Lean Strategy Deployment for Engineering to Order Business

Use Case from: Siemens Transformers China
Division: Energy Management

Speaker: Sezin Taskin Koyluoglu | EMS Summit 2018 Berlin
Transmission Products

High Voltage Substations

VT
CT
CT
VT

DS
CB
DS
CB
AR
AR
CB
DS
CB
DS

sensors & connectivity, protection equipment, parameterization, system engineering

civil & building scope, HV/MV cabling, substation engineering and related I&C

Transformer
Manufacturing Locations of Transmission Products (TP)

Business Unit TP:
36 plants in 13 countries
16,000 employees
### Most attractive employer in China

– Universum ranking among engineering students

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Huawei</td>
<td>Huawei</td>
<td>Huawei</td>
<td>Huawei</td>
</tr>
<tr>
<td>2</td>
<td>Google</td>
<td>Alibaba</td>
<td>Alibaba</td>
<td>Tencent</td>
</tr>
<tr>
<td>3</td>
<td>SGCC</td>
<td>Apple</td>
<td>Tencent</td>
<td>Alibaba</td>
</tr>
<tr>
<td>4</td>
<td>Tencent</td>
<td>Baidu</td>
<td>Google</td>
<td>Baidu</td>
</tr>
<tr>
<td>5</td>
<td>Baidu</td>
<td>Google</td>
<td>Apple</td>
<td>Microsoft</td>
</tr>
<tr>
<td>6</td>
<td>Alibaba</td>
<td>Tencent</td>
<td>Baidu</td>
<td>Google</td>
</tr>
<tr>
<td>7</td>
<td>Apple</td>
<td>SGCC</td>
<td>Microsoft</td>
<td>Apple</td>
</tr>
<tr>
<td>8</td>
<td>BMW</td>
<td>Microsoft</td>
<td>SGCC</td>
<td>Air China</td>
</tr>
<tr>
<td>9</td>
<td>Sinopec</td>
<td>Petro China</td>
<td>Siemens (9)</td>
<td>Siemens (9)</td>
</tr>
<tr>
<td>10</td>
<td>Microsoft</td>
<td>Samsung</td>
<td>BMW</td>
<td>State Grid</td>
</tr>
</tbody>
</table>

Source: Universum
Turning around a low performer to best in class with successful strategy deployment (Hoshin Kanri)
Our highly engineered product, known from its top quality, were facing big challenges

The silent plant,
the trembling light,
the giant windings with thousands pieces that we built day and night.

In here,
we’ve created “top of the world”.

I am Tang Jian Hua,
more or less, I changed the world.
Extremely challenging business environment in 2010-2013…

**External facts**
- Overcapacity in the market with technology matured domestic players
- Localization policy with preference to local players

**Price dropped by 50% within short period**

**Internal facts**
- Price no longer competitive
- Low utilization of workshop
- Puzzle, no clear direction
- No stability in the organization
- Lack of innovation and development capability
- Motivation of the employees became critical

**Consequences**
- Very low biz volume with EBIT hit almost to the bottom line
- Restructuring with 100 HC reduction
- Low aspiration and low engagement from employees
- Task forces and micro management became daily life…

The key question was: How to survive?

Urgent need for a new strategic direction: our “3-pillar Strategy” was set
Hoshin Kanri approach

From …
- optimization of single processes / departments
- lack of guiding strategies…
- without an encouraging vision

… To
- overall optimization of value streams…
- following a focus strategy…
- derived from an encouraging vision

Customer
Company
Process
Target cascade from Vision to Daily Activities

1. Where are we?

2. Vision – Future State (+5 years)
   - Where we want to be in 5 years?

3. Vision & Targets
   - Vision vs. Status: WHERE do we want to be in 5 years?
   - Vision vs. Status: WHERE are we today?
   - How to measure success?

4. How to get there?

5. What has to be done next?

Actual State

Target Cards
   - yearly measures
OBEYA Room

…from hardcopy exhibition to virtual meeting workspace
Shop Floor deviations
…from PDCA cards to Digital Dashboard / ANDON

(Wechat) Mobile interface
Excellent business results with Strategy Deployment

- Compound Annual Growth Rate increased to 33%
- Productivity has increased by 54%
- Inventory turn increased 31% with strong asset management
- Employee turnover rate decreased to 4% despite very dynamic job market
Guangzhou’s “3-pillar-Strategy” is the finalist of Werner von Siemens Award 2017 out of 641 applicants
Our Lean Program is transformed after 5 years of experience + enriched with digitalization
Siemens Performance System (SPS)...

