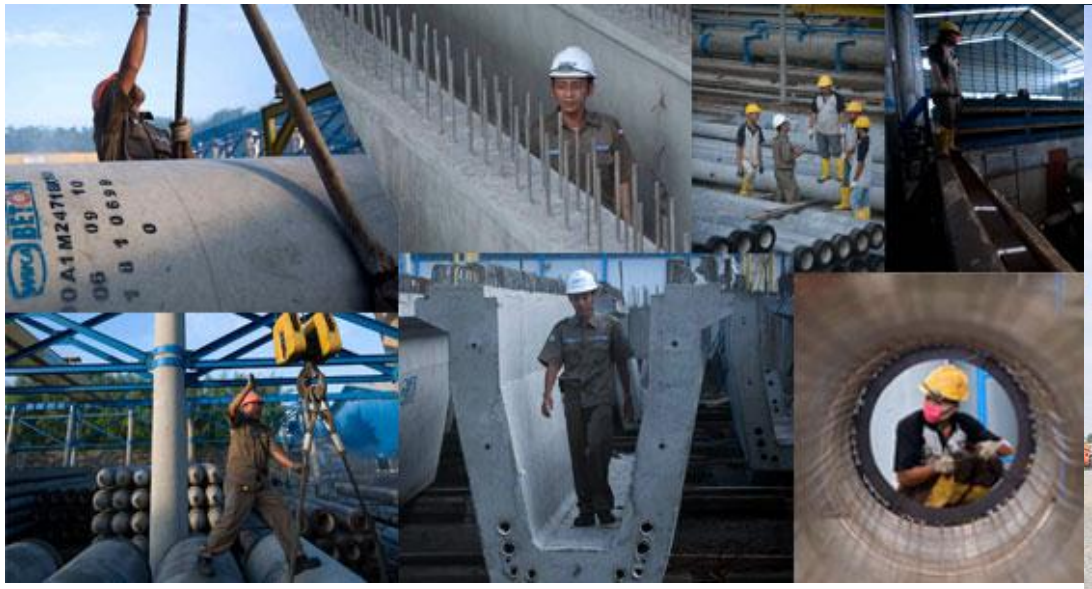
Overview of case studies: Germany



Case study: Siemens – Switchgear and controlgear technology (Siemens Power Transmission / Power Distribution Division) (March 2011)

Summary

- Example of application of the ISO methodology
  - Siemens switchgear and controlgear technology, Power transmission division & Power distribution division
- Credits
  - Technical University Berlin: Mr. Henryk Wolisz (Student, Innovation economics)
  - Supervisors: Prof. Dr. Knut Blind (Technical University Berlin, Innovation economics), Mr. Heinz Gaub (DIN), Dr. Norbert Trapp (Siemens)

The company overview - 1

- Siemens was founded in 1847 as the «Telegraphen-Bauanstalt Siemens and Halske»

- In 1966 the company was re-organized and the various groups were merged into today's «Siemens AG». Siemens is divided into the following main sectors:
  - Industry
  - Healthcare
  - Energy
  - Cross-sector services and businesses

- 2010:
  - Employees worldwide: 405.000 (of which 32% in Germany)
  - Revenue: 75.97 billion Euro, Profit (after tax): 4.06 billion Euro

