

# The 45th Central Glass International Architectural Design Competition

## Theme: Housing for Better Urban Environments

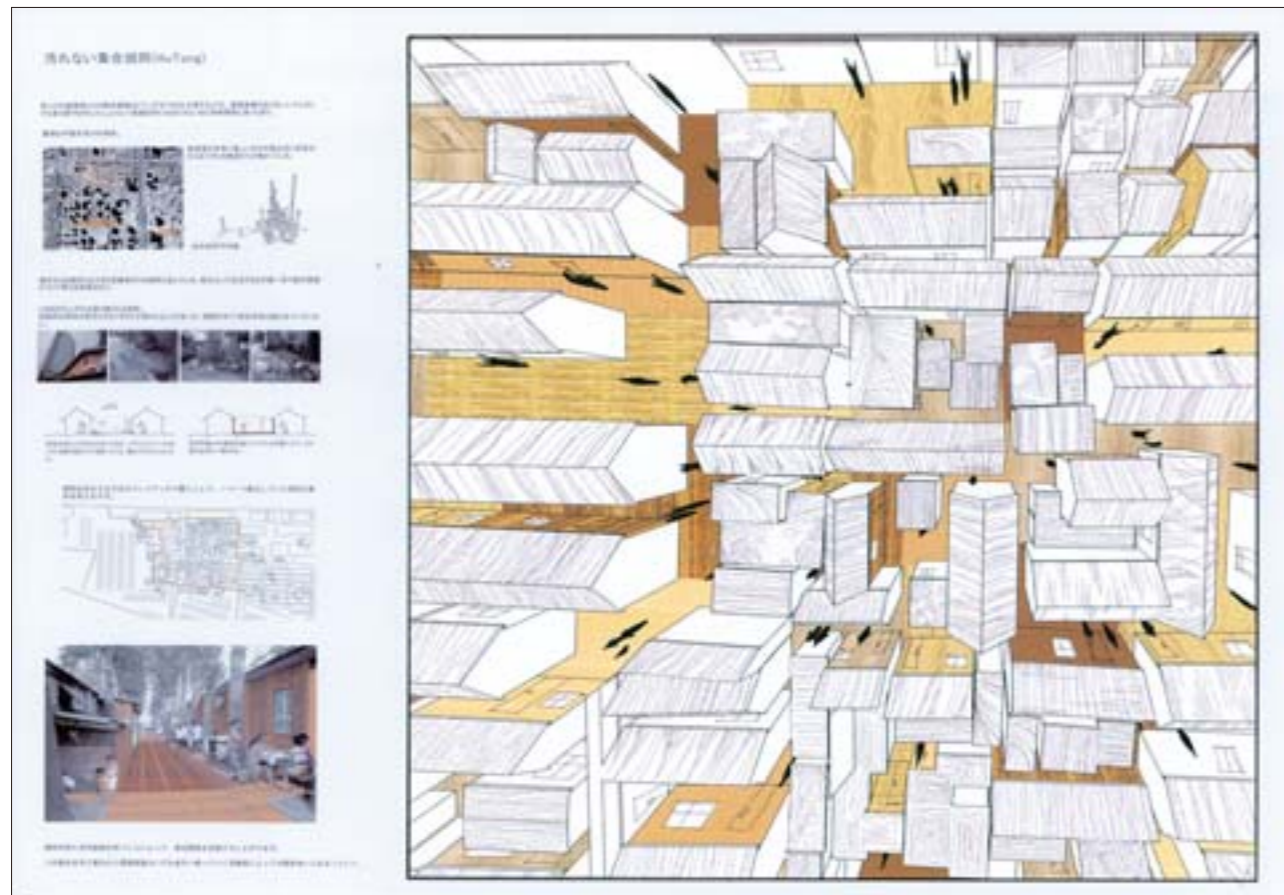
Today, we need to refurbish our existing knowledge on housing complexes in order to reconstruct ideal housing complexes suitable for modern cities, while at the same time protecting the good traditions of our heritage. The theme of this competition—"Housing for Better Urban Environments"—brings diversified ways of urban living under review, so that we can better cope with today's problems, and raises the question "what makes urban life new and rich?" Demographic projections show that in the near future the majority of the world's population will be living in cities, as evident in different forms of urban housing now appearing from region to region.

Moreover, the lives of many people are no longer centered around the family these days, resulting in the appearance new kinds of residence status. People have become more environmentally conscious as we must now pay attention not only to our immediate living environment but also our surroundings. The question of how housing complexes should be in responding to such an environment thus remains as relevant as ever.

We must consider how our urban societies should be in the years to come, how to respond to the requirements of an environment where resources must not be wasted, while at the same time enjoying the convenience of a highly developed urban environment, and also contribute to an urban landscape that is an asset to us all.

(Refer to related article on page 15.)

