

760 Class #13: JUST-IN-TIME/TPS

- 1. Admin:**
- 2. What are the principles of TPS?**
- 3. Why are they so hard to copy & get right?**
- 4. What is the nature of TMM-Georgetown's seat problem.**
- 5. What should they do?**

JUST-IN-TIME PRODUCTION

OBJECTIVE:

- Constant Improvement of the Production/Delivery System, as measured by Quality, Cost, Lead Times, Service, Flexibility

METHOD:

- Simplify the Production System
- Rapid Feedback on Problems Thru Tightly Integrated Production
- Pull System for Inventory Control
- Exploratory Stress to Drive Improvement
- Effective Management of Capital Equipment

SIMPLIFY THE PRODUCTION SYSTEM

Fewer Suppliers

Reduced Parts Counts

Focused Factories

Scheduling by rate, not lots

Fewer storage containers

More Frequent Deliveries

Smaller Plants

Shorter Distances

Less Reporting

Fewer Inspectors

Less Buffer Stock

Fewer Job Classifications

RAPID FEEDBACK

"A DEFECT IS A TREASURE"

ACTION STEPS:

- 1. REMOVE FEEDBACK DELAYS
--ESPECIALLY WIP INVENTORIES**
- 2. LINE WORKERS STOP PRODUCTION
WHEN PROBLEMS ARISE**

BENEFITS:

INSTANT FEEDBACK TO PROBLEM SOURCE

JOB ENRICHMENT

-UTILIZE MENTAL POWERS

INCENTIVES TO AVOID DEFECTS

-CAUSE IS EASILY TRACEABLE

PULL SYSTEM FOR PRODUCTION AND INVENTORY CONTROL

PRODUCE EXACTLY

- WHAT IS NEEDED**
- WHEN IT IS NEEDED**

**KANBAN OR CARD CONTROL REPLACES
COSTLY COMPUTERIZED PLANNING
AND TRACKING SYSTEM**

**PROBLEMS ARE QUICKLY FELT
THROUGHOUT THE SYSTEM**

ELIMINATES JUST-IN-CASE INVENTORIES

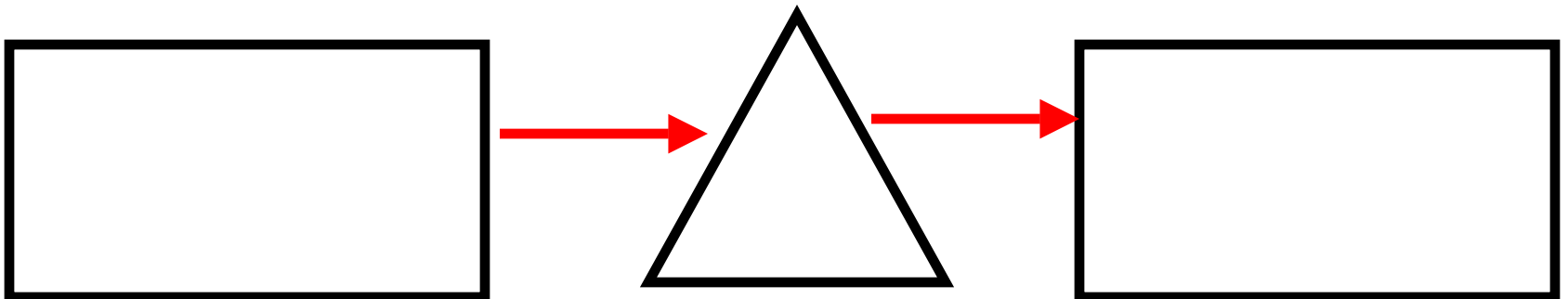
REQUIRES

- FLEXIBILITY**
- FAST CHANGEOVERS**
- SMALL LOT SIZES**

**EXPLORATORY STRESS TO DRIVE IMPROVEMENT
TO EXPOSE PROBLEMS**

**REDUCE BUFFERS
REDUCE CYCLE TIME TARGETS
REDUCE LABOR ALLOCATIONS**

**PROBLEM EXPOSURE DRIVES EMPLOYEES TO WORK ON
SETUP REDUCTION
VARIABILITY REDUCTION
CYCLE TIME REDUCTION**



MANAGING CAPITAL EQUIPMENT

TOTAL PREVENTIVE MAINTENANCE

- ASSURES BETTER UPTIME RELIABILITY**
- OFTEN PROVIDES MORE TOTAL UPTIME**
- OPERATORS PERFORM REGULAR MAINT.**

PRE-AUTOMATION

- PRODUCT DESIGN FOR ASSEMBLY**
 - REDUCE PARTS COUNT**
 - UTILIZE MODULARITY**
 - SET SPECIFICATIONS EFFICIENTLY**
 - Know cust. needs and mfg capability**
- PROCESS DESIGN FOR ASSEMBLY**
 - REDUCE FLOW DISTANCES**
 - UTILIZE FAIL-SAFE DEVICES**
 - LOCATE TOOLS CONVENIENTLY**
 - STREAMLINE BEFORE AUTOMATING**

