Scania Production System

Stefan Palmgren, Senior Vice President, Powertrain Production
Provider of transport solutions

Products
- Heavy trucks
- Heavy buses
- Engines

Services
- Workshops
- Service agreements
- Parts
- Driver training
- Scania Assistance

Financing
- Operational leases
- Financial leases
- Hire purchase
- Insurance solutions
Premium products and services

Haulage  Construction  Distribution

Special purpose  Network and services  City and suburban

Intercity and coach  Used vehicles  Engines
Modular system
The world of Scania

Production units
1891 Sweden
1957 Brazil
1964 Netherlands
1976 Argentina
1992 France
1993 Poland

Sales and services units
- 1,000 sales points
- 1,600 workshops
- More than 95% parts availability
- Round-the-clock assistance

Number of employees
41,000 persons
Global production system

Europe

Latin America
Scania’s core values permeate its entire corporate culture and influence its day-to-day work. Customer first, Respect for the individual and Quality are closely linked and apply in unity. They constitute the starting point for all business development.
Scania Production System

Continuous improvement

Right from me

Priority
1. Safety/Health/Environment
2. Quality
3. Delivery
4. Cost

Consumption controlled production

Normal situation – Standardised working method

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<tr>
<th>Standardisation</th>
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Background

– 1980

Production
- Instructions from engineers
- No common way of working

Leadership
- Leadership focused on result and inspection

Personnel
- High absence
- High employee turnover
Background

1980 – 1995

Production
- Flexible production systems
- Hard to detect waste

Leadership
- Leadership focused on result
- Unclear priorities

Personnel
- High absence
- High employee turnover
Background

1996 – 2010

Production
- Standardised processes
- Visualized waste
- Method improvement by operators

Leadership
- Coaching with focus on working methods
- Clear priorities

Personnel
- Empowered personnel
- Lower absence
- Lower employee turnover
Continuous Improvement

1980

Modular system

P-90 / P2000

1990 – 1995

SPS
• Involvement
• Improvement teams
• Motivation

1996

SPS – “a journey that has no end”

2010 -

SPS
• Leadership
• Principles
• Methods
Focus on process results
From functional excellence to process excellence

Tool

Quality Assurance

Production

Production target

Engineer

Maintenance
SPS Development
Standardised methods & common targets

Production process with integrated maintenance & logistics

@ cost
Integrated Maintenance
SHE Methods

Risk Management & Safety Behaviour

Scania Ergonomic Standard

Energy Efficiency
Training

- Training trainers and managers in awareness, ability to practice SPS in own organization, ability to train and lead others

- Securing transfer of learning into on line application
Small Teams & Present Leadership

Before 2012
- Large groups
- Large work content
- Small focus on our deviations
- Lack of present leaders

After 2012
- Deeper competence
- Fewer positions
- Ownership
- Organized to work according to standard
Real Time Management - RTM

Short term countermeasures  RTM  Long term problemsolving
Standardized Work

Focus on training

Foundation for continuous improvement

- SHE
- Quality
- Delivery
- Cost

ECO, deviations, rebalancing

Man
Machine
Material

Standardized work

Focus on training

4. Continuous training
1. Prepare co-worker
3. Exercise results in skills
2. Show & instruct
Problem Solving

1. Describe the problem
2. Collect facts
3. Target setting
4. Root cause analysis
5. Create countermeasures
6. Implement countermeasures
7. Verify results and follow up
8. Standardise and follow up

Root cause

QA Tools

What is the problem?

Where is the problem?

Unclear problem!
Continuous improvement

SPS – “a journey that has no end”
- Small teams
- RTM
- SHE Methods
- Basic Skills & Quality Gates
- Integrated maintenance
- Logistics methods

SPS
- Involvement
- Improvement teams
- Motivation
- Leadership
- Principles
- Methods

1980
1990-95
1996-

P-90 / P2000

Modular system
Health attendance

1990 | 90.5
1995 | 93.0
2000 | 93.0
2005 | 95.1
2010 | 96.7
2013 Q3 | 95.6
Number of accidents with sick-leave per one million worked hours

Global Production

- 1990: 45
- 1992: 40
- 1994: 35
- 1996: 30
- 1998: 25
- 2000: 20
- 2002: 15
- 2004: 10
- 2006: 5
- 2008: 0
- 2010: 5
- 2012: 10
Global production
Environment responsibility

<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicles</th>
<th>MWh/vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>31800</td>
<td>100000</td>
</tr>
<tr>
<td>1995</td>
<td>46400</td>
<td>90000</td>
</tr>
<tr>
<td>2000</td>
<td>55600</td>
<td>80000</td>
</tr>
<tr>
<td>2005</td>
<td>59360</td>
<td>70000</td>
</tr>
<tr>
<td>2010</td>
<td>67700</td>
<td>60000</td>
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Product Quality (C+M)

Quality Audit results, average

Deviations:

- Truck
- Cab
- Axles
- Gearbox
- Engine

Legend:
- 2009
- 2010
- 2011
- 2012
- 2013

Info class Internal     P Per Hallberg
2013-11-07
Productivity improvement

- Vehicles
- Employees
- Productivity
OPE improvements machining factories
Production cost