The company overview - 2

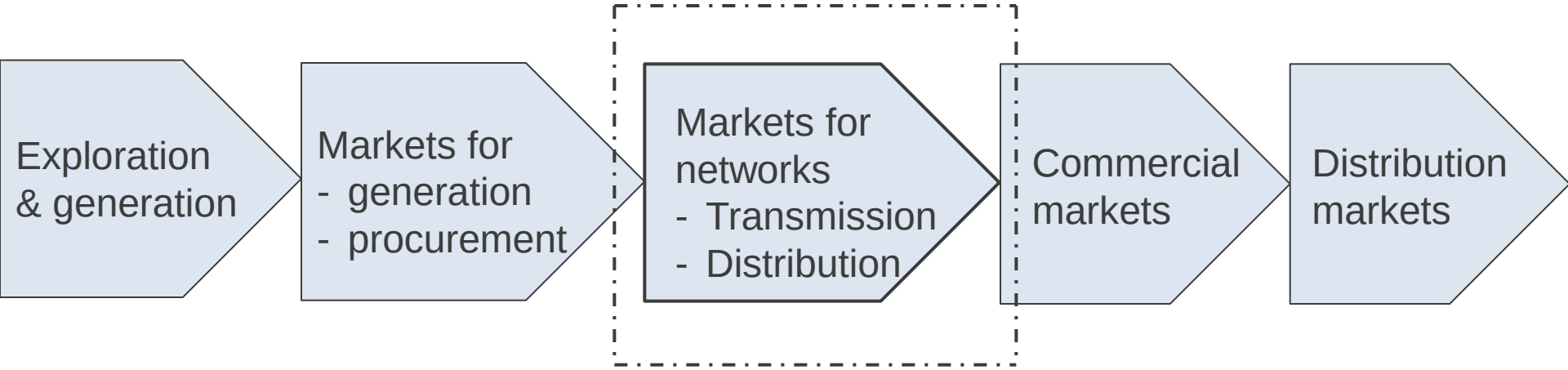
- Switchgear and controlgear technology is the topic of this assessment. This type of technology in Siemens is part of the **Energy sector**

- High-voltage switchgear and controlgear is mainly used for power transmission and medium-voltage switchgear for power distribution

- Siemens produces a wide variety of switchgear and controlgear, which are all of a high quality and exceed the requirements in the relevant DIN EN standards. The products are known for their high level of safety, reliability, performance and long-term usability. Additional tests provide evidence of this performance

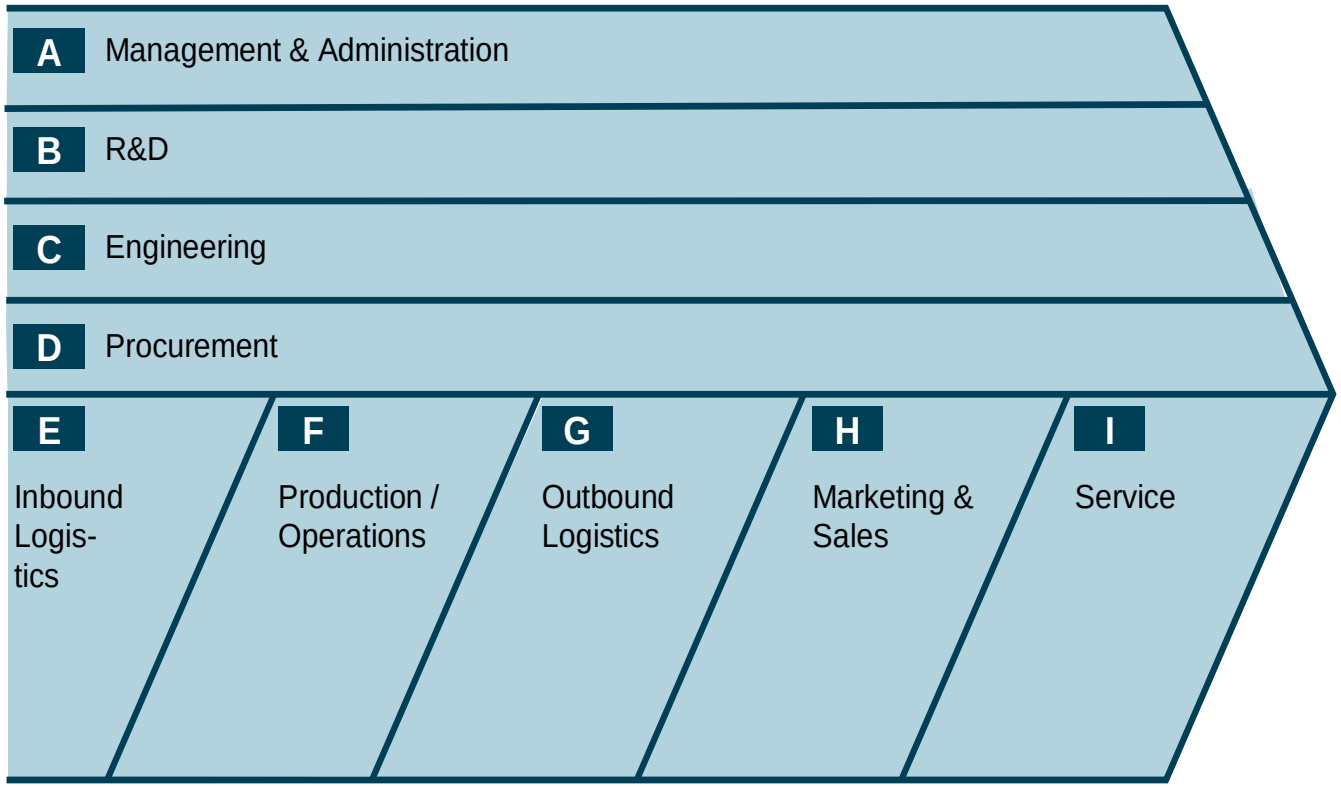
- As a consequence of the high quality, Siemens switchgear and controlgear is positioned in a high-price segment