[Prize Winner] Tian Qiu (China)



## Responsible Care Report Social & Environmental Report

# 2011



Helping Create Prosperous Living Environments  
**CENTRAL GLASS CO., LTD.**

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Helping Create Prosperous Living Environments  
**CENTRAL GLASS CO., LTD.**



Central Glass Co., Ltd.  
Representative Director, President & CEO

*Shuichi Sasasawa*

## A New Form of Corporate Social Responsibility (CSR) Emerging from the Crisis

### CSR values coming into focus due to the crisis

Just when we were beginning to see signs that we might be able to shake ourselves free from the Lehman's fall — a global economic crisis so severe that it has been said to only occur once every century—one misfortune followed another, as the Great East Japan Earthquake struck Japan on March 11 of this year. We suffered enormous human and economic damage, and the restoration and reconstruction activities are apparently taking longer than expected. The production activities in many segments including Japan's key automotive industry were hit hard, with production bases being directly affected and/or hampered by frequent electric power shortages. The earthquake not only impacted the companies that were hit directly but also the entire Japanese economy, all relevant stakeholders, employees, and their families. This large-scale disaster affected business operations of the Central Glass group at several locations. It was a blessing in disguise that we were able to restore those operations in a shorter time, but the whole debacle forced us to recognize the importance of having a Business Continuity Plan (BCP) in preparation for contingent disasters and accidents. After the disaster, news reports showing how Japanese victims behaved in an orderly fashion, even as this great tragedy unfolded,

surprised and deeply impressed people all over the world. This is still fresh in our memory. Both the people of Japan and Japanese companies must make use of that special diligence and patience, and take part in reconstruction of Japan's seriously damaged economy. Now is the time when the CSR of each company really comes into play.

### The keywords are “energy,” “environment,” and “saving natural resources.”

#### Aiming to achieve sustainable society through expertise

In the midst of such tumultuous times, neither individuals nor companies can afford to push environmental protection and social contributions aside as “other people's affairs;” rather, all of us must be willing to take part and “lift our own weight.” For those of us in the manufacturing industry in particular, our mission is to contribute to society by doing what we can to protect the environment, and providing excellent and internationally competitive products, thanks to advanced technology, superior quality, and low prices. From now on, Central Glass will endeavor to best utilize our expertise, that is, our strong development capabilities, to pursue the development of environmentally conscious products (green products) that contribute to the environment and save natural resources. We will strengthen the presence of Central Glass through those products and work toward

## Environmental Principles & Action Guidelines

### Environmental Principles

Central Glass will help create a truly prosperous society through the production of goods and services, by giving consideration to global environment, health and safety at all times. **“Doing everything in the interests of humanity and the global environment.”**

### Action Guidelines

- 1 We will give consideration to the protection of the global environment and people's health and safety on a group-wide scale in all activities spanning from R&D to production and sales.
- 2 We will build frameworks and systems which promote environmentally-conscious corporate activities and strive to make continual improvements.
- 3 We will make efforts to develop products and production technologies that are friendly to the global environment.
- 4 We will strive to build a recycling-based society by effectively using global resources and by recycling waste.
- 5 We will observe laws and regulations relating to environment, health and safety, and make efforts in communicating with citizens.
- 6 As an employee of the company, each and every one of us will strive to contribute to society with a focus on the local community.

establishing a Unique Selling Position (USP), so that we may become a vital entity in the society. To achieve our long-term goals, we must reinforce our business infrastructure to survive as a company, while at the same time aiming to achieve a sustainable society.

### Fostering human resources that respect diversity toward truly global co-existence and co-prosperity

After the earthquake disaster, many people overseas offered assistance to Japan. With today's advanced information-communication technology, news is reported instantaneously, even from the other side of the world. Thus, the world is becoming smaller, boundaries are disappearing, and we are entering a truly global era.

This situation also means that we are already in the midst of international competition, however, and must seek out overseas markets more than ever before, particularly in view of Japan's declining birthrate and aging society with a growing proportion of elderly people. In fiscal year 2011, we intend to keep joint ventures in China and project in the U.S. on the track, as well as establishing new bases in India and South Korea.

In promoting joint ventures and projects with overseas companies, however, we encounter such difficulties as language barriers and cultural gaps caused by differences in culture and national character. To overcome these difficulties, it is necessary to learn the target culture and language, gain insights into local commercial practices, and make other efforts to bridge the gaps. In order for us to play an

active role in growing markets around the globe, we must be able to show respect toward diversity. Toward that end, we will focus our energies on fostering global human resources, as well as improving the communication skills of our employees.

We also regard the world as a single human community, where working together for mutual harmony and benefit will lead to continuous growth. We will fulfill the responsibility we have toward our stakeholders, which I consider the future challenge of Central Glass.

We first will contribute to the new growth of this country that gave birth to and nurtured Central Glass. Then we intend to dedicate all our strength toward realizing a truly sustainable society, while fulfilling our social responsibilities toward all the stakeholders of Central Glass throughout the world.



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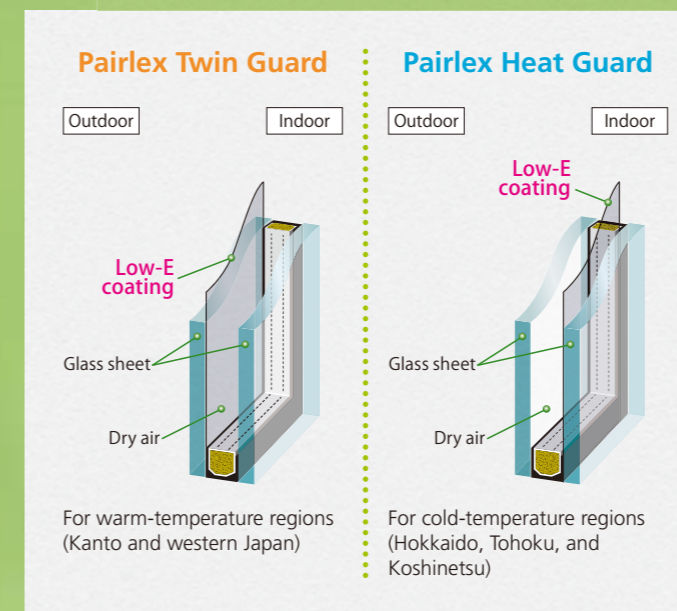
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# Eco-glass of Central Glass Supporting the "Century of Environment"

