

Sustainable Enterprises

Only an expense for companies?



(logos from company websites)

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Sustainable Enterprises

Contents

The role of the engineer in companies

Sustainability in the company

Sustainable companies, examples

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Contents

Traditional: 3 phases

- Commissioning/assignment

- Design

- Implementation/Use

Corresponding divisions of responsibilities

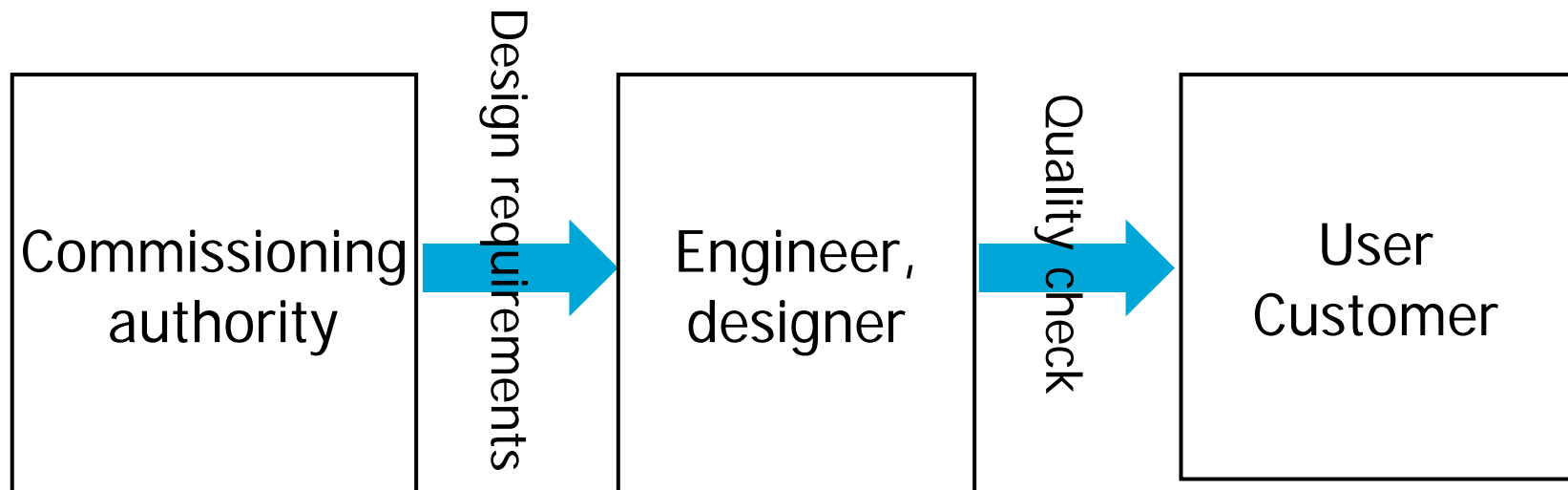
- Executives/managers

- Engineer

- Executives/user/government

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Traditional division of tasks of engineering design



Conclusion: all moral/ethical decisions outside the realm of engineering design?

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Role engineer in the company: only designer?

Engineers are not only responsible for the design job. They also are involved in

- Analysis

- Suggestions

- Feed back

- Evaluation

SD is not an extra requirement in the program of requirements for the design because.....

????

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Sustainable Design

Focus on functional requirements of user

Car → need for mobility or need for access of services, green wheels

Packaging → need for product protection

Clothes → need for comfort/need for self expression

Paper → need for data storage and transmission

Interact, break the walls

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Is a company only about making as much money as possible?

License to operate: a company has to respect the margins set by law and public opinion

A company might trigger new legislation

Consumers might take action: Brent Spar

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Time Horizon: should we optimize money now, or in the future?

If you have an apple tree, you might cut it for the wood, rent it to somebody by an annual auction, or pick apples yourself to sell on the market. The first activity will give you the quickest return. The last activity will probably yield the highest return in the long run as the harvester will probably take care that the tree will remain in good shape and no auctions have to be organized.