Industry value chain (electrical power business)



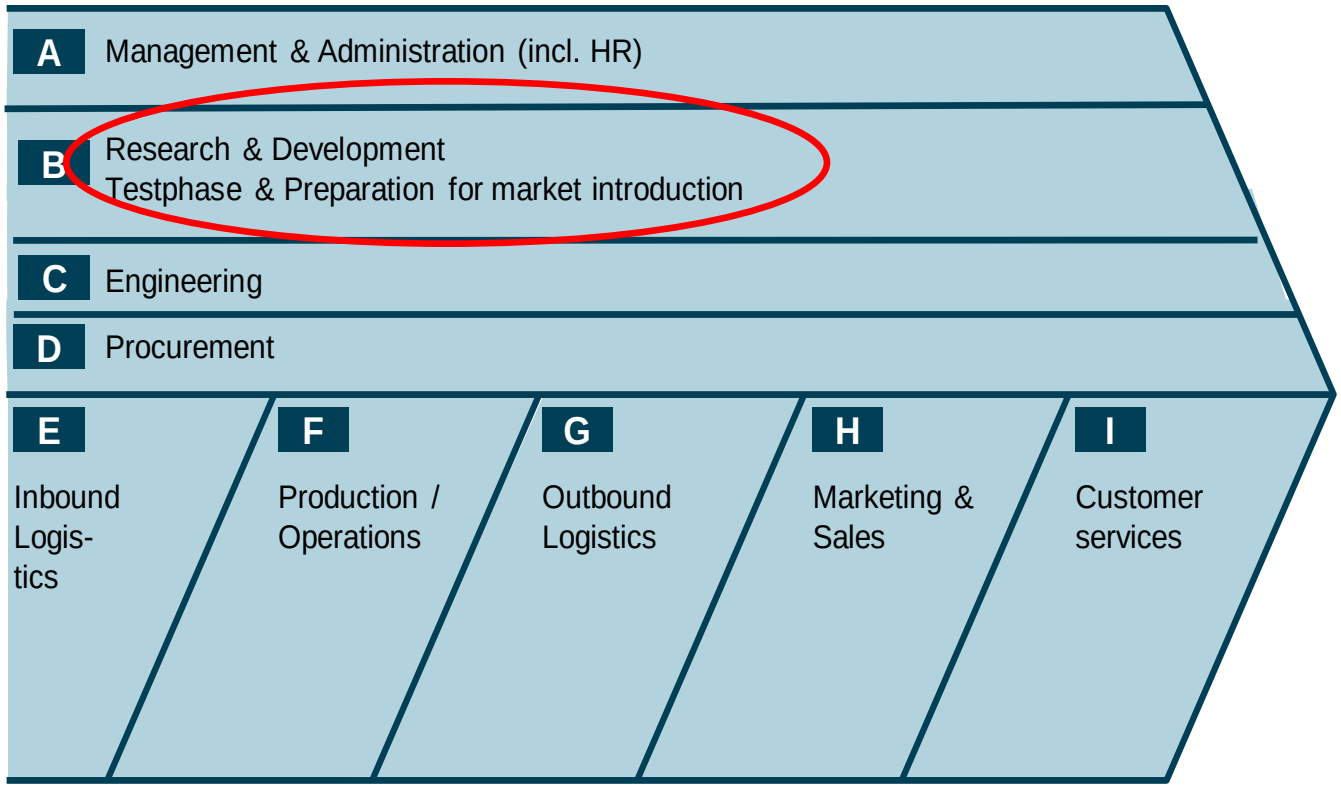
: Segment relevant for the assessment

Model of a company value chain (M. Porter)



