



Yaskawa is committed to eco-conscious design and procurement of materials with a low environmental impact, and we work with our suppliers to protect the environment.

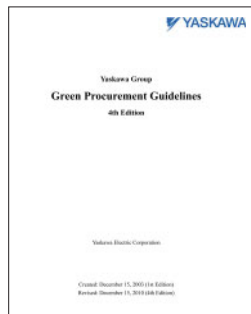
Green Procurement Activities

A movement to reconsider regulations on chemical substances has begun, as exemplified by the EU's REACH regulation as well as in individual countries. As Yaskawa further expands in Japan and globally, we are continuing measures to further upgrade our green procurement in order to promote and firmly establish a high level of support for environmental concerns.

The Green Procurement Guidelines, 4th Edition, was published in FY2010. An across-the-board reevaluation of the green procurement system in support of operations was carried out and business partners were briefed, after which we began to support green procurement that complies with REACH regulation.

Green Procurement Guidelines, 4th Edition

Yaskawa has published the fourth edition of Guidelines in compliance with the Joint Industry Guidelines*1 (JIG) for disclosure of chemical substances contained in electrical and electronic products and in support of the REACH regulation.



JIG selects and limits the chemical substances contained in electrical and electronic equipment that should be disclosed. By complying with JIG, we will implement the efficient gathering of information from our supply chain.

Introduction of a New Green Procurement System

We have introduced a cloud-based chemical substance management system as a tool for communication with our business partners. The purpose is to support REACH regulation and other complex regulations in a sure, efficient, and speedy manner.

This system has the four features shown below, and is set up to enable significant improvement of the administrative burden on business partners that provide us with information.

- Members can share information bidirectionally with each other, and information recorded for other customers can be ported over to this system.
- Supports each sector surveys by JGPSSI*2, JAMP*3, JAMA*4 and other research organizations.
- Globalization of data through presentation in Japanese, English and Chinese
- Complete dedicated support service, etc.

Business Partner Evaluation and Operations

Supplier cooperation is essential to building eco-conscious products. Yaskawa Electric asks suppliers to set up systems for environmental management and chemical content control of products following our green procurement guidelines. We evaluate our suppliers on such by these systems, and in procurement we give preference to suppliers who are actively engaged in environmental conservation. These requirements are not one-way. We trade views at briefing sessions and give support to environmental conservation programs at our suppliers, asking them for understanding and cooperation with our green procurement policy.

The Green Procurement Guidelines (4th Edition) and the Green Procurement System released in FY2010 reflect our business partners' views to a large extent on solutions to green procurement issues.

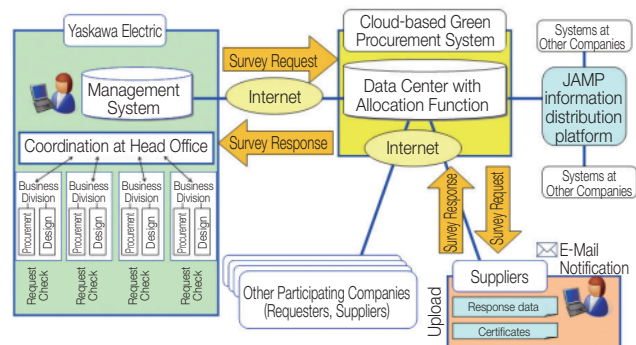
Green Procurement Evaluation Points

◎ Evaluation Items on Suppliers

- Establishment and operation of an environmental management system
- Establishment and operation of a management system for chemical substances in products
- Compliance with environmental laws and regulations

◎ Evaluation Items on Procured Goods & Materials

- Non-inclusion of prohibited substances
- Issuance of a certificate that states prohibited substances are not contained in products
- Determination and report of contained amount of specified controlled substances in products
- Resource saving effort such as reducing the amount of material used or shifting to eco-conscious materials
- Procedures for requesting modifications
- Activities on eco-conscious packaging materials

