The House Module 20

- Cost Reduction By Eliminating Waste
- GPS Depth Study NVA/VA-Functions/Mgrs
- Jidoka (human automation)
- Setup Reduction Changeover
- Multi-process Operations
- RPIW
- Product/Patient Quantity Analysis
- 5S
- Value Stream Mapping
- Kaizen
- Kaikaku
- Takt Time Map Capacity Tables
- Visual Control
- Andon
- Kanban
- Total Productive Maintenance
- Poka-yoke (mistake proofing)
- Continuous Flow
- Heijunka (Leveling)
- Standard Operations
- Just-in-Time
- Quality Cost Delivery Safety Morale
- Takt Time Map
- Profit = Price - Cost
- Total Productive Maintenance
- Just-in-Time Measures
- MUDA
- MUDA
- ONE PIECE FLOW
- TAKT TIME
- PULL PRODUCTION
- Global Production System

© 1996-2013, John Black and Associates LLC
(modified from Hiroyuki Hirano, Productivity Press).
The House: Key Points

- The Global Production System (GPS) House is a **generic representation of the Toyota Production System** (TPS), as developed by Yoshiki Iwata and Chihiro Nakao, founders of Shingijutsu Consulting LTD, and former members of Toyota’s Kaizen Promotion Office under TPS founder Taiichi Ohno.

- The GPS House consists of the following components: the foundation, the floor, two pillars, the resources and processes that make up the interior, and the roof.

- The Lean House demonstrates the coherence and harmony of the Lean system. Boardroom to front line staff, the Lean system bonds all levels of the organization, creating focused purpose through Lean tools, methods and philosophies.
Global Production System

To Make things in the Right Way

JUST IN TIME
Operate with the minimum resource required to consistently deliver
• Just what is needed.
• In just the required amount.
• Just where it is needed.
• Just when it is needed.

People
Standard Work
Takt Time Production

Materials
Standard Work in Process Kanban
One Piece Flow Production
Supermarket System

Machines
Andon Operational Availability
Pull System Production

Jidoka
One-by-one confirmation to detect abnormalities.
Stop and respond to every abnormality.
Separate machine work from human work.
Enable machines to detect abnormalities and stop autonomously.

Leveled Production (Heijunka)

Cost Reduction Through The Elimination of Muda (Waste or Non-Value Added)
This people based system incorporates three operating philosophies,

- **Foundation** – Elimination of waste.
- **Left Pillar** – Just In Time.
- **Right Pillar** – Jidoka.

Working together these principles reduce non-value added activities, decrease work in process, and increase quality. Cost reduction is the result of the effective application of these principles.
JIT reveals waste in all its forms, making inconsistent results immediately apparent.

JIT reduces costs through the elimination of overproduction while clearly establishing the minimum resources necessary to meet capacity.

JIT drives continuous improvement through the elimination of waste by reducing lead time, WIP and process inconsistencies.

JUST IN TIME
Operate with the minimum resource required to consistently deliver
- Just what is needed.
- In just the required amount.
- Just where it is needed.
- Just when it is needed.

Global Production System
To Make things in the Right Way

Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)

Visual management and level production support the JIT pillar by helping to reveal and reduce inconsistencies in the process.

JIT reduces costs through the elimination of overproduction while clearly establishing the minimum resources necessary to meet capacity.

JIT drives continuous improvement through the elimination of waste by reducing lead time, WIP and process inconsistencies.

Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)

Leveled Production (Heijunka)

JIT reveals waste in all its forms, making inconsistent results immediately apparent.
Jidoka drives continuous improvement in the quality, safety and reliability of the process.

Jidoka triggers the response to problems, driving continuous process improvement.

**Global Production System**

To Make things in the Right Way

- **JUST IN TIME**
  - Operate with the minimum resource required to consistently deliver
    - Just what is needed.
    - In just the required amount.
    - Just where it is needed.
    - Just when it is needed

- **People**
- **Standard Work**
- **Takt Time Production**
- **Andon Operational Availability**
- **Materials**
  - **Standard Work in Process Kanban**
- **Machines**
- **Pull System Production**
- **Supermarket System**

**Leveled Production (Heijunka)**

**Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)**

Level production supports the Jidoka pillar by enabling one-by-one processing and establishing a visual standard for normal conditions.

Team members use Jidoka to assure and improve process and product quality, following these 4 steps.

1. Detect Abnormalities.
2. Stop.
3. Fix or correct.
4. Install countermeasures.

**Assure quality by confirming the outcome of each process step.**

**Management System Response:**
- Assist front line staff with root cause analysis
- Apply Immediate countermeasure
- Long term - Fix or correct.