## What is Eco-glass?



Given its excellent insulating and heat-shielding performance, Eco-glass prevents heat from entering and escaping through house windows, thereby keeping the interior of a house comfortable. It also contributes to reducing CO<sub>2</sub> emissions by improving the cooling/heating efficiency of buildings, thus saving energy by reducing the need for air-conditioning, etc.



### Definition of Eco-glass

Eco-glass refers to glass panes having heat-insulating properties that satisfy the requirements of all three classes of "Sealed insulating glass" as prescribed by JIS R 3209-1998 Sealed insulating glass, in addition to offering heat-shielding performance compliant with standards set for the rate of insulation in summer in house apertures, as prescribed by the next-generation energy-saving standard (standard in 1999/Guidelines for the designing, construction and maintenance of residences on the efficient utilization of energy with respect to residences (Announcement No. 378 by Ministry of Land, Infrastructure, Transport and Tourism in 2006), by attaching a glass or "lace curtain" or similar means.

\*Eco-glass is the common name for Low-E insulating glass manufactured by individual companies of the Flat Glass Manufacturers Association of Japan, a nationwide organization of domestic flat glass manufacturers.

## Eco-glass Mechanism

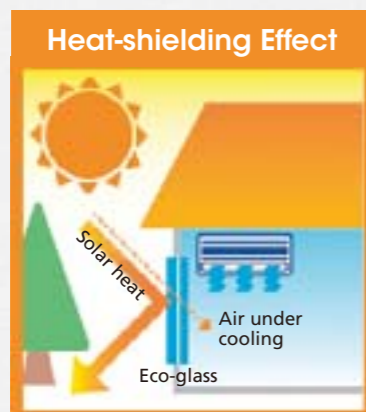
Eco-glass is a term commonly used to describe glass products coated with a special metal film (low-E coating\*) on the surface of the hollow layer between multiple-layer glass panes, in order to prevent heat transmission.

\*1 Low E refers to Low-Emissivity

### Heat-shielding Effect

(shielding against heat from solar irradiation in summer)

Due to the effect of the special metal coating, eco-glass shields against heat from solar irradiation coming in through the window glass, thereby keeping the accompanying rise in indoor temperature low. Of the total amount of heat entering an indoor environment from the surroundings, heat coming through windows and other openings accounts for about 71%; therefore, the heat-shielding performance of these openings is an important factor in keeping the indoor environment comfortable in summer.



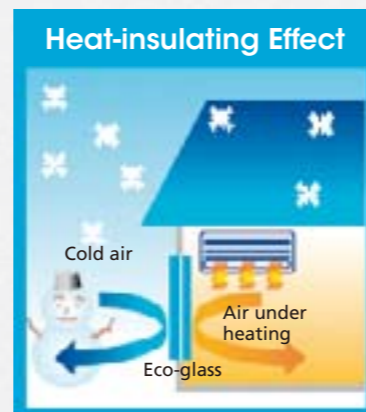
The "special metal coating" shields against the heat of the sun! It will not let hot outside air into the house. Therefore, there is no scorching feel by the window!

### Heat-insulating Effect

(keeping indoors warm in winter)

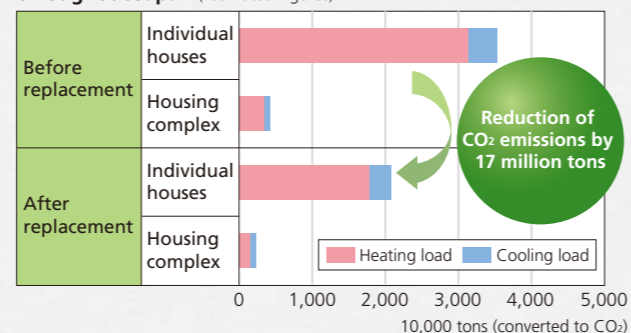
Typical insulating glass suppresses heat transmission with dry air trapped between two sheets of glass. Even when glass on the outdoor side cools down, glass on the indoor side hardly becomes cold, thanks to the heat insulating effect of the hollow layer.

Eco-glass offers even better heat-insulating performance than typical insulating glass due to the effect of its special metal coating, which keeps heat inside by reflecting heated air back into the interior.



