

Materials Strategy

“Milk Run”

Tugger Deliveries

Introduction

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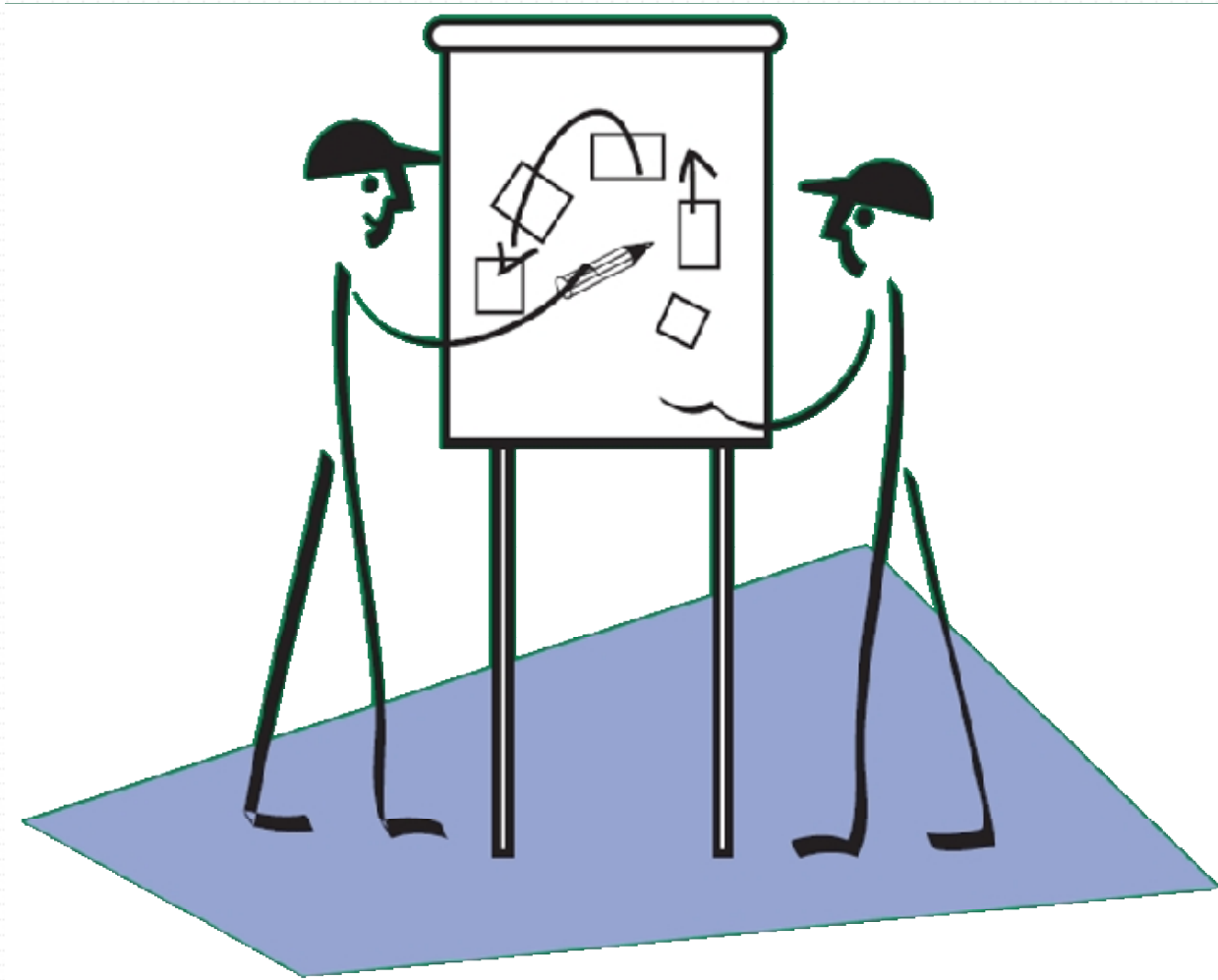