JUST IN TIME

Operate with the minimum resource required to consistently deliver
- Just what is needed.
- In just the required amount.
- Just where it is needed.
- Just when it is needed.

**Level production supports the Jidoka pillar by enabling one-by-one processing and establishing a visual standard for normal conditions.**

**Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)**

**Global Production System**

To Make things in the Right Way

- **JUST IN TIME**
  - Operate with the minimum resource required to consistently deliver
    - Just what is needed.
    - In just the required amount.
    - Just where it is needed.
    - Just when it is needed

- **People**
- **Standard Work**
- **Takt Time Production**
- **Andon Operational Availability**
- **Materials**
  - **Standard Work in Process Kanban**
- **Machines**
- **Pull System Production**
- **Supermarket System**

**Leveled Production (Heijunka)**

**Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)**

Level production supports the Jidoka pillar by enabling one-by-one processing and establishing a visual standard for normal conditions.

Team members use Jidoka to assure and improve process and product quality, following these 4 steps.

1. Detect Abnormalities.
2. Stop.
3. Fix or correct.
4. Install countermeasures.

**Assure quality by confirming the outcome of each process step.**

**Management System Response:**
- Assist front line staff with root cause analysis
- Apply Immediate countermeasure
- Long term - Fix or correct.
Global Production System
To Make things in the Right Way

JUST IN TIME
Operate with the minimum resource required to consistently deliver
• Just what is needed.
• In just the required amount.
• Just where it is needed.
• Just when it is needed.

Jidoka
One-by-one confirmation to detect abnormalities. Stop and respond to every abnormality.
Separate machine work from human work. Enable machines to detect abnormalities and stop autonomously.

Andon
Operational Availability

Standard Work
Materials
One Piece Flow Production
Supermarket System

Pull System Production

Leveled Production (Heijunka)

Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)

Autonomation – configure machines to detect abnormalities and stop, freeing team members to focus on value added activities and problem solving.

Jidoka improves productivity by eliminating defects, rework and the need for people to monitor equipment.
OBJECTIVES

- Appropriate and Efficient use of People’s Skills
- Appropriate Minimal Levels of WIP
- Appropriate and Optimal use of Machines

Cost Reduction Through The Elimination of Waste

The three operating philosophies work together to optimize process resources:
- People
- Materials
- Machines

From Page 1

JIT

Jidoka

Machines

People

Materials
Standard Work is the method which balances people’s work to the Takt Time (production requirement).

Once standard work is in place, Takt Time becomes a management tool for detecting abnormal conditions and defining improvement objectives.

Standard WIP and Kanban are methods which balance the production and movement of materials to the Takt Time.

These methods work with Takt Time management to enable One-Piece-Flow as a management tool for assuring one-by-one confirmation, and immediately detecting abnormalities and improvement opportunities.

Appropriate and Efficient use of People’s Skills

Appropriate and Minimal Levels of WIP

Appropriate and Optimal use of Machines

Standard Work

Standard Work in Process

• Andon
• Operational Availability

One Piece Flow

Pull System

Takt Time Production

Andon Systems signal abnormal conditions and avoid overproduction by ensuring all output is usable. Machines and people use andon to signal an automatic or manual line stop.

Operational Availability, achieved through preventive and predictive maintenance programs, is a method which avoids the necessity for overproduction by ensuring machinery is available when it is needed.

Reliable equipment and One-Piece-Flow enable synchronous, system wide, Pull Production.
When all of the pieces are working together, the system creates a powerful cycle of continuous improvement.

JIT reveals abnormalities and problems in the production system...

...and feeds them to the jidoka pillar.

Through Jidoka we respond by stopping, fixing, installing a countermeasure that improves the system.

Adjustments to the system (countermeasures, productivity improvements) establish the new standard for consistency in the JIT pillar.

Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)

Improve Delivery
Improve Cost
Improve Morale

Improve Quality
Improve Safety

Improve Morale
Improve Cost

This results in the elimination of waste and cost reduction at each cycle.
The House: Key Points Summary

The House is a snapshot of Toyota’s management philosophy.

“The most important determinant of the Toyota paradigm is clearly the company’s management philosophy, including its management doctrines or basic policies. In most companies, management doctrines or basic policies take the form of empty incantations or ornamentation and tend not to penetrate the thinking of employees. Toyota, however, makes sure these are recorded as formal documents, that they reach all employees, and that their penetration throughout the organization is monitored. This allows Toyota to shape the values, thinking and behavior of all employees.”