Approaches to Maintaining and Building Organisational Knowledge

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Fortum – Power and heat company in the Nordic countries, Russia, Poland and the Baltics
Our geographical presence today

**Nordic countries**
- Power generation: 46.5 TWh
- Heat sales: 13.9 TWh
- Distribution customers: 1.6 million
- Electricity customers: 1.2 million

**Russia**
- OAO Fortum
  - Power generation: 20.0 TWh
  - Heat sales: 24.2 TWh
  - TGC-1 (~25%)
    - Power generation: ~7 TWh
    - Heat sales: ~8 TWh

**Great Britain**
- Power generation: 1.0 TWh
- Heat sales: 1.8 TWh

**Poland**
- Power generation: 0.6 TWh
- Heat sales: 4.0 TWh

**Baltic countries**
- Power generation: 0.5 TWh
- Heat sales: 1.1 TWh

**Key figures 2013**
- Sales: EUR 6.1 bn
- Operating profit: EUR 1.7 bn
- Balance sheet: EUR 24 bn
- Personnel: 9,900
Fortum's European power generation based on hydro and nuclear power – wide flexibility in heat production

Fortum's European power generation in 2013

- Nuclear power: 48%
- Hydro power: 37%
- Other: 2%
- Natural gas: 3%
- Biomass: 3%
- Coal: 7%

European generation 48.7 TWh
(Generation capacity 10,873 MW)

Fortum's European heat production in 2013

- Biomass: 28%
- Oil: 1%
- Peat: 2%
- Waste: 12%
- Heat pumps, electricity: 16%
- Natural gas: 19%
- Coal: 22%

European production 18.6 TWh
(Production capacity 8,193 MW)
Fortum’s reporting segments and divisions

**Power and Technology**
- Hydro, nuclear and thermal power generation
- Power Solutions with expert services
- Portfolio management and trading
- Technology and R&D functions

The segment incorporates two divisions:
- **Hydro Power and Technology**
- **Nuclear and Thermal Power**

**Heat, Electricity Sales and Solutions**
- Combined heat and power (CHP) production
- District heating activities and business to business heating solutions
- Solar business
- Electricity sales and related customer offering
- Corporate Sustainability

**Russia**
- Power and heat generation and sales in Russia
- Includes OAO Fortum and Fortum’s slightly over 25% holding in TGC-1

**Distribution**
- Electricity distribution activities
Nuclear power* capacity

<table>
<thead>
<tr>
<th>Nuclear power</th>
<th>MW</th>
</tr>
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<tbody>
<tr>
<td>Fully-owned</td>
<td></td>
</tr>
<tr>
<td>Loviisa</td>
<td>992</td>
</tr>
<tr>
<td>Co-owned</td>
<td></td>
</tr>
<tr>
<td>Olkiluoto (TVO)</td>
<td>468</td>
</tr>
<tr>
<td>Oskarshamn</td>
<td>1 089</td>
</tr>
<tr>
<td>Forsmark</td>
<td>699</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3 248</strong></td>
</tr>
</tbody>
</table>

- A fully-owned nuclear power plant in Loviisa
- Co-owned nuclear assets:
  - 26.6% interest in TVO’s power plant units in Olkiluoto, Finland.
  - 22% interest in the Forsmark units, Sweden
  - 43.4% interest in the Oskarshamn units, Sweden

* Power capacity refers respectively to Fortum’s shares of fully and jointly-owned power plants.
Loviisa nuclear power plant - Benchmark availability, performance and safety culture

• Loviisa NPP includes two PWR units VVER-440, 976 MW (2 x 488 MW).
• Loviisa 1 (LO1) started operation in 1977 and Loviisa 2 (LO2) in 1980.
• Key figures measuring plant's safety and performance reliability have been good throughout its operational history.
• The annual load factors have risen to and even exceeded 90%.
• In 2012 Loviisa produced 7.61 TWh of electricity.
• Capacity factor describing the power plant's availability was 87.4%.
Safety is vital for us

- Safety is the most important factor guiding Fortum’s nuclear power production operations.
- Continuous operational improvement in accordance with the latest requirements ensures the plants’
  - safe operation
  - good availability
- In terms of safety and availability, Loviisa is among the world’s best nuclear power plants.
- Safety is a shared issue for the entire industry.
- Fortum is an active participant in WANO operations
  - In positions of trust, work groups and international assessments.
KM Objective and Focus

- Knowledge should be timely available where needed
- Knowledge needed for business objectives; Safe and Reliable Operations
  - “What do we need to be able to do?”, “What do we need to know in order to do?”
- Organisational knowledge
Focus of KM - Organisational knowledge

• Context specific know-what, know-how, know-who
• Knowledge embedded in people, ways of working, processes, technical solutions
• Team level knowledge, objectives are achieved with a combination of people
• Cooperation between expertise areas
• Networks
KM Approach

• Combination of formal processes and practices embedded in everyday tasks
  – Formal and informal practices support each other
• Involvement of people
• Formal support for knowledge activities

Managed processes
• KM
• Document management
• HR processes
• Training
• R&D
• OPEX

Embedded practices
• Ways of working, Culture
• Learning in everyday tasks
• Knowledge sharing in everyday work
• Appreciation of each other’s knowledge
**KM Approach – Why, What, How**

**Business needs?**
- What do we need to be able to do to meet business objectives?

**Knowledge needs?**
- What do we need to know in order to do X?

**Knowledge processes?**
- Creation
- Sharing
- Maintenance

**How to do it?**
- R&D
- Working in pairs
- Document management
- Training
- Job induction
- Integration in the management system and daily activities
KM Approach – Alignment of Formal Processes

**Knowledge Management**
- Support leaders, managers, experts
- Knowledge needed in nuclear design and related projects
- Knowledge risks

**Competence Management**
- Shared by the Fortum corporation
- Corporate level role based competencies
- Development discussions, Individual development plans etc.

**Training**
- Qualifications
- Job induction
- Basic training, Continuing training

**Management of codified knowledge**
- Configuration management
- Documents
- Archives

**OPEX**
- Internal
- External

**Nuclear R&D**
- Developing new organisational knowledge
- Learning on individual level
KM Roles

• Involvement of people
  – In practice, knowledge is handled by people
  – Ultimately managers and team leaders are responsible for the knowledge as well
  – Culture that values knowledge and its sharing is essential (embedded KM practices)

• Formal KM
  – Structures are needed to support knowledge related activities
  – Support for management
  – Coordination of the system formed by formal and informal elements
  – Knowledge risk analysis
  – Develop the KM approach and tools
  – Collect, document and share good practices
Conclusions

• Involvement of people is one of the most important enablers of successful KM
• KM focuses on organisational knowledge that is needed for achieving business goals
• Working culture and KM activities embedded in the ways of working are essential for management of organisational knowledge
• Formal KM approach is needed as well, and one of its objectives is to support informal KM activities
• For a successful management of organisational knowledge, KM related functions need to be identified and understood as one entity