ADD CAPITAL INCREMENTALLY

- SEVERAL SMALL MACHINES MORE FLEXIBLE**
 - MATCH SUPPLY WITH DEMAND**
 - LESS CYCLE INVENTORY NEEDED**
 - MOVABILITY PERMITS DEDICATED CELLS**

JIT IMPLEMENTATION ISSUES

- 1. INVENTORY AS A SECURITY BLANKET**
- 2. REDUCE INVENTORY CARRYING COSTS VS.**

REDUCE SOURCES OF VARIABILITY

3. SUPPLIER MANAGEMENT

- BULLYING VS. COOPERATION**
- HOW TO SHARE THE PAINS & GAINS**
- GET OWN HOUSE IN ORDER FIRST?**

4. PHYSICAL DISTANCES

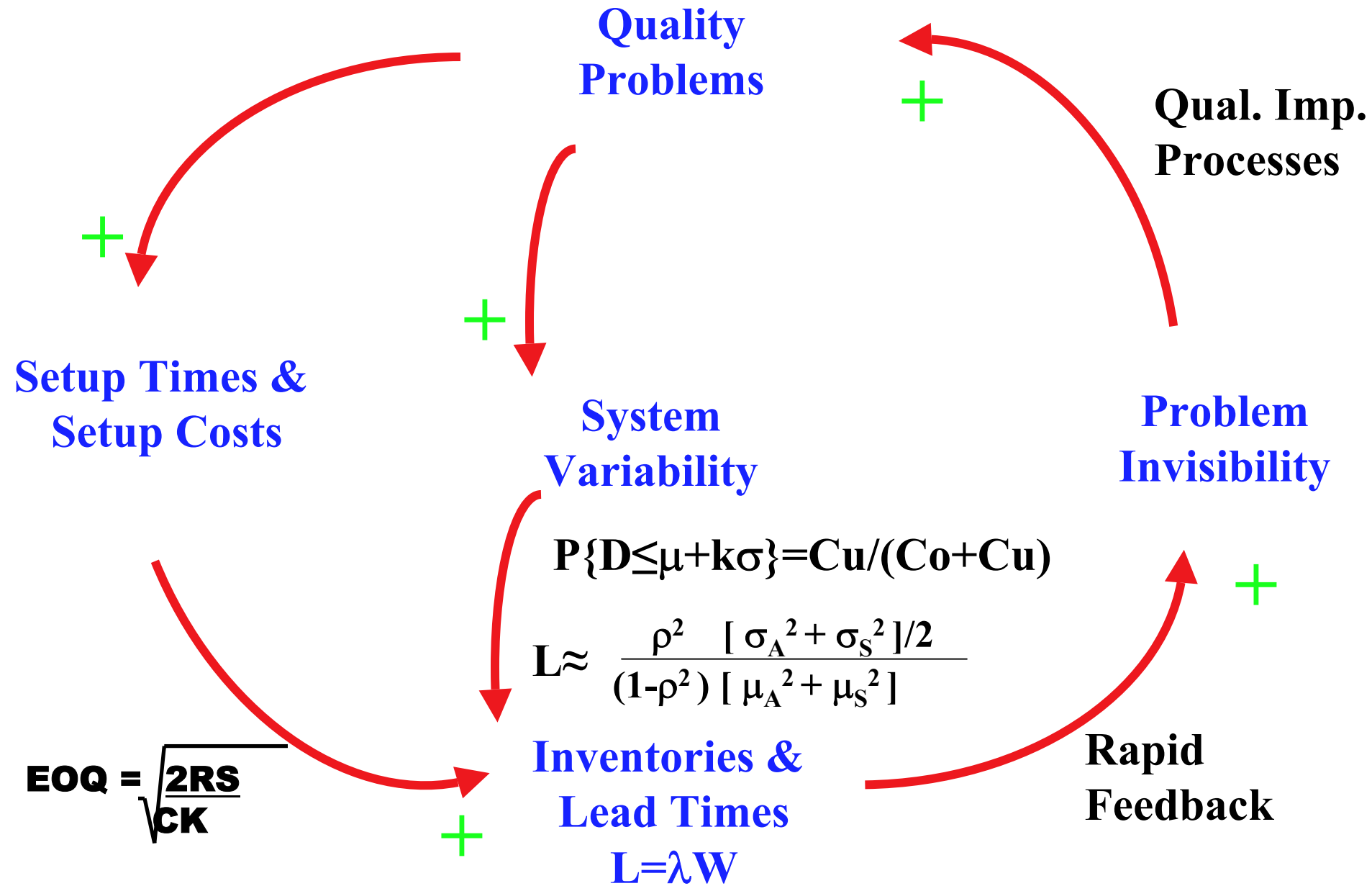
- BETWEEN PLANTS**
- BETWEEN WORKSTATIONS**

5. COOPERATIVE EFFORTS AMONG

- MANUFACTURING**
- MARKETING**
- PURCHASING**
- ENGINEERING**

6. PATIENCE

The Logic and Processes of JIT Improvement



See Karmarkar: Getting Control of JIT, HBR, Sept-Oct 1989