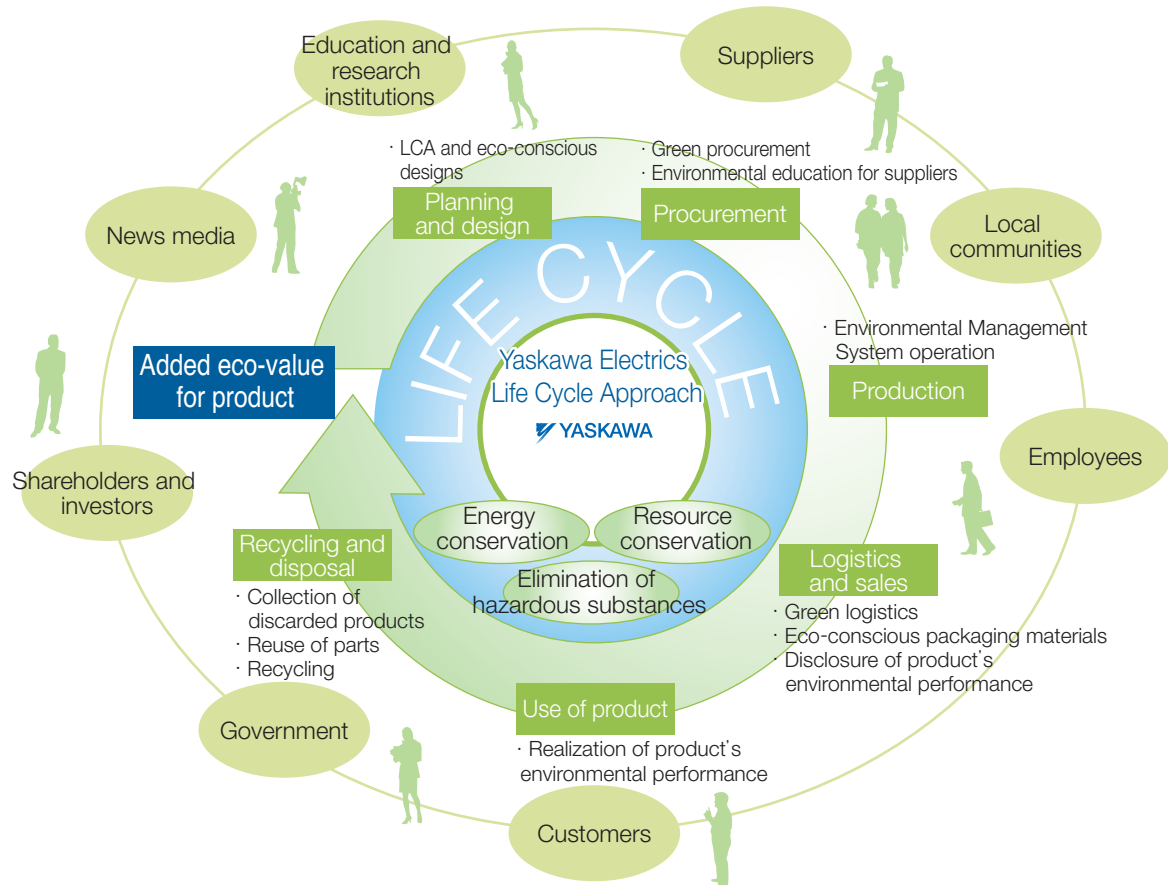


*1 : Supply Chain Communication Guide on Declarable Substance Content in Electrotechnical Products that was released jointly by the Consumer Electronics Association (CEA) in the United States, Digital Europe in Europe, and JGPSSI in Japan
 *2 JGPSSI: Japanese Green Procurement Survey Standardization Initiative
 *3 JAMP: Joint Article Management Promotion Consortium
 *4 JAMA: Japan Automobile Manufacturers Association, Inc.

Activities in Product Development

Consideration for the Environment throughout the Product Life Cycle

Recent worldwide economic growth has inflated environmental problems to global proportions, and enterprises have to care for the environment on a wider scale than before. At Yaskawa, we care for the environment throughout the entire life cycle of our products. Since introducing LCA in FY2006, we have taken concrete measurements of the life cycle environmental loads of our major products. This process has shown that a great proportion of the environmental load comes from the usage stage. Although we concentrate resources and adopt new technologies to conserve energy and enhance efficiency, we do more than focus on a single aspect of environmental impact. Rather, we look at the environmental impact at every stage of a product's life cycle and thus reduce environmental loads throughout that life cycle.



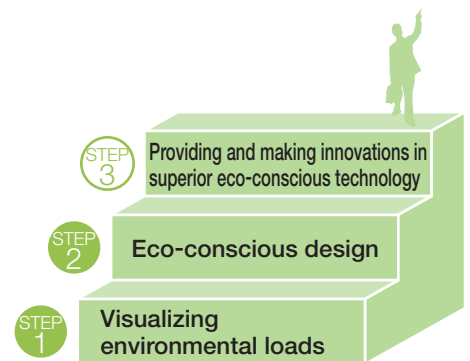
LCA-based Eco-conscious Design

In the mid-term plan, we aim to create an eco-conscious design system that can generate environmental added value, and to offer eco-conscious technologies and demonstrate innovation.

Yaskawa has established rules for product assessment so that we can verify that eco-conscious design is used. We set up the system so a design that does not meet certain standards cannot be marketed as a product.

Eco-conscious design is a process that visualizes environmental loads, which enables us to clarify the issues and to verify the effectiveness of countermeasures. The repetition of this process yields improvements in performance.

