The Haldex Way
- Our way to excellence

Monica Bellgrann
Director Production Technology and Systems
Adj Prof at Mälardalen University
Agenda

- Today’s industrial setting
- Manufacturing footprint
- Lean production and Toyota’s success
- Haldex applying Lean
- What is required to “take lead”?
- Focus production development
- What do we need to do today – and tomorrow?

The Challenge:
To go beyond Lean to reach a world class production level
Market Requirements and Contextual Conditions

- Global competition drives outsourcing closer to the company’s core business
- Consolidation, large & few companies
- Global footprint
- Short product life cycles
- Mass customization, flexible customer centered production
- Cost focus
- Increased international ownership reduces local/regional industrial effort
- Continuous fight for investments
- National & regional preconditions for industrial growth are at focus: Taxes, cost level, infrastructure, competence, research quality etc
Increasing the content of knowledge in our products and production systems to stay global competitive requires industrial R&D and governmental financed research.

**Product content – Towards functional products**

- Increasing content of knowledge
- Decreasing raw material content

- The product is a function solving the customer’s problem
- The supplying company has unique knowledge
- Low requirements of customer product knowledge
- R&D absolutely vital

**Production system content**

- Increasing content of knowledge
- Standard solutions
- R&D
Outsourcing of functions and factories

- European industry - constantly redefining its core business and core competence

- Rationales behind the Make & Buy decisions?
  - General outsourcing trend
  - Easier to outsource then develop
  - The business case
  - Mindset of owners and management
  - Lack of production focus
One-way direction of off-shoring

“The increase in specialisation is negatively correlated with employment growth, implying that restructuring and repositioning decrease employment at least over the short run. This is well in line with evidence that firms, which are merging and/or restructuring, streamline production and reduce employment first, thus becoming more competitive.”

Ref. Speed of Change and Growth of Manufacturing by Karl Aiginger, www.OECD.org from the Austrian Institute of Economic Research (WIFO)
“Manufacturers of all types seek the same holy grail: the strategy that delivers products at the lowest possible total landed cost. In search of that goal, over the past few years companies all over the world have relocated facilities, outsourced production to low-cost countries, invested in automation, consolidated plants, or fundamentally redefined relationships with suppliers.”


This is the industrial logic. Is it sustainable from a global resources’ perspective??
Manufacturing footprint drivers

A manufacturing footprint is often a consequence of the company’s history, but could also be:

- **Structural driven**: by growth or consolidation
- **Cost driven**: But labour and material cost is too focused, many hidden costs
- **Market driven**: Following customers’ new location and/or new market growth potential
- **Driven by the location of R&D**
- **Driven by a risk strategy to handle** changing global/local demand, trade regulations, currency exchange rates or varying capacity costs
- **Driven by social and environmental concerns** – *driver of growing in importance?*
- **Driven by non-rational reasons…**
(Re-)designing the manufacturing footprint

- **Challenges:**
  - Dynamic market and context
  - Speed of change
  - Extreme global competition
  - Local human and social factors
  - Environmental focus – sourcing

- The manufacturing footprint decision exposes the company both to risks and opportunities.

- With a value-add and sustainability perspective – what is the best possible manufacturing footprint?

Consequently, the manufacturing footprint has become a strategic design issue that should be aligned with the business strategy.
Discussion 1

WHAT HAPPENS WHEN YOU OUTSOURCE PRODUCTION?
Advantages
Risks

HOW CAN LEAN PRODUCTION BE A MEANS TO PREVENT OUTSOURCING?
What do Manufacturing companies do in order to achieve operational excellence and stay competitive?
Increasing Demands on Operation’s Performance
- Response to a dynamic industrial context

KEY PERFORMANCE INDEX:
KPI’s
Examples:
S - Security
Q - Quality
D - Delivery
C - Cost
H - Human Resources

Why is Toyota so successful?
”The cars that Toyota builds are not substantially different from those made by other automobile manufacturers. What is different is the efficiency of the Toyota organization.

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
## What we would like to know:

- How can Toyota consistently generate superlative results decade after decade?
- Do they have an embedded mechanism for permanence?
- Why haven’t other companies succeeded in the same way, despite their implementation of the TPS/Lean principles?

## Some answers:

- Parts are meaningful only in the context of a whole. Companies need to adapt the system in its entirety.
- The infrastructure of Toyota is the answer to the success, i.e. what is invisible
- Succession of leaders, preserving their leadership principles.
- Documentation of standards, creating a foundation for continuous improvements.

