Problem 03

"Something" travels through the sequence of activities

E326 – Lean Manufacturing & Six Sigma

SCHOOL OF ENGINEERING

Problem 03
Suggested Solution

Y=f(X) Representation

- $Y = f(X_1, X_2, X_3, \ldots X_n)$

- For Pneumatic cylinder assembly operations:
  - X = suppliers delivery, goods quality, truck transport availability.

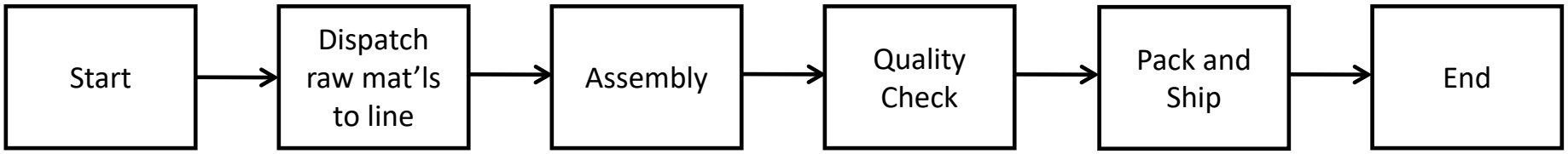
  - Y = customer orders delivery, type of goods picked and delivered

  - f( ) = process of how goods are received into stock and being shipped.