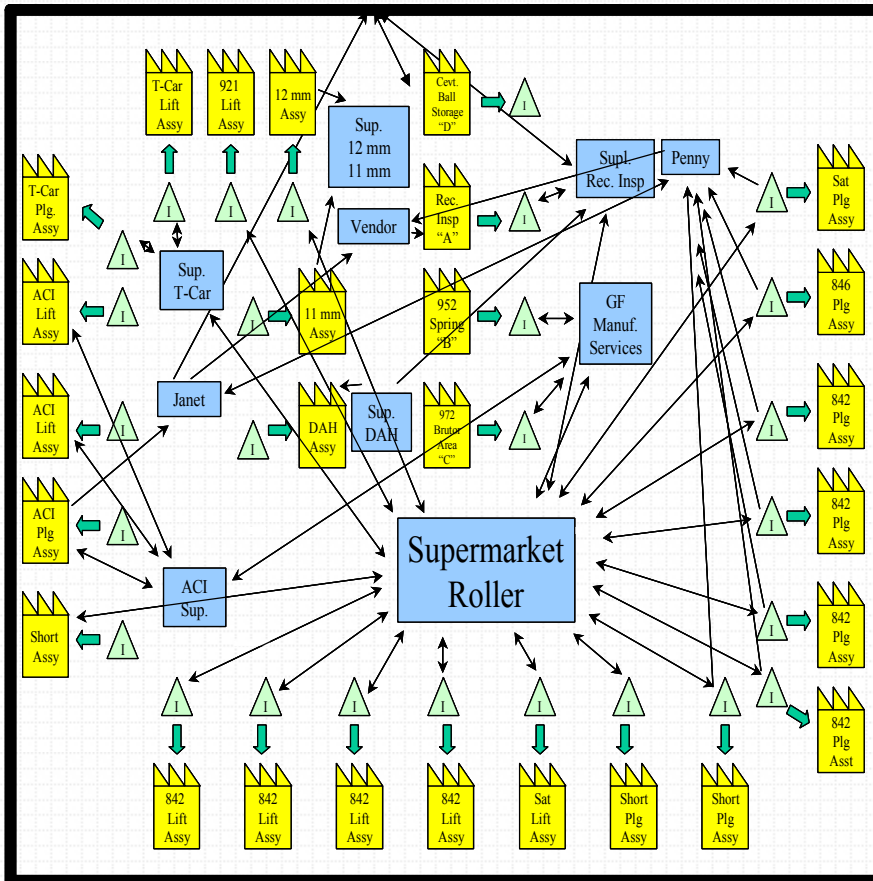


Delivery Method – Design Principles

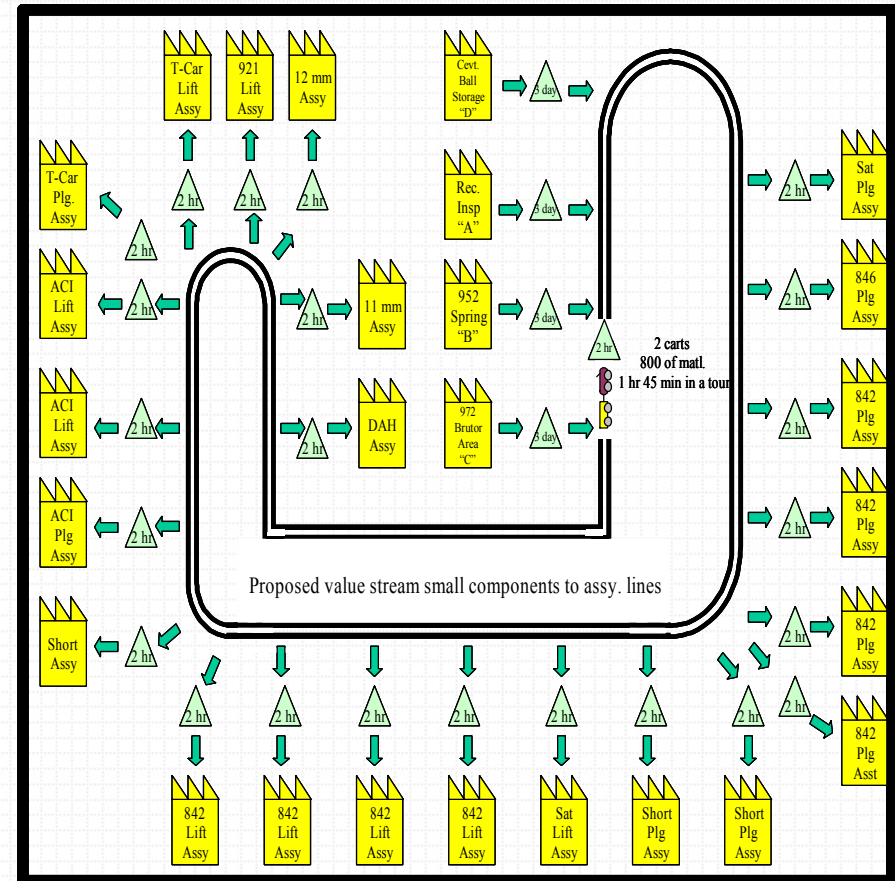


Why Change?

Original Condition

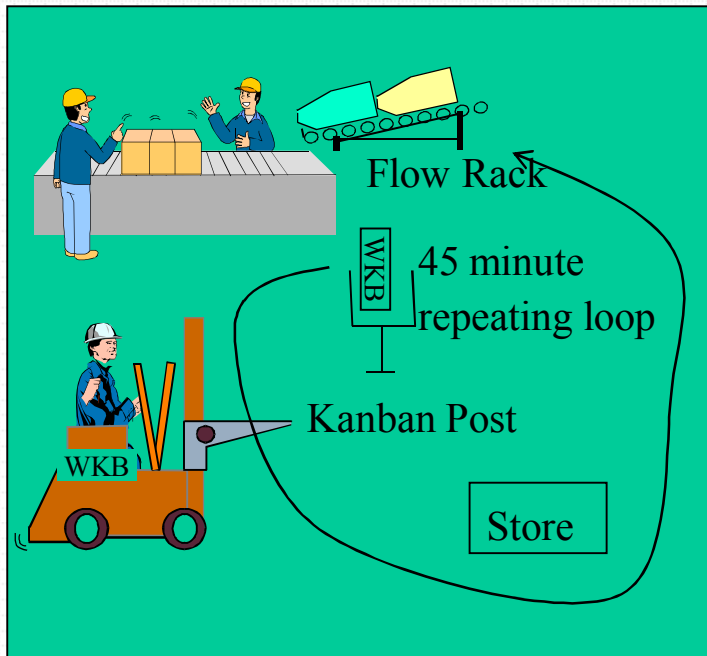


Tugger Condition



