Process efficiency improvement – concept and practice

Lean management in the oil industry

Dávid Losonci
Agenda

1. Current performance of the industry
2. Excellence in process management
3. 3 steps in lean to sustainable operational excellence
4. Challenges during lean journey
5. Summary
## Performance gap

Important measures of manufacturers
- Inventory turnover
- Quality (Parts Per Million)

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Source: Wilson and Farley 2010 p. 4
**Performance gap**

Important measures of manufacturers
- Inventory turnover
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Source: Wilson and Farley 2010 p. 4
Excellence in process management – where our potential lies

1. Safety
2. Quality
3. Delivery
4. Cost

- Speed
- Flexibility
- Risk
- Reliability
3 steps in lean toward sustainable operational excellence

1. Aim
   - C (cost)
   - D (delivery)
   - Q (quality)
   - S (safety)

2. Visible part
   - Apply lean principles and tools

3. Invisible part
   - By focusing on employees you should transform your organization to a lean organizations

1. Lean KPIs and strategic goals
2. Adopt principles/tools to your context
3. Resolve challenges
1st - Define lean KPIs and relate them to your strategy

- **Rapid Scorecard Methodology** (finance, customer, **operations**, learning)

- Identify strategic goals
- Prioritize strategic goals
- Relate strategic goals to critical key processes
- Create development plans

- Lean KPIs are related to S (safety), Q (quality), D (delivery), and C (Cost)
- Define measures and establish performance management and motivation system which connect all levels (**hoshin kanri**)

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**Stratégiai célok**

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<thead>
<tr>
<th>Pitfall</th>
<th>Measure</th>
<th>Establish performance and motivation system which connects all levels</th>
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<td>Profits</td>
<td>Rainfall</td>
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**Strategic goals**

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2nd - Adopt lean principles and tools to your context: a general overview

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2nd - Adopt lean principles and tools to your context

a general overview

Strategic level

- Pull system
- Heijunka, levelled production
- Kanban
- Mixed-model production
- Takt time
- Cells
- Batch reduction, one piece flow

Operational level

- JIT
- Supplier development
- Long term contracts
- Value
- Value stream
- Pull
- Flow
- Perfection
- 5S
- Visual management (VSM)
- Total productive maintenance (TPM)
- Quality (Qa)
- Multifunctional workers (rotation)
- Jidoka, autonomation
- Work standard (WS)
- Team-based problem solving
- Statistical process control
- Quality circles
- Kaizen
- 5S
- Takt time
- Cells
- Batch reduction, one piece flow

Adopt lean principles and tools to your context
2nd - Adopt lean principles and tools to your context – process industry

Source: Abdulmalek et al. 2006 p. 23
2nd - Adopt lean principles and tools to your context – process industry

Source: Abdulmalek et al. 2006 p. 23
2nd - Adopt lean principles and tools to your context – process industry
2nd - Uneven adoption of lean tools - continuous process industries

- Pull system
  - Heijunka, levelled production
  - Kanban
  - Mixed-model production
  - Takt time
  - Cells
  - Batch reduction, one piece flow

- 5S
  - Visual management (VM)
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  - Value stream mapping (VSM)
  - Work standard (WS)

- Team-based problem solving
  - Quality circles
  - Multifunctional workers (rotation)

- JIT
  - Supplier development
  - Long term contracts

- Low level of adoption
  - Low level of adoption

- Moderate level of adoption
  - Moderate level of adoption

High level of adoption
- High level of adoption

Source: Lyons et al. 2013, 62 sites were studied
3rd - Challenges in building a lean organization

Lean vision – true north
Lean vision – true north

3rd - Challenges in building a lean organization

My new style of management is exhausting me.

I heard some people talking about “MBWA” or “management by walking around.”

I walked all the way to the park and back. But I can’t say that I see much improvement around here.
3rd - Challenges in building a lean organization

Lean vision – true north

Managers, expert and workers
3rd - Challenges in building a lean organization

Lean vision – true north

Managers, expert and workers

Lean organization

Toolset and experts
Cost issues, operational performance, environmental legislation and ageing assets are the biggest challenges for European refineries. Nearly sixty percent of guests from the energy industry cited effective cost management and optimised operational performance as the most vital characteristic of European survivor sites.” KPMG (2012)

- Over capacity of refineries, negative cash flow at many sites and cost pressure gives burning platform to accelerate change process
- Lean management can enhance competitiveness considerable in oil industry
  - Demand/supply alignment; enhance lean tools
  - Build on the skill and knowledge of your workforce
  - Quick results give you a momentum
- Your value chain is extreme long and very complex, you should go beyond refinery
  - Lean logistics, lean distribution, lean retail, lean accounting, lean office
Questions?

Thank you for your attention!

Dávid Losonci
assistant professor

**Assistant Professor**

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KPMG (2012): Survival of the fittest for European refineries warns research from KPMG

Lyons, A.C., Vidamour, K., Jain, R. and Sutherland, M., 2013. Developing an understanding of lean thinking in process industries. Production Planning & Control, 26 (6), pp. 475-494

Wilson, L. and Farley, J. (2010): Lean manufacturing in the Oil Refinery

Photos:
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http://www.lean.org/Workshops/WorkshopDescription.cfm?WorkshopId=106
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Gilbert