Production cost (KSEK) per vehicle

[Graph showing the production cost (KSEK) per vehicle from 1997 to 2013]
Small teams

Target Achievement
0 / 0 / 85 / 95
@ cost
Leadership

WHAT

WANT TO

• Involved
• Competent
• Secure

HOW

• Coaching leadership
• Challenge – feed back / recognition

Business excellence through motivated employees
The journey continues

Evolution steps not Revolution steps

SPS = The Total Business

SPS next steps (2010)
- Small teams
- RTM
- Problem solving
- Basic Skills
- Training and support
- Integrated maintenance

SPS (1996)
- Improvement teams
- Motivation
- Involvement
- Leadership


P90 (1990)

Modular system (1980)

* Priority
  1. Safety/Health/Environment
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* Normal situation - Standardised working method

- Standardisation
- Task
- Limited flow
- Balanced flow
- Visual
- Real time

- Customer first
- Respect for the individual
- Elimination of waste

Leadership

Right from me

Continuous improvement

Evolution steps

Revolution steps
Thank you
SPS Development Forums

- P&L Common Development Group
  - D
  - M
  - O
  - PRU Managers
  - TD
  - TH
  - TE
  - H
  - Q
  - IF Metall

- Assembly Development Group
  - M
  - PRU Managers Assembly
  - TD, TE

- Machining Development Group
  - D
  - PRU Managers Machining
  - TD, TE

- Logistics Development Group
  - O
  - Logistics Managers
  - TD, TE

- DP1
- DP2
- DP3
- DP4

- Preparation
- Pilot
- Develop Global Standard & Training Content
- Master process
- Global Training & Workshops
- Global Implementation

Info Class Confidential  P/PHG/P&L Strategy 2014+
2013-11-11
Getting Started…

1. < 5+1
2. Nävaro PL >85%
3. RTM
4. Störnings uppfölj
5. Ta hand om störningar
6. Maskin ägare
7. Initial rengöring UFO/FU
8. Potentiella fel

Nyckeltal för Underhåll
Kostnads - kontroll & Uppföljning
Arbetsorder - System
Ordning och reda på Arbetsplatsen

Daglig Underhålls - rapportering
Daglig Planering
Daglig Underhålls - rapportering
Daglig För Tillförlitlighet

Produktivets Uppföljning
Utrustnings - historik
Motåtgärder mot Källan till Problem
Kortinnervals - kontroll
Veckovis Underhålls - rapportering

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Veckovis Underhålls - rapportering

Resurser och Kompetens - matris

Nuläge
Nuläge
Kritisk Maskin - utrustning

20130701

Info class Internal     QT/Magnus Rylander
Logistics: Three loop system

Suppliers → 3 → Logistics Centres → 2 → Scania PRU

Goods reception/storing
Sequencing
Unit supply
Repacking
Low value
Kitting
Packaging breakdown

Platforms → Trains → Platforms

NILE
SPS – "a journey that has no end"

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LEADERSHIP

SCANIA
Focus on process results

From functional excellence to process excellence

Tool

Production target

Engineer

Quality Assurance

Production

Maintenance

SCANIA
Standard interfaces

Production and material control
R&D + Purchasing
Production process
Maintenance
Safety, Health & Environment
HR

All functions support stability by ZERO defect focus.
Cross-functional work throughout the value chain

R&D  P&L  S&M  CO  F&BC  S  HR

- Product Development
- Order to Delivery
- Sales
- Services Delivery
Cross-functional work throughout the value chain

Production = The whole value chain

Alt 2

Input:
- R&D
- Purchasing
- Planning
- Marketing
- Etc.

Manufacturing due to "takt time"

Output:
Sales Department
Bygga kunskap genom ansvarskänsla, som på 50-talet?
Leadership Principle 1

Co-ordinate but work independently – take responsibility
Leadership Principle 2

Work with the details and understand the context
Leadership Principle 3

Act now – think long term
Leadership Principle 4

Build know-how through continuous learning
Leadership Principle 5

Stimulate commitment through involvement
More than 1,600 sales and service points globally – 1,000 in Europe
Customer First

- Good knowledge of customer’s operations
- Deliver solutions
- The customer’s operations are at the centre of the entire value chain
Respect for the individual

- Recognising and utilising all employees’ knowledge
- Ideas and inspiration from day-to-day operations
Quality

- High quality solutions
- Improvements are triggered by
  - Customers’ needs
  - Deviations
Connected flows

- Global Production/AFR
- Central method development
- Common IT systems
Method development

SPS next steps (D & M inputs)

- **Small Teams**
  - Base Organization
  - RTM
  - Critical equipment
  - Initial cleaning
  - KPI Performance

- **Integrated Maintenance**
  - Asset number system
  - Scania Basic Skills

- **Training & Support**
  - SPS Development Program
  - SPS Training Center

- **Logistics Methods**
  - Platform
  - Train
  - Internal Supply Methods
  - Packaging Selection Sheet

- **SHE Methods**
  - Load Ergonomics
  - Performance Mgmt.
  - Capable Processes
  - Picking Quality

- **Quality Methods**
  - Quality gate
  - Containment
  - Performance Mgmt.

SPS – “a journey that has no end”
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Modular system

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