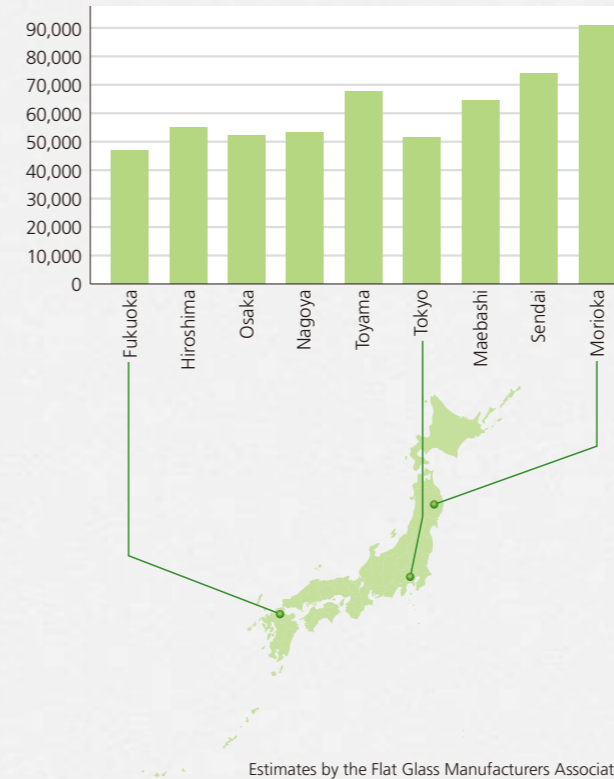
The hollow layer with dry air and "special metal coating" keeps in warm indoor air. Therefore, there is no chilly feel by the window!

### Volumes of CO<sub>2</sub> emissions by the cooling/heating of houses throughout Japan (Estimated Figures)



### Reduced cooling/heating cost

(Unit: yen/year per household)



### 2 Dew Condensation Prevention Effect

Since eco-glass has higher heat-insulating performance than normal insulating glass, it prevents outside air from cooling down the inner glass in winter, thereby reducing dew condensation on the window panes (though not preventing condensation completely, however).



### 3 Reduction of CO<sub>2</sub> Emissions

Eco-glass significantly contributes to reducing CO<sub>2</sub> emissions caused by cooling and heating. By replacing all the window glass in all houses in Japan with eco-glass, it would be possible to reduce CO<sub>2</sub> emissions by approximately 17 million tons in a single year (estimation by the Flat Glass Manufacturers Association of Japan).

For example, by replacing the windows of a typical single-family house with eco-glass, one could expect an effect of reduced CO<sub>2</sub> emissions equivalent to that obtained by planting 25 beech trees.

### 4 UV Block

The "special metal coating" of eco-glass not only blocks solar heat radiation but also reflects about 90% of ultraviolet light. It thus reduces color fading and the discoloration of furniture, floors, furnishings, etc. caused by ultraviolet light.

( Note that visible light, heat, chemicals and other things also cause color fading and discoloration, so please keep this in mind. )

## Advantages of Eco-glass

### 1 Energy-saving Effect

Since eco-glass prevents an influx of heat in summer and an outflux of heat in winter, it improves the heating and cooling efficiencies of housing and leads to lower heating/cooling costs. In other words, eco-glass allows you to live efficiently and comfortably with a smaller energy footprint.

# Lithium-ion Batteries Contributing to "Energy-saving Society"

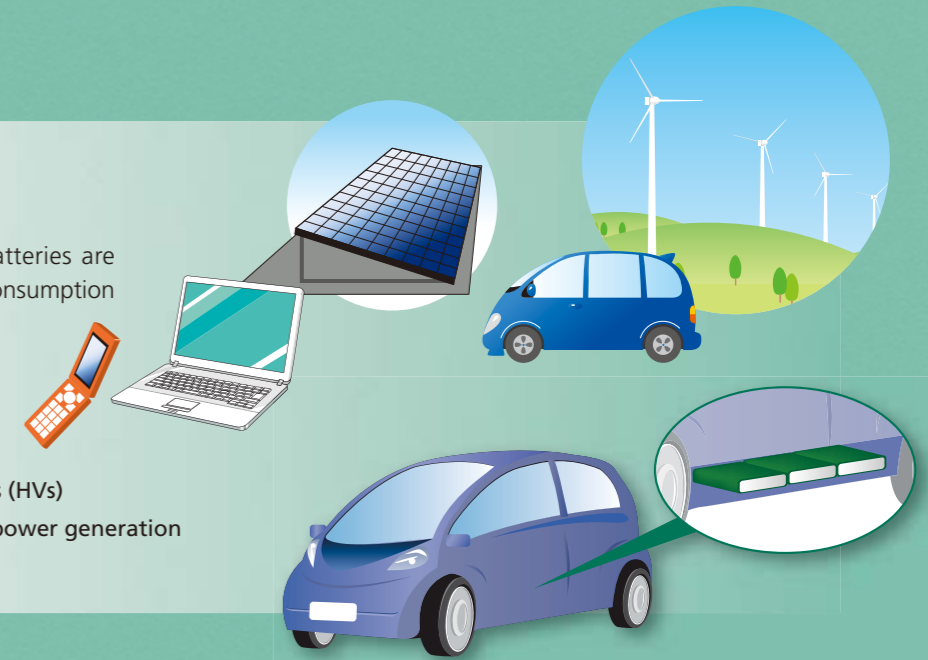
## What are Lithium-ion Batteries?

Lithium-ion batteries are not disposable primary cells, but environmentally friendly secondary cells that can be used repeatedly by recharging. Familiar examples of applications that use lithium-ion batteries include mobile phones, notebook PCs and other mobile devices. As these batteries are compact and lightweight, have high charging efficiency, and can store large capacity of electric energy, the expectations placed on them as energy sources for highly environmentally friendly electric and hybrid vehicles, as well as a key "enabling technology" for the storage and efficient usage of clean energy generated via solar photovoltaic power or wind power generation, are high indeed.