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
The Toyota Company Model

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
The Importance of Standards and Documentation

- Rather than focusing on individuals with extraordinary technical skills, Kiichiro Toyoda emphasized creating teams whose average skill level was high. His primary tool for accomplishing this was the formulation of standard operations.

- Managerial perspectives shift as times change, and documented procedures are needed to keep those perspectives from disappearing.

- Documented procedures means standard ways of working (best method known at a specific time).

Creating a culture of documentation (a system for enduring growth that does not depend on individuals) → A fundamental condition for sustaining stable growth!

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
Preserved Toyota Principles of Former Toyota Leaders

- "Fabrication is the foundation on which civilization is created". *Eiji Toyoda*

- "Always stay ahead of the times through research and creativity". *Sakichi Toyoda, the founder* (Big company disease means the loss of creativity)

- "Don’t talk about true value without conducting exhaustive market trials". *Sakichi Toyoda*

- "Study what customers want and reflect that in your products". *Kiiichiro Toyoda, Sakichi’s son and founder of the Toyota Motor Company*

- "Improve the product by auditing the production system, as well as the product itself". *Kiiichiro Toyoda*

- "As soon as processes are stable, reduce inventories between process steps. This will bring new problems to the surface". *Taiichi Ohno*

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
Sakichi and Kiichiro Toyoda shared certain characteristics; extraordinary drive, an uncommon pioneering spirit and stubborn perseverance. However, so does most company founders. What is the difference? Why do the spirit continues from one generation to another?

- Wisdom are added to the successors instead of exchanged.
- Elements of Toyota’s evolutionary capability:
  - A pattern of thinking that links every trial to competitive strength
  - The tenacity to bring ideas to fruition even in spite of initial setbacks
  - A gritty willingness to use whatever means necessary to win
  - The successful maintenance of systems of formal rules
  - Succession practices that ensure policy continuity
  - Mechanisms for emphasizing the continuity of Toyota management thinking among employees

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
Examples of principles within The Toyota Way

The right process:
- Continuous process flow to bring problems to the surface
- Pull to avoid overproduction
- Level out workload
- Culture of stopping to fix problems, right the first time
- Standardized tasks foundation for kaizen
- Visual control, do not hide problems
- Reliable and thoroughly tested technology that serves your people and processes
Haldex Way – our way to implement Lean thinking
What do you think are the biggest challenges when implementing Lean in a manufacturing company?
Haldex develops and provides **reliable and innovative solutions** that **improve safety, vehicle dynamics and environmental sustainability** in the global commercial vehicle industry.
Haldex will be the global commercial vehicle industry’s preferred choice as an innovative solution provider with a focus on brake and air suspension products.

- **Customer First:**
  
  *We understand our customers demands and live by our principles*

- **Respect for the Individual:**
  
  *We recognize the importance of our people.*

- **Passion for Excellence:**
  
  *We are committed to continuous improvement.*
Brake Systems

Air Management
- Air dryer systems
- Air cleaner systems

Brake Control
- ABS
- EBS
- Valves
- Brake actuator

Air Suspension
- Height control
- Suspension control

Wheel Brake
- Brake adjusters (drum)
- Disc brake
- Brake linings

06/10/2011
Global Customer Base

**Truck customers:** Daimler, Volvo Group, MAN, SGS, Scania, Freightliner, Navistar, Paccar, Oshkosh, BAE, Tata Motor.

**Trailer customers:** CIMC, Schmitz, Krone, SDC, SAF, Fruehauf France, Utility, Hendrickson, Wabash, Great Dane, Stoughton, Hyundai.
Haldex Way

Customer First | Respect for the Individual | Elimination of Waste

Right from Me | Continuous Improvement | Consumption Controlled Production

Normal Situation – Standardized working Methods

Teamwork

Priority
- Safety/Environment
- Quality
- Delivery
- Cost

Core Values
- Customer First
- Respect for the Individual
- Elimination of Waste
- Safety/Environment
- Quality
- Delivery
- Cost
- Priority

Bellgrán Haldex Way 2011
Haldex Way is our management and process improvement system aiming at:

- Increasing productivity
- Operational excellence throughout the entire value chain
- World class production, supported by Leadership Excellence
- A culture of continuous improvements
- Built on the concepts of Lean Manufacturing

Haldex Way is driven by management and supported by Haldex Way structures, tools and resources.
Haldex Way is built on a certification structure from “Copper” to “Platinum”.