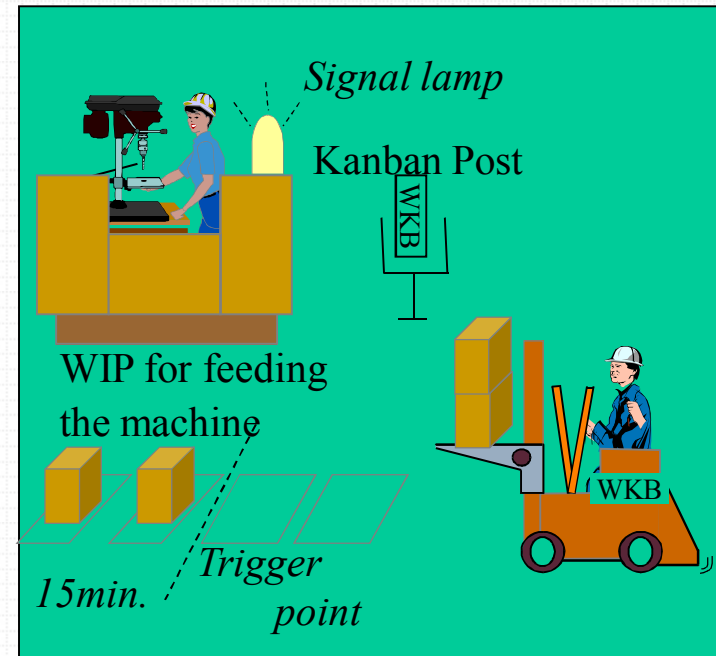
Two Methods of Delivering Material

1. Fixed Time Random quantity delivery



On a set and timed route e.g. 45 minutes the material handler will pick up the Kanban cards and deliver product line side

