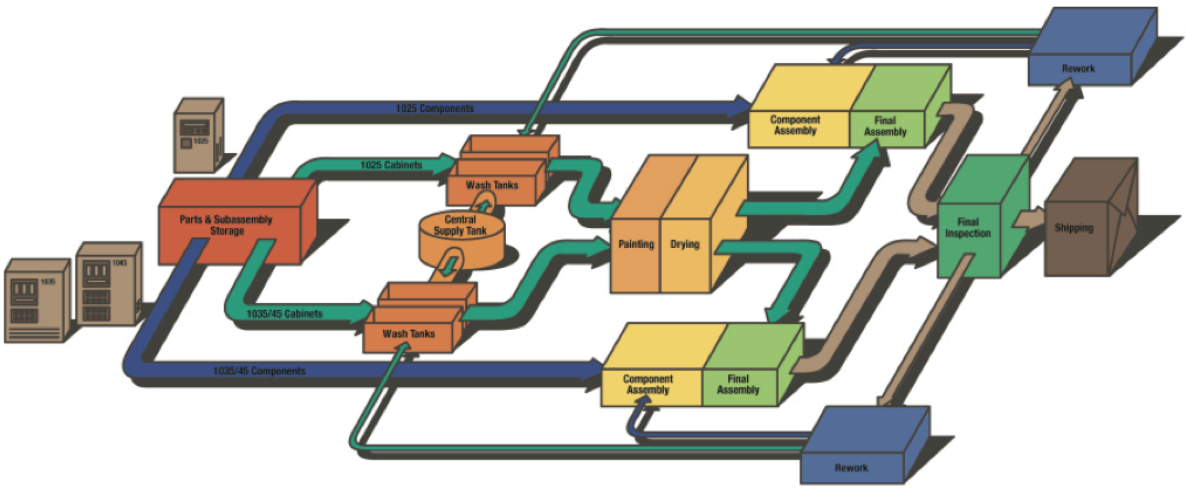
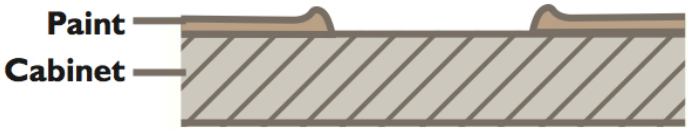


Production Flow Diagram

The Problem

The 1025 reject rate is normally 0.15%. It is currently over 6% and still rising.



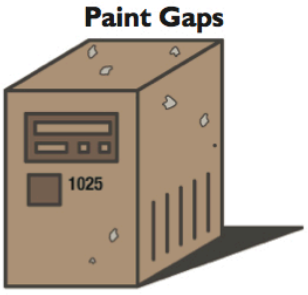
Every microcomputer goes through all three final inspection stages. Lately, a significant number of 1025s are being rejected periodically at final visual inspection due to gaps in the paint. A rejected cabinet may have as many as 11 different gaps in the paint coverage. These gaps appear randomly on the painted surface of the cabinets.

This is frustrating for experienced people who saw the same kind of reject rate on 1025s during last year's peak period. After a few weeks, they learned that some employees were wearing a silicone hand cream that can prevent paint from sticking. Management posted a list of acceptable hand creams in the washrooms. Within a week, the reject rate returned to normal.

The reject rate for 1025s has been increasing over the last two weeks. The reject rate for 1035s and 1045s is normal.

The operation of the microcomputers is unaffected, but the units cannot be sent to customers. The rejected cabinets are stripped and repainted, so there is no increase in scrap. However, key customers are complaining about late delivery of their 1025s.

How can you fix this problem?



CASE STUDY 1

Microcomputer Cabinets

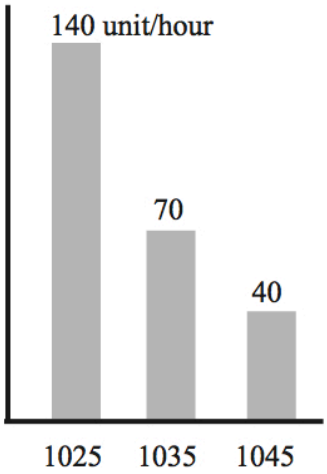
You're a troubleshooter. Your company makes three kinds of microcomputers: the 1025, the 1035, and the 1045. The three models are similar in design, engineering, and size. The company sells more 1025s than the other two models combined.

The demand for computers varies over the year. Your company can usually cope with the changes in demand. You are now in the middle of your peak period, which is six weeks long.

You took on new employees two weeks before the start of the peak period. They work with experienced people on both assembly lines. This provides on-the-job training and helps prevent mishandling of the units.

All three models are produced in a similar way. The basic process involves assembly, cabinet painting, and quality control. The 1025 is produced on Line 1. The 1035 and 1045 are both produced on Line 2.

This week's production rate



During your peak period, production rates increase weekly. Each line has increased production in each of the last three weeks. Here are this week's production rates. Rates will increase again tomorrow. They will continue to rise for three more weeks.

The Production Process

1. Each line has its own supply of components, which are assembled into the computer chassis. Components are tested during assembly. While the components are being assembled, the metal cabinets go through wash, paint, and dry operations.

2. The cabinets are washed by dipping them in a cleaning solution that removes contaminants and oils. The cleaning solution is changed every half hour. Each line has two wash tanks. One is used while the other is drained and filled with fresh solution. The tanks on both lines are filled from a central supply tank.

3. After washing, the cabinets are hung by hand on the Line 1 and Line 2 conveyors. The cabinets are hung from grounded (earthed) hooks. Both conveyors move at the same speed through the paint booth. Electrostatically charged paint is sprayed onto the cabinets. After painting, the units enter the drying section.

4. After drying, the cabinets go to final assembly. There the chassis are put into the cabinets. The finished units are sent to quality control, then to shipping.

5. Final inspection is done in three stages: electronic, operational, and visual. Computers rejected in final inspection are sent to the rework sections. Faulty components are repaired or returned to the supplier. Faulty cabinets are stripped, washed, and returned to the washing operation for recycling through production.