SIPOC

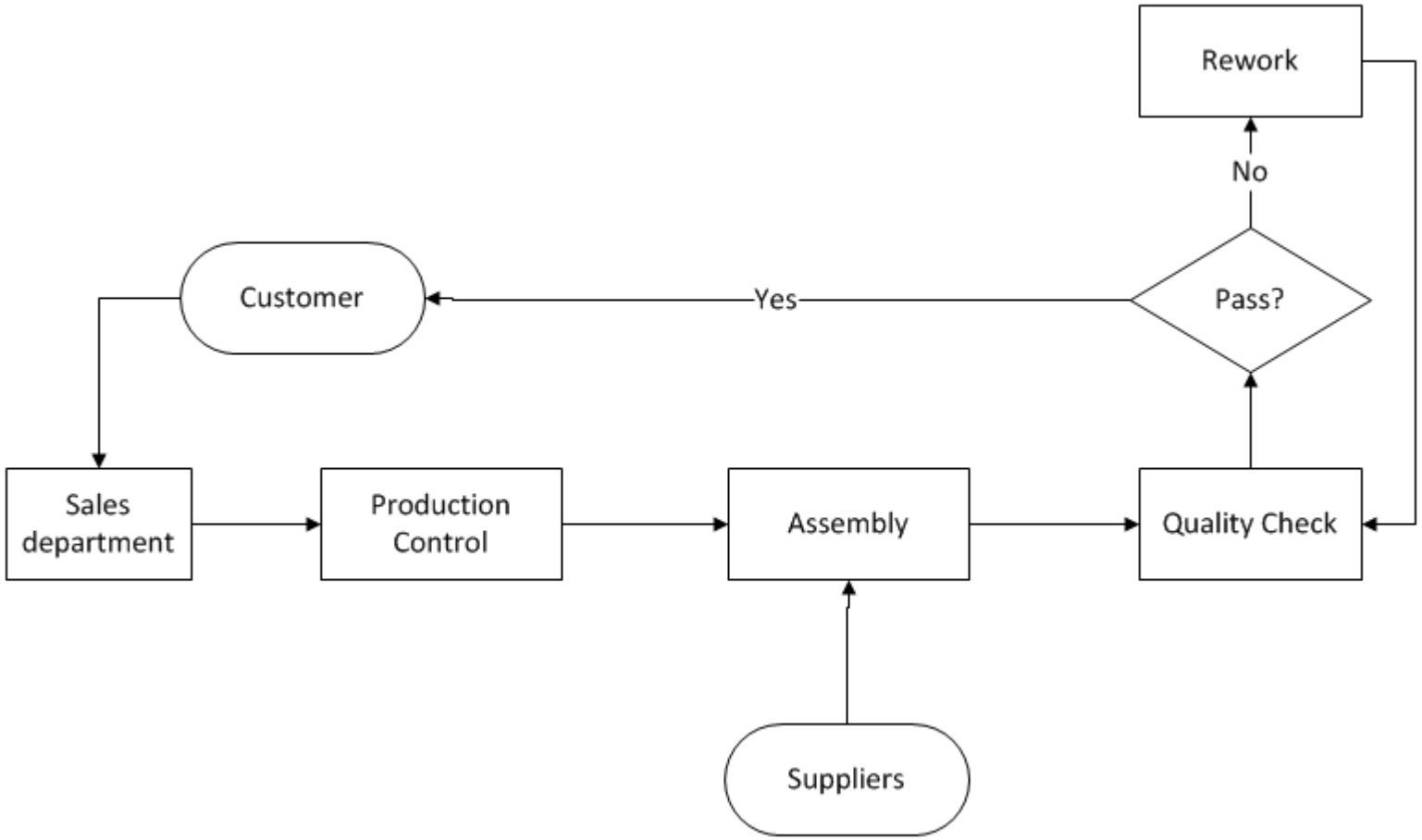
$$Y = f(X_1, X_2, X_3, \ldots X_n)$$

Suppliers	***Inputs***	***Process***	***Outputs***	***Customers***
• Materials suppliers • Transportation / Logistics suppliers	• Materials based on BOM list • Customers' orders delivery date and time • Raw materials availability	• See Below	• Quantity of Finished Goods (FG) • Delivered schedule • Payment	• Production • Customers