## Various applications of lithium-ion batteries

The scope of usage of lithium-ion batteries are expanding thanks to its efficiency in consumption of electricity.

- Mobile phones, PCs, digital cameras
- Electric bicycles
- Cranes, forklifts
- Electric vehicles (EVs), hybrid vehicles (HVs)
- Solar photovoltaic power and wind power generation
- Aircraft, railways, artificial satellites



## Mechanism and Features of Lithium-ion Batteries

Lithium-ion batteries are chemical devices in which lithium ions move between an anode (-) and a cathode (+) to charge and discharge electricity. When charging, lithium ions move from anode to cathode as driven by a charging current. When discharging, the lithium ions move inversely from cathode to anode, thereby allowing discharging current to be conducted.

### Compact/Light Weight and Large Capacity

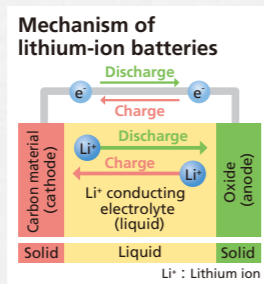
Lithium-ion batteries represent a new type of battery that first appeared in the 1990s. These batteries have higher energy density than conventional nickel-cadmium and nickel-hydrogen batteries, thus allowing for 20 to 50% downsizing in terms of volume and a weight reduction of about 50%, as compared with batteries of the same energy storage capacity.

### Powerful

It is possible to draw voltage up to three times higher from lithium-ion batteries than from nickel-cadmium and nickel-hydrogen batteries. This means that a voltage requiring three batteries in the past can now be obtained from a single lithium-ion battery.

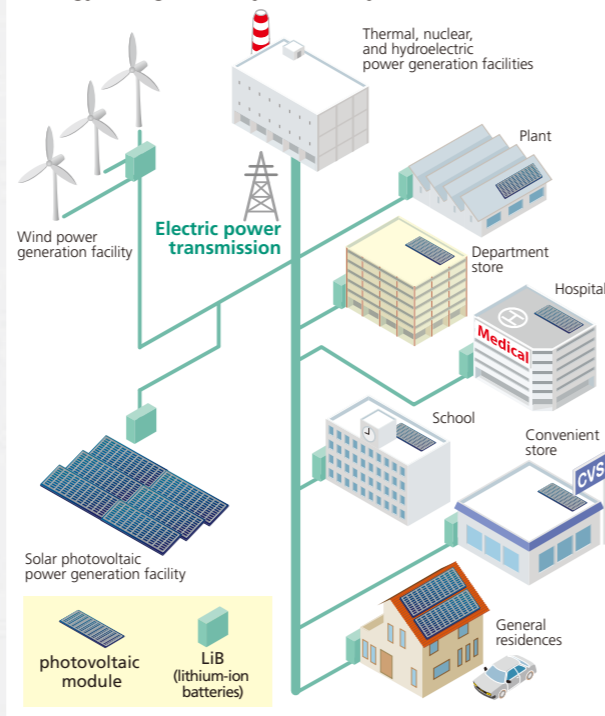
### Can be Recharged Anytime without Depleting Batteries

So-called memory effects occur when nickel-cadmium and nickel-hydrogen batteries are recharged repeatedly without being depleted, thereby rendering a battery unable to store its original full charge. In contrast, lithium-ion batteries experience no such memory effect and can be recharged repeatedly without having to be depleted in between.



## Advantages of Lithium-ion Batteries

### "Energy-storage" Society Enabled by Lithium-ion Batteries



### 1 Reduction of Waste

Lithium-ion batteries used in electric vehicles and hybrid vehicles have a long service life and can be used repeatedly by recharging, thus affording a low need for replacement. It is investigated to recycle automotive lithium-ion batteries as storage batteries when cars are scrapped, which will lead to the reduction of waste.

### 2 Reduction of Environmentally Hazardous Substances

Environmentally hazardous substances, such as lead, mercury, and cadmium, are not used in lithium-ion batteries.

### 3 Effective Energy Use

Lithium-ion batteries can store large capacity of electricity and have smaller self-discharge—a phenomenon whereby batteries gradually discharge electricity stored therein over time—than that of nickel-cadmium batteries. As a result, lithium-ion batteries enable the efficient storage of electric energy for longer periods of time.

### 4 Reduction of CO<sub>2</sub> Emissions

Lithium-ion batteries are expected to contribute significantly to the reduction of CO<sub>2</sub> emissions through their use as energy sources for hybrid vehicles and plug-in hybrid vehicles with ultra-low CO<sub>2</sub> emissions, and electric vehicles that emit no CO<sub>2</sub> at all.

