

Kashimiro Spa – Exam Simulation

Kashimiro Spa produces luxury scarfs for men.

The range of this product family is composed of 30 standard variants: 5 different laces, 3 different lengths and 2 different widths. Kashimiro Spa produces also tailored scarfs based on customer requests and the range for this “special product” is unlimited, each tailored scarf is different from the other.

When customer demands a standard scarf, she wants to have it immediately, and when she demands a tailored scarf she is willing to wait up to 10 days.

According to historical data, luxury scarfs demand is equal to 70 pieces per day: 60 standard scarfs (all the variants are requested every day) and 10 tailored ones. The demand for standard scarfs is affected by some fluctuations while the one for tailored scarfs is stable.

Production process:

The production system is composed by 3 departments decoupled by stocks: Cutting, Embroidering and Packaging.

Cutting department: in this department there are 2 machines that work in series. There are 2 operators, one per machine. Operators work consists in loading the machine, processing and then unloading the machines. Machines need setup each time the length or the width of the scarf is changed.

Embroidering department: this department is composed of 2 stations that work in parallel. In each station, an operator does all the activities to complete the process for an item: firstly, she stitches the lace on the scarf (6 minutes) and then, she finishes the scarf ironing the lace (9 minutes) using a specific machine. A setup is necessary when product variant changes.

Packaging department: this department is composed by 3 stations that work in series each one with one operator. The process in this department consists in wrapping the scarf in Kashimiro Spa designed packs, and it is done manually. The stations need setup only when the width of scarfs changes.

Each shift is 8 hours and there are 2 breaks of 15 minutes per shift.

All the stages are completely dedicated to this product family.

Upstream the production department there is a stock of raw material enough for 630 pieces.

There are no scraps in any process.

Department	Station	Cycle Time per resource (min.)	Changeover (min.)	Availability (%)	Shifts	Inventory (downstream)
Cutting	M-1	7	15	100	2	350
	M-2	7	10	85	2	210
Embroidering	E	15	5	100	2	280
Packaging	P-1	4	10	100	1	140
	P-2	3	15	100	1	140
	P-3	4	0	100	1	280

The company receives everyday customer orders.

The company daily schedules the shipping department for many finished pieces deliveries. The production control function issues a weekly production plan for each stage.

Two times per week the first station of cutting department informs production control about the raw material inventory level. The production control places a raw materials order to the supplier every two weeks and, once per month it makes a forecast about the consumption of raw-materials and sends it to the supplier. The supplier delivers the day after Kashimiro Spa places an order.

Q1: Draw the Current State Map of the company (with the timeline).

Q2: Compute the EPE for each stage and indicate the most rigid one.

Q3: Draw the Future State Map of the company to design the future state, answering in detail to the first six questions of the eight questions. The target of the company is to define the minimum changes in order to have each buffer size for standard scarfs not exceeding 420 units and raw-material maximum stock equal to 700 pieces.