Greening the gate model

Making products sustainable by design

Lennart Swanstrom

Many of ABB's technologies are, by nature, environmentally friendly. Electricity is probably one of the cleanest and most efficient ways of transmitting energy. Environmental benefits can also be identified for many other ABB products: Process-control systems, for example, help reduce wastefulness in manufacturing. Over the years, these technologies have been improved and developed to further increase their efficiency. This was mostly motivated by the will to improve productivity by reducing losses – ecological gains were often a byproduct of economic improvements.

The rise of environmental awareness has changed this paradigm. Processes and products are now optimized to be both economic and green. This article takes a look at how ABB is developing greener products by taking sustainability into account in the design phase.

For ABB, the continuous search for ways of minimizing the environmental footprint of its products and activities has become a core focus. It is now a vital consideration in all aspects of the company's activities. ABB recognizes that awareness of the topic must be present from the boardroom to the factory floor. To achieve this target, the company has adopted a set of sustainability management goals including (among others):

- Integrating sustainability aspects into decision-making processes on all management levels
- Raising the awareness and commitment of every employee

ABB's overall environmental strategy further includes audits and reviews of its manufacturing processes, and the

implementation of sustainability management systems on individual manufacturing and servicing sites. Besides the strictly environmental aspects that these measures include, they focus on such topics as health and safety management.

Raising issues and reviewing and discussing topics does help to keep them in people's minds and influences decisions. However, to repeatably and continuously deliver the required results, verifiable steps must be anchored in process definitions. Fortunately, any properly managed process already has such a definition. Without such a definition, any process would be difficult to manage and risk escalating out of control or exceeding time and budget constraints. Quality management would be almost impossible. The definition is therefore already in existence, and the challenge is to modify or extend this definition to include sustainability-related measures.

When new processes are introduced there is sometimes a risk that, in practice, they are bypassed because they are too challenging to implement and not supported by the workforce.

When it comes to product development in any part of the ABB Group, the company has already for some time been using a process definition it calls the ABB Gate Model Factbox.

The goal was thus to modify the gate model by adding sustainability criteria. These measures included:

- Environmental checklist (eg, hazardous materials, energy efficiency and recyclability)
- Support tools

One important goal was to assure the extended gate model was adopted and applied across the company. A prerequisite to this was that it could be understood by all those who needed to apply it. When new processes are introduced there is sometimes a risk that, in practice, they are bypassed because they are too challenging to implement and not supported by the workforce. In designing the sustainability version of the ABB Gate Model, great care was taken to assure that all demands were feasible. The individual development units should be able to apply the plan without any need for supervision.

To enable this, a sustainability toolbox was designed and made available on the company's intranet. This toolbox lists all aspects needing to be considered. These include:

- Energy efficiency and CO_2
- Materials selection
- Restricted substances
- Life-cycle assessment
- Environmental and climate declarations
- Supplier qualification

The product development process must specifically refer to the following points:

1) ABB's list of prohibited and restricted substances
2) Environmental and health & safety legislation
3) Possibilities to reduce energy consumption during product use
4) Risks during manufacture and/or operation of the product
5) Recycling and end-of-life issues

These sustainability aspects are now mandatory across the entire ABB Group.

This checklist is referred to at gate 1 of the ABB Gate Model and again at gates 2 and 4. In the latter gates, a check is furthermore required to ascertain that the identified problems have been acted upon, and that the requirements are still valid.

These sustainability aspects are now mandatory across the entire ABB Group, and all new products now being introduced have been developed using this methodology.

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Factbox The ABB Gate Model

The gate model is a description of a development process that is mapped as a timeline. This line is separated into sections divided by gates. The gates mark important milestones, and the process cannot pass one of these gates and proceed into the next phase without a formal decision. Such a decision is based on an assessment of the project status. All project aspects that are relevant at that stage are examined and future actions decided. ABB has defined a specific version of the gate model. This ABB Gate Model is now used in all development processes within the company. It permits an orderly, controllable and accountable development activity.