2. Fixed quantity Random time delivery



In response to inventory decreasing below the trigger point, the material handler brings a fixed quantity e.g. two boxes to the line

Tugger Deliveries - Design Principles

Two types of material delivery systems:

- Time based (regular schedule)
- deliveries based on a regular schedule, “Milk Run”
- Random based - deliveries
based on a “as needed” signal



Creating information flow - Delivery

- Decide on a delivery method:
 - ◆ Time based “Milk Run” or random deliveries
 - ◆ Small container vs bulk container
 - ◆ Standard Work for Material Handlers
 - ◆ Identify frequency of deliveries
 - ◆ What signal to use
- Decide on the “Point-of-Use” inventory levels
 - ◆ How much inventory to keep at the line. Use PFEP.
 - ◆ How much inventory to deliver each time

Creating material flow - Delivery

- Identify a delivery route
 - ◆ Material pick up and delivery points
 - ◆ List of material to delivery at every point
 - ◆ Map out the delivery route
 - ◆ Disposal of returnable containers and trash
- Verify readiness:
 - ◆ of each part for the delivery
 - ◆ of delivery equipment
 - ◆ of each pick up point – Warehouse/Supermarket
 - ◆ of each delivery point – Line/Work Cell

Operating Principles

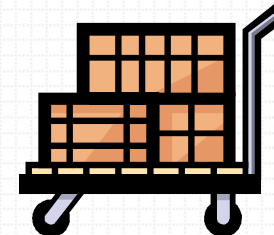
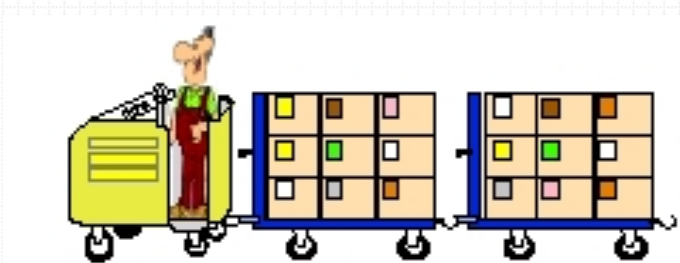
- All deliveries and material handling conducted only by designated people from the Material Handling department – NOT production operators
- Empty or returnable containers are picked up by the Tugger and delivered to the warehouse - NOT to the Supermarket.
- Delivery Kanban cards must be collected on regular basis and returned to the Supermarket.
- All material taken from the Supermarket must be delivered and left at the Line. No material is returned to the Supermarket. *“Take only what you need”*.
- No Kanban (signal) – no delivery

Operating Principles (Con't)

- All delivery routes must be well defined and standardized
- Point-of-Use racks and WIP markets to be located along main delivery routes to allow timely delivery system
- Point-of-Use storage locations well designed and located near main delivery routes
- All parts and components delivered to the line must be operators ready – boxes open, all packaging material removed
- All material must be stored on designated racks. No material to be stored on the floor or in the isles
- An attempt should be made to minimize Forklift traffic between warehouse and assembly lines or work cells

Tugger Deliveries - Design Principles

- There are two ways of loading and unloading Tugger:
 - ◆ Coupled (1 Operator)
 - Tugger driver loads the carts in the Supermarket and delivers parts to the point-of-use.
 - ◆ De-Coupled (2 Operators)
 - One Operator is Tugger driver only delivering parts
 - Another Operator is a Supermarket Attendant who loads the carts in the Supermarket.



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