Companies that never made any profit are sold for high prices



http://www.wisebread.com/files/frugano-mics/imagecache/blog_image_full/files/fruganomics/blog-images/appletree.JPG

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Principle of Subsidiary

Greedy management does not imply that all individuals in the company are, they have their own morals and interests

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Chance

In innovation you are never sure what brings money

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Earning Money by Green Products?

Green electricity

Gist-Brocades: solving effluent water problem created a new business

Effectiveness of consumer protest:
conditions of chickens were improved,
seal hunting was curbed

Green wheels



<http://www.consumentenkracht.nl/images/greenwheels.jpg>

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Sustainability in the mission



(logos from company websites)

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Pollution Prevention Pays: example 3M

Eliminate or reduce a pollutant.

Reduced energy/materials use

Avoidance of pollution control equipment



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PPP Results at 3M, 1975-2002

- 4973 project
- prevented emissions of 857,282 tons of pollutants
- saved \$894 million
- Prevented accidents?



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Other Examples

Unilever, water, Fisheries

Anglo American,

Johnson & Johnson

Johnson & Johnson



Unilever

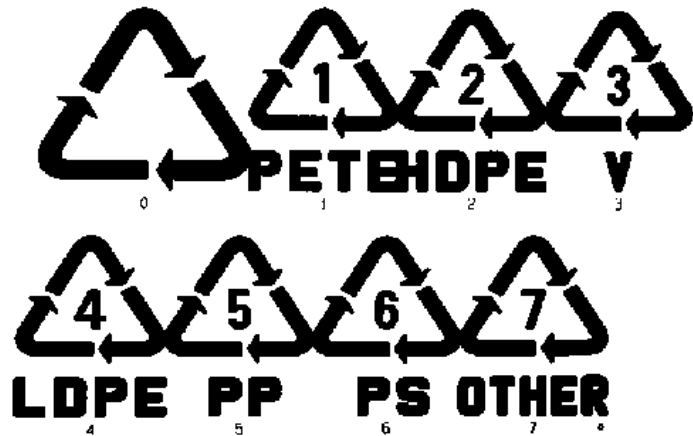
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Value for the Company

Product performance and production costs

Reputation and public image improvements: motivation of personnel also

Coherence of various parts of the company: increasing effectiveness and flexibility



<http://www.ngms.state.ms.us/env/images/recycle,%20reuse%20reduce.jpg>
<http://www.lamro.com/fonts/specfont/recycle2.gif>

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Many companies engage

World Business Council for Sustainable Development (WBCSD)

People Planet Profit

190 international companies

economic growth,

ecologic balance

Social progress

Corporate Social Responsibility

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Nothing New?