### 5 Contribution to "Energy storage" for Energy Management

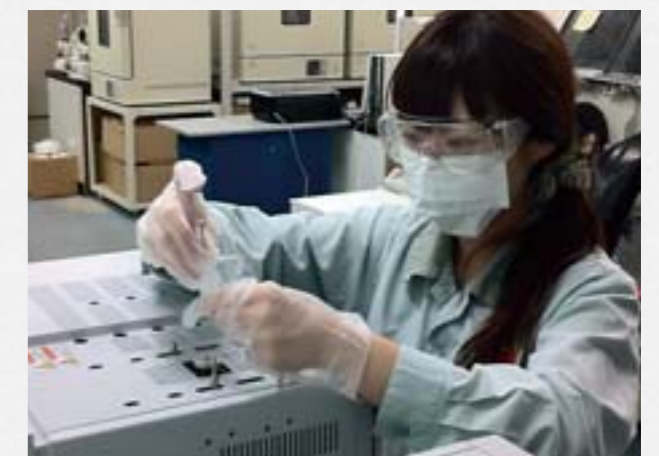
Lithium-ion batteries contribute to "energy storage" in energy management systems that strive for more efficient utilization of energy by combining "energy creation," "energy storage" and "energy saving" technologies. For example, electricity generated by solar cells during the day can be stored in lithium-ion batteries for use at night or on days with bad weather, or may be used in devices that allow energy to be saved through intelligent operational control, such as at air-conditioning facilities, and the brightness control of lighting equipment. Moreover, the amount of power generated by thermal power plants and other sources tends to exceed the regular nightly consumption; consequently, lithium-ion batteries can be used to store that excess electricity for later use as required. Such efforts have already begun at plants, schools, stores, and many other facilities all over Japan.

## Supporting the Advancement of Lithium-ion Batteries

### Central Glass's "Lithium-ion Battery Electrolyte"

The key component of lithium-ion batteries is the electrolyte solution. Central Glass is the world's only integrated electrolyte solution manufacturer capable of handling the entire manufacturing process from electrolyte salt to electrolyte solution. Thanks to our advanced fluorine technology, we can produce lithium salt (LiPF<sub>6</sub>: Lithium Hexafluoro Phosphate)—the key material for lithium conduction in batteries—by using hydrogen fluoride produced in-house.

We have also developed various additives for improving performance for specific purposes, thereby achieving better battery heat-resistance properties, prolonged battery service life, achieved higher battery power and lower electrolyte inflammability, and made other improvements regarding the performance and safety of lithium-ion batteries.



Development of analysis

## 01. Construction/housing glass

### 02. Eco-glass

Our eco-glass is insulating glass offering excellent heat-insulating and heat-shielding performance, thus yielding significantly higher energy savings. Please see Special Feature on pages 3 to 4.

### 03. Infrared shielding laminated glass

Our infrared shielding laminated glass filters out at least 99% of near-infrared wavelength, and eliminates that scorching feeling on the skin when exposed to direct sunlight.

### 04. Glass for PCs and touch panels

Extremely thin glass used for sensor substrates and glass covers for touch panels, a rapidly growing market.

### 05. Lead-free mirrors, Antifog mirror

Manufactured by Mie Glass Industry Co., Ltd.

Our lead-free mirrors are environmentally friendly as the back coating contains no harmful lead components. Our anti-fog mirror suppresses blurring due to a special functional coating applied on the mirror surface.

### 06. Photovoltaic (PV) glass

Our high transmission figured glass is used for crystalline silicon type solar cells, etc., thereby improving their efficiency.

### 07. Powder glass, Glass paste (under development)

Lead-free powder glass and glass paste with a low-melting point, usable as an environmentally friendly sealant and adhesive.

### 08. Automotive glass

### 09. Glass antenna

Unlike conventional pole antenna, our glass antenna has no protrusions, meaning less wind noise and a more aesthetically pleasing design.

### 10. Soda ash

Soda ash is used in various industries and applications, including glass production, and one of the representative alkaline materials among soda industrial products made from salt.

### 11. Calcium chloride

Due to its strong moisture-absorption characteristics, calcium chloride is used as a moisture absorption agent and for similar purposes. It is also used as anti-freezing agent for roads in winter, as calcium chloride solutions do not freeze at extremely low temperatures.

### 12. Poly Aluminum Chloride (PAC)

Clean water is vital to our daily life. PAC is a product having strong cohesive properties that is used in the treatment of drinking water, sewage wastewater, and industrial drainage, where it adsorbs (via flocculation) fine particles and allows them to settle into suspended solids in the suspension being treated.

### 13. ZEM-SCREEN®

ZEM-SCREEN is an environment-friendly gas developed to replace SF<sub>6</sub>, which is used as cover gas for melting and casting magnesium alloys.



## 14. Active ingredient for pharmaceuticals and its intermediates

Central Glass supplies active ingredients and intermediates for such pharmaceuticals as anesthetics and ulcer treatment drugs utilizing fluorine chemistry and other in-house accumulated technologies.

## 15. Fluorine generator

**Application: Fluorine supply facilities for producing cleaning gas as a substitute for perfluorocarbons (PFCs) and fluorides**

Finally, we developed on-site fluorine generators as a replacement for high GWP fluorinated cleaning gases, such as NF<sub>3</sub>, SF<sub>6</sub>, and C<sub>2</sub>F<sub>6</sub> in manufacture of LSI, TFT and thin film solar panels.

## 16. Trifluoromethanesulfonic acid and anhydride

**Applications: Raw material for pharmaceutical products, Electrolytes for lithium primary batteries and liquid crystal display materials**

Due to our advanced knowledge on the material characteristics of trifluoromethanesulfonic acid and anhydride, we have a large market share for the most demanding applications in quality mentioned above.