...is the holistic management approach to create value beyond customer expectations, increase operational efficiency, integrating all partners and transforming into the digitized world.
SPS is build upon a well proven foundation

Method Collection

Systematic functional and divisional process optimization

Siemens Production System

Siemens Performance System

- Holistic approach addressing the entire value chain (Networking & Collaboration)
- E2E optimization by Lean and Digitalization
- Deployed consistent strategy and goals

- Leaders acting as role model
- Increasing competences and enable employees
- Fail fast, learn fast!
- One common implementation systematic adjustable to business needs

![Diagram showing the evolution from 2000 to 2016](image)
Company enabler: Siemens Performance System (SPS)

"Always act as if it were your own company"

"...we have decided to strengthen and to refine our Operating Model which will help us achieve our goal. It is a solid tool for driving Business Excellence. It will be a facilitator on processes and also it will form an important basis for empowering our businesses. It includes usual core elements of Best Practice Sharing and Benchmarking..."
15 typical Action Areas for all Siemens

<table>
<thead>
<tr>
<th>Action areas</th>
<th>Core Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy and Goals</td>
<td>From Vision to Action</td>
</tr>
<tr>
<td></td>
<td>Customer Value Orientation</td>
</tr>
<tr>
<td></td>
<td>Quality Aspiration</td>
</tr>
<tr>
<td></td>
<td>Advanced Technology</td>
</tr>
<tr>
<td></td>
<td>Global Collaboration</td>
</tr>
<tr>
<td>Execution and Excellence</td>
<td>Value Stream Orientation</td>
</tr>
<tr>
<td></td>
<td>Partner Integration</td>
</tr>
<tr>
<td></td>
<td>Reliable transparent Processes</td>
</tr>
<tr>
<td></td>
<td>Agile Improvement</td>
</tr>
<tr>
<td>People and Leadership</td>
<td>Encouraging Leaders</td>
</tr>
<tr>
<td></td>
<td>Proactive Change</td>
</tr>
<tr>
<td></td>
<td>Competencies</td>
</tr>
<tr>
<td></td>
<td>Empowering Collaboration</td>
</tr>
<tr>
<td></td>
<td>EHS</td>
</tr>
</tbody>
</table>

Digitalization aspects: green
Lean aspects: blue
Assure competitiveness – Start digitalization now

Yearly Productivity (x%)
Shaping Digital Future

Siemens Transformers’ Digitalization Strategy

Digitalization Categories

- Product focused Digitalization
- Production focused Digitalization
- Underlying IT Architecture and Platforms

Related Programs

- Connectivity & Analytics (Sensformer™)
- IoT
- Transparency & Visualization

Profitable growth

Industry 4.0

Unrestricted © Siemens AG 2018
## Industry 4.0 Main Levers

100+ digitalization projects are either completed or ongoing in Siemens Transformers

<table>
<thead>
<tr>
<th>Lever</th>
<th>Automation</th>
<th>Transparency</th>
<th>Paperless Factory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Implementation</strong></td>
<td>Robotics (IoT)</td>
<td>Real Time Monitoring</td>
<td>Visualization</td>
</tr>
<tr>
<td><strong>Tools / Technology</strong></td>
<td>Robots, Sensors</td>
<td>Sensors + tech. for digital data exch. + monitors / displays</td>
<td>Digital Working Assistance</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td>Replacement or support of manual tasks / operations by robots</td>
<td>Automated measuring or monitoring of products / parts within the production process</td>
<td>Any kind of tracking / tracing of products / parts through the production process</td>
</tr>
<tr>
<td></td>
<td>Monitoring of oven temperature and automatic adjustment</td>
<td>Marking of Tx components with QR-Code in order to trace them</td>
<td>Monitors to display 3D Tx drawings on shop floor</td>
</tr>
<tr>
<td></td>
<td>Augmented reality via „Datenbrille” to support decisions during the manufactoring process</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unrestricted © Siemens AG 2018
The first Lean Digital Factory of Transformers in Guangzhou, China
We are growing significantly and digital factory is our solution to fulfill future requirements

Corner stones of digital factory

- Standard & Lean process
- PLM optimization & integration
- Capacity of IT tools & automation
- SCM optimization & integration
- Continuous improvement culture

Horizontal, vertical and end2end integration
The Red Queen Hypothesis

In *Alice's Adventures in Wonderland*, Red Queen tells Alice:

“Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!”
Contact

Sezin Taskin Koyluoglu
Siemens Transmission Products
Lean Program Manager

Siemens Ltd. China
sezin.taskin@siemens.com