- Requirements set on targeted KPI’s (e.g. delivery performance and inventory)
- Requirements set on deployed tools and procedures e.g. Six Sigma, Value Stream Mapping, to be certified to various levels.
- During 2007 our first units on “Silver” level.
Tier Challenges

Challenges

• The tier challenges are a set of requirements that must be met at the local level to objectively demonstrate the implementation of the Haldex Way.
• Each challenge is meant to be objective.
• The series of challenges are a road map to the Haldex Way journey.
• The tier challenge measures education, tool usage and results.

The Tier levels

• Copper introduces the structure and 1st use of lean tools.
• Bronze introduces more tools and looks for results.
• Silver advanced tools are in use and significant results are evident.
• Gold the BU or division is being managed as a value stream.
• Platinum world class and beyond.

The Gold Tier will shift from a site focus to the enterprise level.

● This Tier will focus on the entire value stream with the primary focus still within Haldex.
● Important enabling functions are seemingly left out of the site based Tier Challenges such as sales, finance, R&D...Over 60 enabling process have been identified.
The Gap Analysis

- **Dash Board**
  - Question format following the Core Values
  - Visual
  - Auto scoring
  - “Paretoed”
  - Summary of results with action item list

- \delete{Copy of tools for history presentation\Admin gap.xlt}
The tool box

Haldex Way

6 Sigma
Value Stream Mapping
Cell Team

TPM
OEE

PCDA
Pull
Others

5S
Cross Functional Team
Poka Yoke

The tool box

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The Haldex Way Implementation Timeline

- **2000**: 1st Issue of The Haldex Way Booklet
- **2002**: Change Agent Team Chosen
- **2003**: Gap Analysis Developed
- **2004**: Tier Model developed & 1st ISSUE Adopted
- **2005**: Tier Challenge Developed & Adopted
- **2006**: "COPPER" Challenge Cont'
- **2007**: "Bronze" Challenge Cont'
- **2008**: "Silver" Challenge Cont'
- **2009**: "Gold" Challenge Cont'
- **2010**: "Platinum" Challenge Cont'
- **And Beyond**

June 13, 2005
Islands of momentum

• In 2000 Haldex published and distributed the 1st edition of the Haldex Way booklet.
• This in itself created little change in behavior.
• 5% (estimated) of plants were attempting to move forward with the Haldex Way in 2001

In 2001 a Masters level student was given the task to create a tool that could measure the progress of the Haldex Way.
• Determined the activity level and the gap between local practices and world class practices.
Deployment of Change Agent Team 2002

Change Agent Team (ChAT) creation
- 4 person team from 3 countries and 3 different divisions.
- 1st meeting in Stockholm January 2002

The team and tool was taken to each facility worldwide
- Showed commitment from Haldex
- Allowed the gathering of best practice

The initial efforts and deployment was at the cell or natural work teams on the varying shop floors.
It took off ....

- True implementation began
- Cohesive ChAT team
- Accurate and in-depth view of Haldex with respect to the deployment of the Haldex Way.
- World wide recognition of the dedication to implementing the Haldex Way.
- The idea that this was a flavor of the month and would go away began to diminish.
- Focus remained on shop floor and site
- Global management meeting
  - Hosted by the ChAT
  - Typical participants are plant managers.
  - Communicate
  - Ask for action and commitment
  - Address concerns
  - Share successes
  - Annual meeting
  - Member of Executive Committee attends to show support and deliver message.
Reflections

- Challenges during the journey
  - Time, resources, organisation
  - Mindset
  - Communication
  - Standards
  - Implementation

- Goals and means
- Management and process improvement system
- What is unique?
- Relation to the production strategy
Challenge

Production Knowledge on Lean is Global

- The X production system.
- We are mainstreaming production. Where is the competitive edge?
- Lean is operations-driven.

**Issues:**

- More production development focus needed in Lean production
- Developing structures and tools - or new production technology?
- Kaizen and Kaikaku
The Next Production System Paradigm?

1. The Ford Production System
2. The Toyota Production System
3. The X Production System

The first paradigm

The second paradigm

The third paradigm

Taking the Lead
World-Class
Competitiveness

Kjirchi och Eijo Toyoda
Toyota Motor Corp.

The Life of
Henry Ford

Holonic
Bionic
Agile
Uddevalla
- TOYOTA ALWAYS TALK ABOUT SENSE OF CRISIS DRIVING THE MOTIVATION FOR DEVELOPMENT AND CONTINUOUS IMPROVEMENT.

- DO WE HAVE A SENSE OF CRISIS IN SWEDEN?

- DOES THE LEVEL OF CRISIS (AND URGENCY) VARY AMONG COMPANIES?