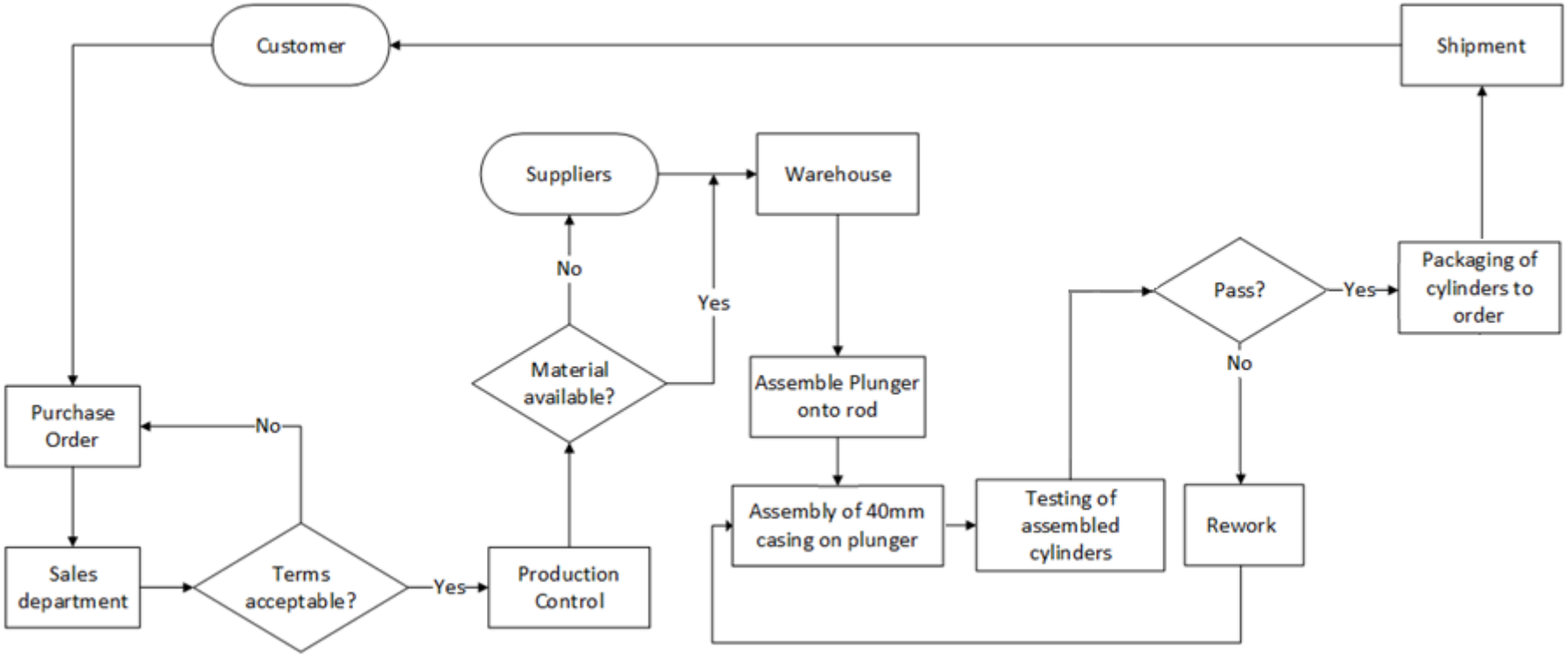
Linear Flowchart – Macro Level

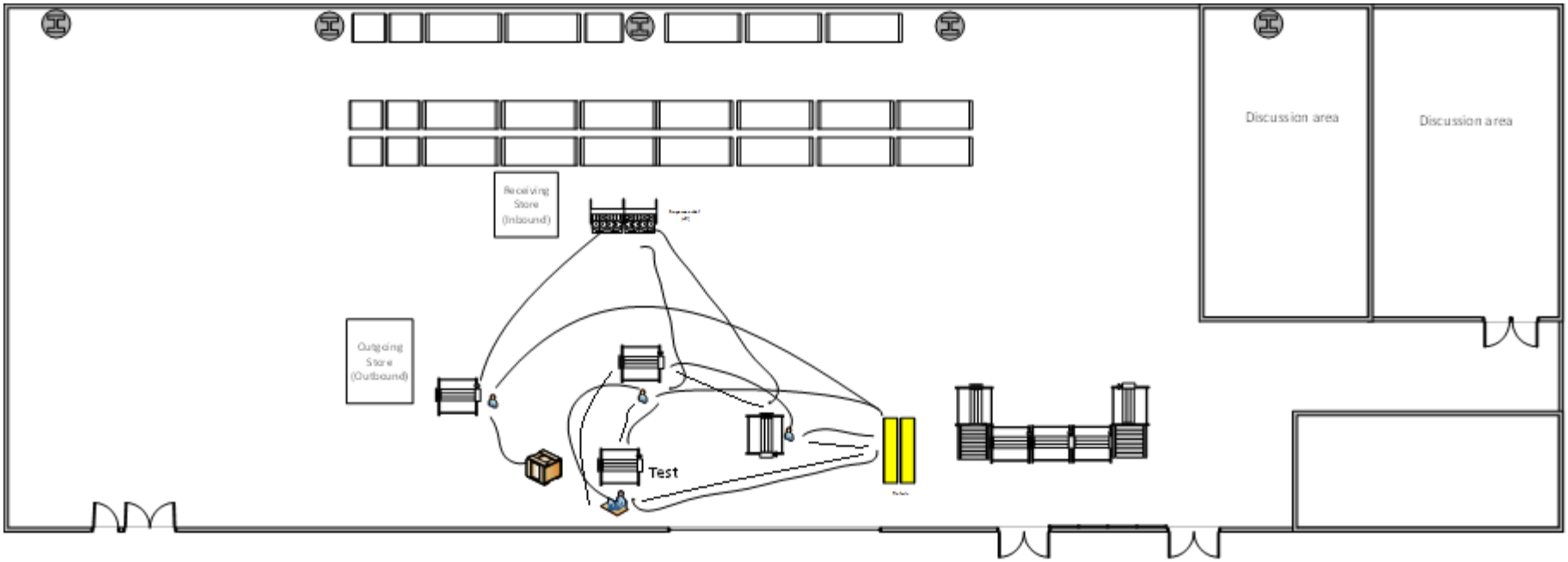
The following flowchart shows how you can map the macro level of the manufacturing process:



Linear Flowchart – Detailed Level

The following flowchart shows how the production of Pneumatic Cylinder can be triggered from customer till completed products are delivered to the customer's premises.




Discussion area
Discussion area
Receiving Store (Inbound)
Outgoing Store (Outbound)
Test

Learning Objectives

- Demonstrate the understanding of Y=f(X) notation
- Apply Input and Output Variables in Lean Six Sigma
- Define SIPOC, Macro- and Micro- (Detailed-) level in Process Mapping
- Differentiate techniques and deliverables used in Process Mapping
- Develop Spaghetti diagram(s) for the workflow

Overview of E326 Lean Manufacturing and Six Sigma