

PROCESS ANALYSIS

PART II



THE FLOW AND HANDLING OF MATERIALS

Excessive movement of men and materials on the shopfloor is always a problem. This problem should be addressed using the METHOD STUDY procedure. For this purpose Process charts are widely used in industry.

THE FLOW AND HANDLING OF MATERIALS

Recording of facts mostly facilitated by the use of process charts.

Process charts are useful because they:

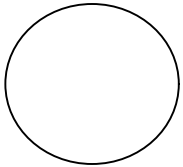
- i. Help gather, organize and visualize facts
- ii. Aid in analysing facts
- iii. Help in developing the improved method
- iv. Assist in convincing higher management
- v. Assist in giving everyone concerned an understanding of the overall problem.

PROCESS CHART SYMBOLS (1)

The recording of the facts about a job or operation on a process chart is made much easier by the use of 5 symbols, the so-called ASME (American Society of Mechanical Engineers) symbols. These 5 symbols, are Operation, Inspection, Transport, Delay and Storage. They serve as a very convenient, widely understood type of short-hand, saving a lot of writing and helping to show clearly just what is happening in the sequence being recorded.

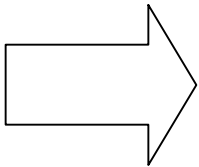
PROCESS CHART SYMBOL (2)

Operation



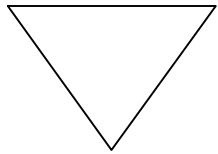
Indicates the main steps in a process, method or procedure. Usually the part material or product concerned is modified or changed during the operation.

Transport



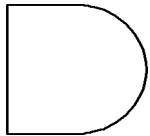
Indicates the movement of workers, materials or equipment from place to place.

Permanent
Storage



Indicates a controlled storage in which material is received into or issued from a store under some form of authorisation or an item is retained for reference purposes.

Temporary
Storage/
Delay



Example work waiting between consecutive operations, or any object laid aside temporarily without record until required.

Inspection



Indicates an inspection for quality and/or check for quantity. (Checking a requisition.)

THE OUTLINE PROCESS CHART

An Outline Process Chart (OPC) is a process chart giving an overall picture of a production process by recording in sequence the main operations and inspections.

An OPC gives a “birds-eye” view of the activities. Hence only 2 symbols are used namely: Operation and Inspection.

In order to carry out detail study of the processes for the purpose of method improvement, it is necessary to use the Flow Process Chart (FPC).

FLOW PROCESS CHART (1)

What is a flow Process Chart

A Flow Process Chart is a process chart setting out the sequence of the flow of a product or a procedure by recording all events under review using the appropriate symbols.

FLOW PROCESS CHART (2)

Two types of FPC's are commonly used in industry.

(i) Flow Process Chart - Man Type

This records the activities of the worker

(ii) Flow Process Chart - Material Type

This records how an item or material is handled or treated

The FPC is more detailed than the OPC. Usually it is used to study a small portion of the OPC. All the 5 ASME symbols are used in the FPC.

FLOW PROCESS CHART (3)

Steps in Making a Flow Process Chart

1. Obtain or make a chart
2. Determine the scope of study
3. Follow the job
4. Question as you go
5. Record supplementary facts
6. Apply symbols
7. Spotlight the “do” operations
8. Check back for completeness
9. Summarize

FLOW DIAGRAM (1)

A flow Diagram is a drawing or layout of the shopfloor, drawn substantially to scale, on which is shown the location of specific activities and the routes followed by workers and materials.

The ASME charting symbols are employed for this purpose. The flow diagram is used to supplement the OPC and FPC.

FLOW PROCESS CHART (2)

When using the flow diagram for method improvement, look out for the following:

1. Long moves between operations
2. Changes in directions and flow
3. Backtracking
4. Small volume items, or low production work areas on most direct line of flows
5. Large volume items, or high production work areas on long route through out-of-the way corners
6. Places to unitize or combine operations

THE HANDLING OF MATERIALS (1)

The basic approach to the problem of materials handling is:

- 1) Eliminate or reduce the handling of materials as far as possible
- 2) Improve handling by employing suitable materials handling equipment

THE HANDLING OF MATERIALS (2)

To eliminate or reduce materials handling we should focus on two areas:

1. Housekeeping - the amount of materials handling can be significantly reduced if good house-keeping practices are adopted on the shopfloor.
2. Plant Layout - a good, well-planned shopfloor layout will ensure that movement of men and materials is smooth-flowing and kept to a minimum. Travelling distances are also kept to minimum and materials handling is lessened.

THE HANDLING OF MATERIALS (3)

Using Materials Handling Equipment

One of the basic principles in materials handling is to adopt equipment as far as possible.

Humans are not suitable for materials handling because of their limited strength and their susceptibility to injury.

A wide variety of storage and materials handling equipment include conveyors, industrial trucks, cranes and hoists, containers and storage racks.