## 17. CEFBON®, CEFRAL LUBE®

**Applications: Solid lubricant, Water resistance, Active material for lithium battery**

These products were developed using our fluorination technology to control the degree of fluorination, to control the degree of fluorination, molar weight of graphite and PTFE. CEFBON and CEFRAL LUBE are widely used as a high-end lubricant.

## 18. High-performance membrane material (under development)

We are developing materials that will contribute to environmental protection, recycling, and energy saving utilizing the unique attributes of fluorine.

## 19. Lithium-ion battery electrolyte

Please see Special Feature on pages 5 and 6.

## 20. Environment-conscious agricultural products/coated fertilizer Cera-coat® R

Manufactured by Central Kasei Chemical Co., Ltd.  
Marketed by Central Godo Fertilizer Co., Ltd.

Cera-coat R is a controlled-release coated fertilizer based on three concepts: ideal fertilizer effect, labor and cost saving performance, and eco-friendly properties. This product is highly effective, resulting in less amount of applied fertilizer to obtain the desired effect.

## 21. Environment-conscious agricultural products/microbial control agents

Supporting higher levels of safety for humans, animals, and produce, these agents can be used until before harvest. Essentially, they are environmentally-sound microbial agrichemicals suitable for organic and low-chemical farming, because their application is not counted as the use of agrichemical spraying.

## 22. Continuous glass fiber

Manufactured by Central Glass Fiber Co., Ltd.

## 23. Glass wool

Manufactured by Central Glass Wool Co., Ltd.

Continuous glass fiber is widely used in such diverse applications as housing, automobiles, ships, and electronics products. Glass wool is a noncombustible, fire-resistant material used as heat- and sound-insulating material for automobiles, rail cars, etc.

# Corporate Governance & Compliance

The basic concept behind the corporate governance\*1 of Central Glass is to continually increase transparency and fairness of our overall management, in order to enlarge corporate value, further increase profits, and make efforts to establish an efficient and reasonable organizational structure that can readily respond to changes in the management environment (see the figure below for the specific corporate governance system).

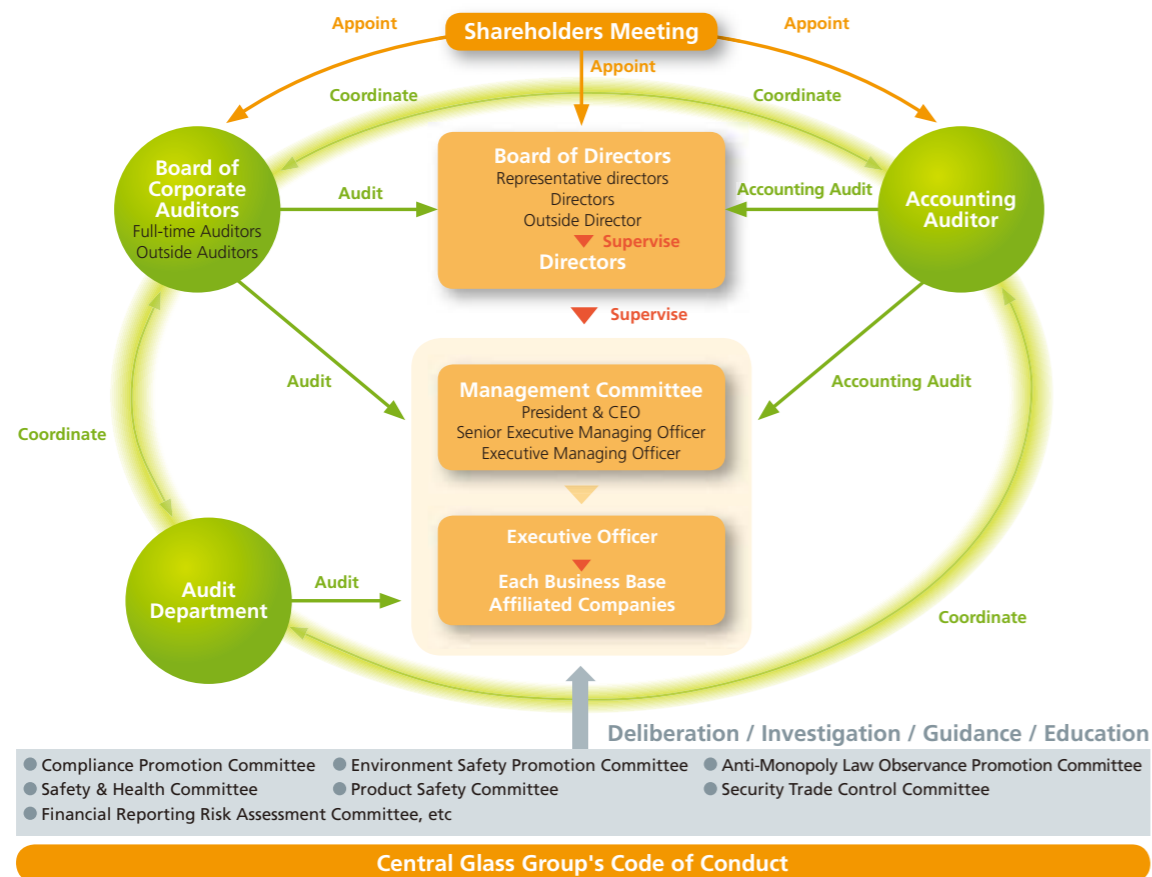
In order to absolutely prevent corporate misconduct, it is essential to raise our awareness of compliance,\*2 in addition to upgrading and reinforcing our corporate governance framework. To fulfill this purpose, Central Glass established "Central Glass Group's Code of Conduct" as the internal code for conducting faithful business activities with stakeholders such as business partners, organizations concerned, customers, consumers, and employees. Every employee carries a card displaying this Code of Conduct, as to constantly enhance the awareness of compliance. The top executives also strive to set a good example in their actions.