A company value chain & the business functions « A » to « I » that constitute the Value Chain

Adapted value chain for the Siemens power business & Scope of the assessment (in red)



Key value drivers

- Based on interviews with Siemens staff the following areas have been identified as key value drivers:

  – Efficiency improvement of the products
  – Cost-efficient extension of the current product portfolio
  – Products should meet a wide variety of customer needs in the high-value, high-performance segment
  – Ensure high quality & reliability of switchgear and controlgear
  – Develoment of tests to demonstrate the high quality levels that exceed the provisions in the relevant standards (DIN EN)
  – Cultivation & further improvement of Siemens reputation

Attitude of Siemens towards standardization

- Siemens is activley involved in standards committees nationally, regionally and internationally and has developed a high level of awareness and attention to standards issues (« standards culture ») in all of its operations and divisions
- Siemens must be seen as a «leader» in standards issues and is activley involved in shaping standards (new or revisions of existing standards) and introducing standards into the company

Methodological decisions and challenges for the assessment

- Most of the standards are in use for many years
- Most of them are incorporated in regulations and sales of switch- and controlgear without the use of these standards would be impossible
- Consequence:
  - There is no possibility to compare a situation in Siemens «Before the use of the standards» with a situation «After the introduction and the use of the standards».
- Decision for the assessment approach: Evaluate the incremental benefits that are generated by new editions of standards over previous editions of the same standards

Key standards addressed in the assessment

- Standards series: DIN EN 62271 *High-voltage switchgear and controlgear*
- This series comprises currently 27 valid individual standards which are published as parts of this DIN EN standard
- 4 of the 27 parts are of special practical importance (parts 1, 100, 200 and 203) and are addressed by the assessment

Operational indicators for the assessment

- The following indicators were selected:
- Are the changes in the revised standards relevant for
  - Development or type testing for switchgear
  - Technical product requirements
  - Quality or service requirements
  - Recommended or mandatory modified values
- The following additional indicators have been selected:
  - Are these changes relevant for public bids/procurement of products
  - Are all competitors in the market affected in the same way or not
  - Effort to implement the changes
  - Extent of the required actions (e.g. costs/savings and number of affected employees)

Types of impacts of the revised standards

- **Direct positive impacts**: Savings/revenue increase results directly from the use of a certain new edition of a standard [number of indicators related to this type of impact: 3]
- **Indirect positive effects**: Savings/revenue accrue to indirect effects, e.g. due to difficulties of competitors to implement provisions of the revised standards [number of indicators related to this type of impact: 4]
- **Other types of impacts**:
  - Anticipation of future changes in the standards in the construction of switchgear and controlgear
  - Participation in standards committees

  [number of indicators related to this type of impact: 2]

Results

- The contribution of standardization work and standards utilization to the EBIT (Earnings Before Interest and Tax) of the relevant Siemens business unit « power switchgear » is **between 1.1% and 2.8%** (of the total EBIT)
- This first-time-ever quantified business impact proved what some people in Siemens claimed to be a « gut feeling » - that, to a certain extent, standardization work pays off
- This impact does only reflect the incremental additional gains due to the introduction of revised (or updated) editions of standards
- The figures do **not** include the contribution of the already existing standards infrastructure, otherwise the impacts would be much higher

Additional considerations (1)

- The resulting impacts are limited to the switchgear and controlgear business of the Siemens Power division and cannot be generalized or directly applied to other companies
- However, the economic benefits from the use of standards are evident
- A *general* conclusion can therefore be drawn that standards generate economic benefits and that benefits would also occur in other divisions in Siemens and in other companies that are users of standards (with a similar attitude to the use of standards as in Siemens)

Additional considerations (2)

- However, in some cases, economic indicators do not show benefits if companies meet higher-level standards
- This can be caused by low-cost producers being able to sell their products cheaper and customers not sufficiently aware of the difference in quality (which sometimes may even be safety-relevant). In such cases higher quality - by meeting higher standards - does not translate into measurable economic benefits
- There may be a communication dilemma for companies that produce for the high-end market segment to adequately communicate to potential customers the relevance and practical implications of higher product quality

Thank you for your attention!

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