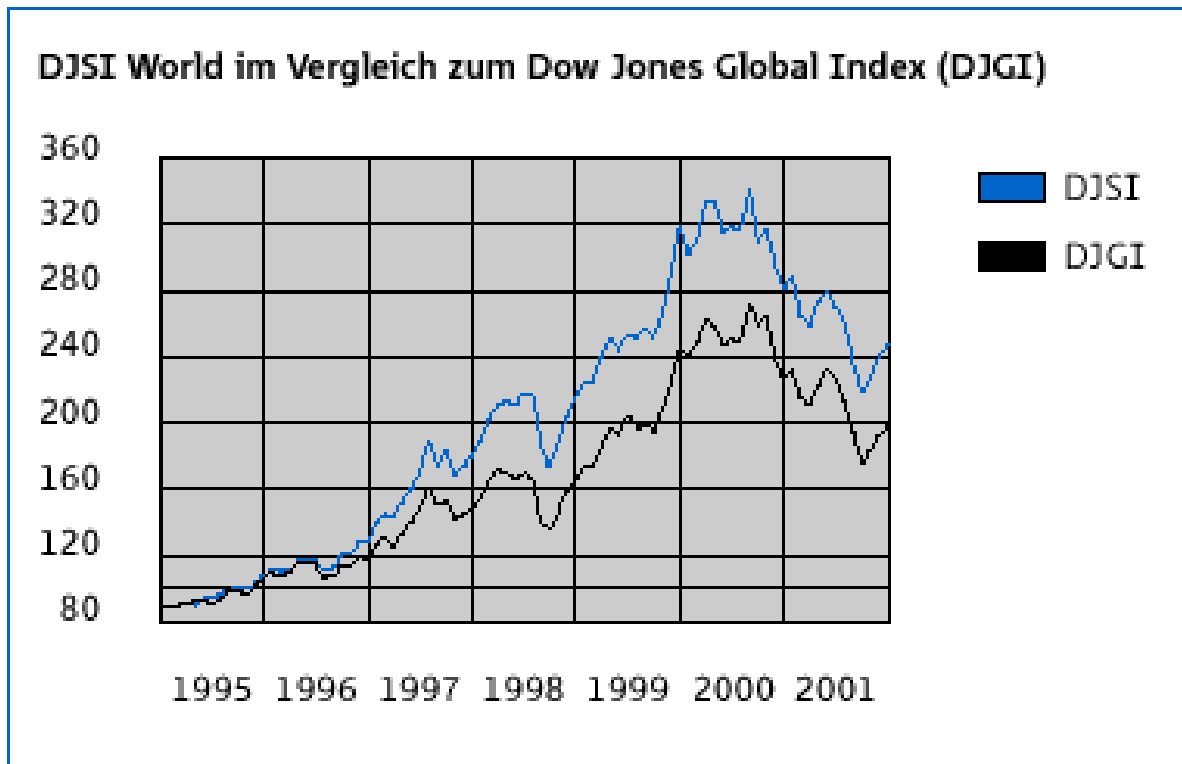
Robert Owen – New Lanark mills

Jacob van Marken – Delft yeast plant

Fourier

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Dow Jones Sustainability Index



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Companies Need New Managers

Increasing Complexity of technology

Globalization

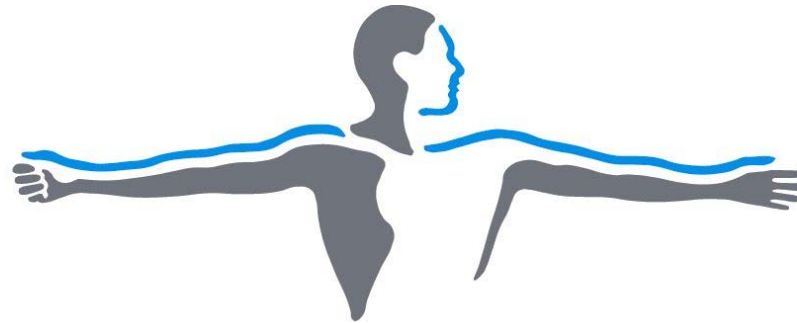
Emancipation of citizens

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Company Technology Assessment?

In the longer run Chemical Industry cannot afford to be in war with society,

Aernoud Loudon, CEO AKZO-Nobel, president CEFIC



AKZO NOBEL

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Sustainable Development: a Better understanding of the company's self interest

Because one needs the **cooperation of stakeholders**

workers,

consumers,

stock owners

neighbors, media, local officials

because more Sustainable technologies might become the **standard at the market**

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Authorities

In a modern civil society, authorities are no longer commanders but process organizers

Consensus based strategy

Coordination of various activities

Communication with stakeholders

Sustainable Development for Engineers

Modern engineers must have a holistic approach, so they can not only use their expertise in a scientific or technological context but are also sensitive to social, environmental and political needs. The best technical solution of a challenge is not always the one most acceptable to society.

Therefore engineers must also be skilled communicators, able to translate challenges and possible solutions between society and science.

Jeroen van der Veer
Chief Executive Royal Dutch Shell

