

ACTIVITY CHARTS; MAN AND MACHINE CHARTS

Although the process chart and the flow diagram give a picture of the various steps in the process, it is often desirable to have a breakdown of the process or of a series of operations plotted against a time scale. Such a picture is called an **activity chart**.

MAN AND MACHINE CHARTS

The operator and the machine work intermittently on some types of work. That is, the machine is idle while the operator loads it and while he or she removes the finished work from it, and the worker is idle while the machine is in operation. It is desirable to eliminate idle time for the worker, but it is equally important that the machine be kept operating as near capacity as possible.

The first step in eliminating unnecessary waiting time for the operator and for the machine is to record exactly when each works and what each does. Such a record is called Man & Machine chart. Many operations consist of three main steps: (1) GET READY, such as putting material in the machine; (2) DO (Doing the work), such as drilling a hole; and (3) IDLE (Waiting for an operation to be completed or being idle or having no job to do).

Very often, a clearer picture of the relationship of the working time of an operator and the machine time can be obtained by showing the information graphically to scale.

Example:

A workshop is engaged in printing patterns on plastic matt. The work is done according to customer orders. The shop has two identical printing equipments that can print only one side of a matt at a time. The matt have dimension of 60x40 cm.

A customer demands 3 matt's with identical patterns on both sides. The printing process is simple, the matt is placed in the machine and 30 minutes is allowed to print the pattern. If the matt is kept in the machine less than 30 minutes then the colors fade. If it is kept more than 30 minutes, then the colors are too strong.

The necessary operations and the required times are shown below.

Placing one side of a matt	15 minutes
Printing either side.	30 minutes
Turning the matt.	5 minutes
Removing the matt.	15 minutes

By the help of Man-Machine charts, show the best way for completing the printing of 3 matt's.

A method can be as follows:

Time	Equipment-1	Equipment-2	Man
5	Get Ready		Placing
10			Matt-1
15			Side-1
20		Get Ready	Placing
25			Matt-2
30	Printing		Side-1
35	Matt-1		Idle
40	Side-1		
45		Printing	
50	Get Ready	Matt-2	Turning Matt-1
55		Side-1	Idle
60			
65	Printing	Get Ready	Removing
70	Matt-1		Matt-2
75	Side-2		
80		Idle	Idle
85	Get Ready		Removing
90			Matt-1
95			
100	Get Ready		Placing
105		Matt-2	
110		Side-2	
115		Get Ready	Placing
120			Matt-3
125	Printing		Side-1
130	Matt-2		Idle
135	Side-2		
140		Printing	
145	Idle	Matt-3	Removing
150		Side-1	Matt-2
155			
160		Get Ready	Turning Matt-3
165			Idle
170			
175		Printing	
180		Matt-3	
185		Side-2	
190			
195		Removing	
200		Matt-3	
205			

The best working method is as follows:

Time	Equipment-1	Equipment-2	Man
5			Placing
10	Get Ready		Matt-1
15			Side-1
20			Placing
25		Get Ready	Matt-2
30	Printing		Side-1
35	Matt-1		
40	Side-1		Idle
45		Printing	
50		Matt-2	
55	Get Ready	Side-1	Removing
60			Matt-1
65	Idle	Get Ready	Turning Matt-2
70			Placing
75	Get Ready		Matt-3
80		Printing	Side-1
85		Matt-2	Idle
90		Side-2	
95	Printing		
100	Matt-3		Removing
105	Side-1	Get Ready	Matt-2
110			
115	Get Ready	Idle	Turning Matt-3
120		Get Ready	Placing
125			Matt-1
130	Printing		Side-2
135	Matt-3		Idle
140	Side-2		
145		Printing	
150		Matt-1	Removing
155	Get Ready	Side-2	Matt-3
160			
165		Get Ready	Removing
170	Idle		Matt-1
175			
180			
185			