Competency development – a discussion from two perspectives

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Flow Cell Design and Line Balancing
Material Replenishment: Takt and Sequence
Quality: Reduced Risk by Kitting
Single Piece Flow and Takt Time Management

Single Piece Flow … in Takt Time … … of a 30 min Count Down
Realised Improvements – typical Lean Project

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Unit</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Time</td>
<td>days</td>
<td>-60%</td>
</tr>
<tr>
<td>Value added time share</td>
<td>%</td>
<td>+200%</td>
</tr>
<tr>
<td>Produktivity</td>
<td>units / employees / Week</td>
<td>+6%</td>
</tr>
<tr>
<td>Floor space</td>
<td>qm</td>
<td>-75%</td>
</tr>
<tr>
<td>OEE</td>
<td></td>
<td>+14%</td>
</tr>
<tr>
<td>Failures at test</td>
<td></td>
<td>-24%</td>
</tr>
</tbody>
</table>

This is not the challenge!
Complete Lean System

This is the challenge:
- People solve problems
- Learning system
- Process highlights abnormalities
Why lean often fails …

1. Missing methodological competence
   • Limited success from method application
   • Lean understood as a toolbox
   • Typical 5S deadend

2. Leadership competencies missing
   • Setting wrong priorities
   • Managing from the desk
   • No people development approach
   • No cultural foundation
Lean - some key findings

• Method competency is necessary, but by far not enough

• A cultural foundation based on strong and credible values is mandatory

• Associate problem solving is the core of a lean system

• People development on all levels is the catalyst

• Leaders need to have the competency to challenge and respect their associates the same time

• To do so they need to be committed to self development

Quelle: PTW
The Lean Evolution

Lean 1.0
Method application

Lean 2.0
System approach
Value stream design

Lean 3.0
Cultural foundation
Shop floor problem solving

Lean 4.0
Digital upgrade
• Accelerated problem solving
• Adaptive standardisation
• Worker Assistance

Tool box
Wertstrom-management

Shopfloor-management

Real time + connectivity

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Future Production Work – two Alternatives

- More Automation
- Correlation instead of search for the root cause
- System takes over control

Human centered approach: Digital Support on
(a) problem solving
(b) value adding
Employee Competencies for the digital transformation

Which are required?

<table>
<thead>
<tr>
<th>Competency</th>
<th>Large scale</th>
<th>SME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisziplinäres Denken und Handeln</td>
<td>73,8 %</td>
<td>52,5 %</td>
</tr>
<tr>
<td>Zunehmendes Prozess-Knowhow</td>
<td>67,5 %</td>
<td>48,3 %</td>
</tr>
<tr>
<td>Führungskompetenz</td>
<td>58,8 %</td>
<td>52,9 %</td>
</tr>
<tr>
<td>Mitwirkung an Innovationsprozessen</td>
<td>59,5 %</td>
<td>52,5 %</td>
</tr>
<tr>
<td>Problemlösungs- und Optimierungskompetenz</td>
<td>56,0 %</td>
<td>52,5 %</td>
</tr>
</tbody>
</table>

Which need to be developed?

<table>
<thead>
<tr>
<th>Competency</th>
<th>Large scale</th>
<th>SME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problemlösungs- und Optimierungskompetenz</td>
<td>41,6 %</td>
<td>30,5 %</td>
</tr>
<tr>
<td>Zunehmendes Prozess-Knowhow</td>
<td>31,5 %</td>
<td>31,3 %</td>
</tr>
<tr>
<td>Mitwirkung an Innovationsprozessen</td>
<td>25,8 %</td>
<td>27,3 %</td>
</tr>
<tr>
<td>Beherrschung komplexer Arbeitsinhalte</td>
<td>25,8 %</td>
<td>21,9 %</td>
</tr>
<tr>
<td>Interdisziplinäres Denken und Handeln</td>
<td>30,3 %</td>
<td>18,8 %</td>
</tr>
</tbody>
</table>

Source: Acatech
Summary Employment and Competencies

- Systems automation and software development
- Design, implementation and operation of complex systems more important
- Threshold for economical automation will be further lowered
- Activities that could not be automated so far will be automated

Competencies required to
- design and implement digital systems in production
- work with digital systems and end devices
- interpret information and systematically draw conclusions
- understand consequences of own behaviour down the line