In FY2010, we completed a reorganization to strengthen the environmental energy business. Going forward, we intend to roll out products that will make major contributions to reduction of environmental loads across the entire life cycle of solar power conditioners, electrical equipment for large-scale wind power generation, automotive and other electrical drive systems, and other such products.





Establishment of Mechanism for Enabling Visual Measurement of Environmental loads by LCA

Yaskawa Electric considers LCA an important basis for eco-conscious design, and we are therefore working to make standardized LCA methods more efficient and firmly establish them in our business.

Yaskawa adopted the LCA approach in FY2007. We investigated the environmental loads of certain major products throughout their life cycles and evaluated them concretely.

In FY2008, we standardized the LCA method and developed a shared LCA database called Eco-bridge as a support tool. We also brought in third parties to conduct a review of our LCA quality level.

In FY2009, we inaugurated a project team to promote LCA efficiency. This heightened efficiency by lightening the administrative burden of LCA implementation while maintaining the quality of LCA implementation.

In FY2010, we put the previously developed criteria and shared database into operation in the design division without any problem, and this established the LCA mechanism for visualizing environmental loads. We will use this mechanism to develop products while verifying the validity of our eco-conscious designs.

High-Efficiency Electric Drive System for Electric Vehicles Employing SiC* Devices

The SiC-QMET is a new-concept drive system for electric vehicles employing silicon carbide (SiC) devices.

We developed it jointly with ROHM Co., Ltd., combining their device technology with the Yaskawa core technology related to motors and motor control.

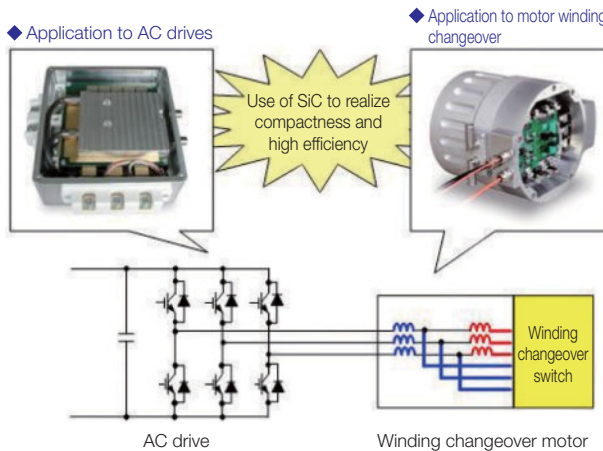
The SiC-QMET is based on the QMET drive systems, which is equipped with Yaskawa Electric's unique electronic winding changeover technology. Where conventional electronic winding changeover used an Insulated Gate Bipolar Transistor (IGBT) and diode made of silicon and built into the motor, this replaces the IGBT and diode with SiC, taking advantage of the high-temperature operating characteristics of SiC to simultaneously make the motor cooling mechanism simpler and more compact and thus realize still higher efficiency. The main circuits of AC drives used as motor drives were also all changed over to SiC to realize significant gains in compactness and efficiency. This reduced the volume of the electronic winding changeover section of the motor, as well as the volume of the AC drive, to one-half or less what it used to be and increased conversion efficiency by 2%.

Motor drives have a high environmental load ratio at the utilization stage. Improvement of conversion efficiency therefore contributes greatly to reduction of the environmental loads over the entire life cycle of the product.

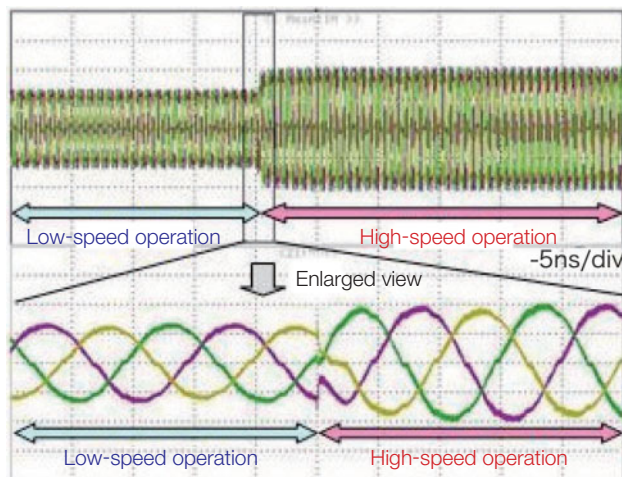
We intend to conduct further development of drive systems in the future, with the aim of realizing greater compactness and higher efficiency.

* SiC: Silicon carbide

- Example of Development: The SiC-QMET
Realize major advances in compactness and heightened efficiency of motor and AC drive



- Operating Wave Form of SiC-QMET During Winding Changeover



The newly developed winding changeover technology realizes smooth automobile acceleration and deceleration without causing changeover torque to fluctuate.