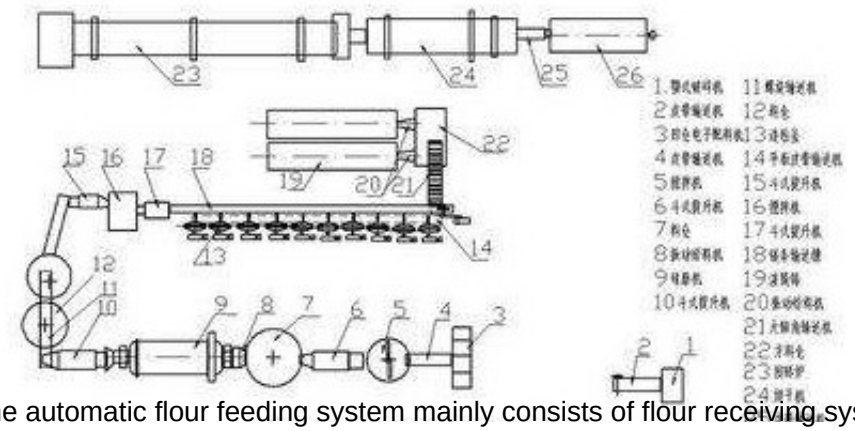
Design and implementation of automatic powder feeding control system in food factory



The automatic flour feeding system mainly consists of flour receiving system, flour discharging system, flour sieving system, flour conveying system, batching metering system and ventilation and dust removal system. Microwave heating mechanical equipment conveys raw flour to the flour storage bin for storage. It can be conveyed to the flour storage bin by the bulk truck through the positive pressure of compressed air. It can also be unpacked by the manual bag, poured into the feed port, and conveyed to the flour storage bin by the positive pressure.

In the outgoing system of food factories, there are vibration unloader, variable frequency adjustable speed winch and flour mixing winch under the raw flour storage bin. Different kinds of flour are stored in different flour storehouses. According to the actual production needs, the frequency of variable frequency adjustable speed winch can be adjusted to achieve the purpose of flour roughing. The flour sieving system is equipped with sieving equipment to sieve the flour entering the production workshop, to prevent foreign bodies or unqualified flour such as raw worms and caking, and to further ensure the quality of raw flour.

The conveying mode of flour conveying system includes mechanical conveying and pneumatic conveying (including positive pressure conveying and negative pressure conveying), which can be flexibly selected according to the actual production. The flour used in the production system can be measured and counted by the batching metering system, and the flow and output can be adjusted. The flour can be mixed proportionally according to the formula.

The upper computer monitoring software is completed by commercial configuration software. Compared with the computer high-level language (VB, VC, etc.) to program the monitoring interface, the professional configuration software has higher reliability and shorter development cycle. The monitoring software mainly completes the functions of powder feeding process flow chart, equipment failure alarm, formula management, powder feeding data acquisition and display, report printing and so on. The configuration screen of powder feeding process monitoring mainly uses three-dimensional image to describe the shape of equipment, and animation to display the process flow.

The equipment failure alarm module sends out sound and light alarm when the equipment in the powder feeding process fails, and displays the fault information. It can also query the historical fault information when needed. The data acquisition and display module of powder feeding produces report system according to the data collected from various weighing scales and watt-hour meters.