Crisis = Danger + Opportunity

Ref: Satoshi Hino, Inside the Mind of Toyota (2006)
Focus on production development in order to compete successfully!
What competition factors do we have to work with to make production to a competitive means?

When is the production system contributing to
- winning order?
- making new business?
The Built-in Conflict Between Development and Operations

The Production System

Development Output:
- Output: Modified or new production system
- Priority No.2

Operations Output:
- Output: Products
- Shows the result of the development phase
- Always Priority No.1

Many problems and much waste in production are created in earlier phases.
Challenge
Competing on time to volume

Build the factory…

Industrialization…

Run the factory…

TTT = Time To Technology (time for conceptual development)
TTM = Time To Market (time for introducing new product generations or variants)
TTV = Time To Volume (time for ramp-up to full volume)
TTC = Time to Customer (order processing time)
…Time to Cash
Challenge
Efficient Industrialization for short TTV

Towards short TTV:
- Early involvement
- Modular solutions
- Off-line set-ups
- Simplicity
- Robust solutions
- On-the-shelf solutions
- Updated project gate models with production-related activities (inputs-outputs)

Goal: to reduce time for running in and To reduce running-in problems

Product - and Production problem
Rate
FORD’s production development

- Ford had employed 10 – 20 talented mechanics for production engineering (who still didn’t have developed established ways to do things)

- Ford allowed extensive experimentation at the production site.

- Ford encouraged the group to perform production experiments and test new methods for measurement, fixture design, tools manufacturing, industry design, quality control and materials planning.

- The production engineers used the best from different production approaches and added new solutions.
Production Engineering at Toyota

Central PE
Project centric*

Approximate size

- 3-5% of factory operators

Responsibilities

- Define the overall production principles
  - Mandate to ensure that VS PE midi/micro design in line with production principles
- Master factory layout (macro level) on a long term (value stream machine allocation arbitrage)
- Support to larger projects
- Own technology roadmap
- Run new machine investment projects (planning and supplier contacts)
- Coordinate development with R&D
- Retain non sharable expertise (I&T PLC tools, …)

Value Stream PE
(reporting to VS)
Improvement centric

Approximate size

- 1-3% of value stream operators
- Temporary crew add-on for special projects such as vehicle launch (up to 25 best team leaders in assy department – 500 FTE)

Responsibilities

- Design, maintain and improve the midi and micro design of cells (continuously and with new machine investments) according to production principles
- Run day-to-day continuous improvements
- Troubleshoot and train floor people in troubleshooting
- Share knowledge, work and problem solve on daily basis with quality, maintenance team mates.
- Use special temporary crew for special projects such manufacturing industrialization of a new car
Choosing perspective

- Developing a production system along with the product
- Involvement of functions in the development project?
- Front-loaded project budget
- Strategic suppliers involved when designing the product and production system?
Vision for Haldex
Lean and Green Production Systems

- Reduce environmental load. Carbon footprint. ISO 14001.
- Benchmark: Toyota opens green cutting-edge factory in Ban Poh 2007 - a selected model plant in Asia for Toyota’s "Sustainable plant initiative"

Issues:
- Design and operation of green production systems
- Supply chain responsibility
- Longer or shorter life cycles?
- Complete sustainability focus
Cont’d Summary: Goal for production development: High contribution to competitiveness

- Stop holding the organization back
- Be as good as competitors
- Be clearly the best in the industry
- Redefine the Industry’s expectations
- Increasing contribution of production

Stage 1. Internal neutrality
- Poor level of contribution
- Internal detailed control
- ‘Necessary evil’. Want to be ignored
- Not enough resources

Stage 2. External neutrality
- Start benchmarking similar companies
- Operations not holding company back
- Adopting best ideas and norms of performance from rest of industry

Stage 3. Internally supportive
- Operations reached first division in the market
- Clearly aspire to be the best
- Provides a credible operations strategy

Stage 4. Externally supportive
- The company sees the operations function as providing foundation for future competitive success
- Strategy making, creative, proactive

PRODUCTION:

Cont’d Summary: Goal for production development: High contribution to competitiveness

- Correct the worst problems
- Adopt best practice
- Link strategy with production
- Give a production advantage

Cont’d Summary: Goal for production development: High contribution to competitiveness

Ability to implement
Ability to be appropriate
Ability to drive strategy

Everything is really about individuals and the creation of attractive environment for the “right” individuals

...so also in the production field!

Mindset and ambition level controls the results
End of presentation.
Thank you.

monica.bellgran@haldex.com