We also created a "Compliance Manual" to serve as a guide on dictating social norms and corporate ethics, and are using it to meet social demands. This manual covers a wide range of fields including, among several others: anti-monopoly law; independence from antisocial forces; intellectual property

rights; regulations on insider trading; environmental conservation; workplace environment; protection and management of information; and respect for human rights. Each item in the manual is reviewed and revised at regular intervals in accordance with the revisions of applicable laws and regulations and trends of social conditions. To supplement this manual, we improve the information by introducing the website of a law book publisher, so as to allow self-examination of questions and problems associated with corporate governance and compliance. Central Glass also established and started the operation of the Whistle Blowing System so that all employees can obtain guidance and consultation on issues and questions concerning compliance and solve them before they become serious. The effective use of these systems, together with regular education through internal training seminars, helps each employee gain a deeper understanding of relevant laws and regulations and take appropriate action when conducting business. Through these activities, Central Glass Group aims at enhancing both consciousness and implementation of compliance.

\*1 Corporate governance: The way a corporation should be governed  
 \*2 "Compliance" refers not only to the observance of laws and regulations in a limited sense, but also includes the observance of a wide range of social norms when conducting business activities.

Organization Chart for Corporate Governance



# Targets and Progress

FY2010 Results and FY2011 Plan

Progress : ☀️ ... Fulfilled ☁️ ... Additional measures required

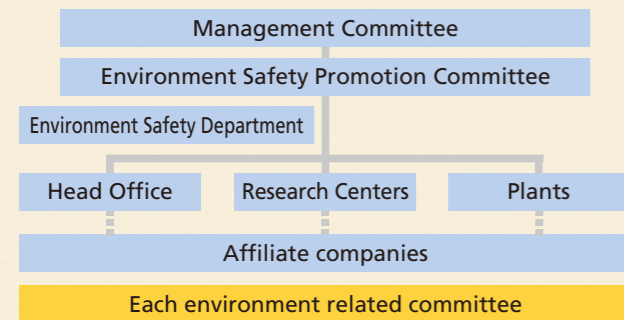
Item	Major Issues	Medium term target	FY 2010 Results	Rating	FY 2011 Plan
Environmental & Safety Management	Establishment & maintenance of environmental management system.	<ul style="list-style-type: none"> <li>Maintenance &amp; enhancement of ISO14001 certification of main workplaces</li> <li>Implementation of maintenance, renewal and new acquisition of certification in affiliates.</li> <li>Enhancement of self-management in non-certified affiliates.</li> </ul>	Ube Plant, Matsusaka Plant, Sakai Mfg. Site and Kawasaki Plant maintained ISO14001 certification.	☀️	Maintain & update ISO14001 certification of main workplaces. Respond to evaluation in accordance with changing structure of business.
	Compliance	<ul style="list-style-type: none"> <li>Listing applicable laws and regulations on a Group-wide scale.</li> </ul>	Japan Tempered & Laminated Glass Co.,Ltd.: Acquired Eco Action 21(June, 2010). Implemented self-audits on environmental safety of 33 affiliates, using an environmental safety self-checklist.	☀️	Maintain & update ISO14001 certification in affiliates. Promote new acquisition of certifications.
	Promotion of awareness		Confirmed compliance and listing status of each workplace through self-audit and site audit on environmental safety.	☀️	List applicable laws & regulations on a Group-wide scale. Observance of laws & regulations by visualization (e.g. Database). Promote risk management for environmental safety.
Safety efforts	Chemicals and product safety	<ul style="list-style-type: none"> <li>Carry out PRTR survey completely.</li> <li>Establish a control system for chemical substance's safety.</li> <li>Extend range of MSDS.</li> </ul>	Complied with the Act on the Evaluation of Chemical Substances, Regulation of Manufacture Industrial Safety and Health Law (conducted the notifications required) and provided the affiliates with the relevant information. Sequentially improved MSDS.	☀️	Continue to comply with the applicable laws & regulations and revise our MSDS.
	Accident prevention	<ul style="list-style-type: none"> <li>Promote Green Procurement</li> <li>Implement audits on chemical substance.</li> <li>Establish a system to respond to our customers.</li> </ul>	Confirmed management of chemical substance(compliance with laws) and response to customers on a Group-wide scale, using an environmental safety self-checklist.	☀️	Reduce the environmental impact of products by strengthening management of our information database and establish a reliable and prompt information service system for customers.
	Logistics safety	<ul style="list-style-type: none"> <li>Conduct voluntary safety audit by management on high pressure gas.</li> <li>Enhance proactive measures against disaster.</li> </ul>	Administrative inspections were done in our Plants (Ube,Matsusaka, Kawasaki and Sakai Mfg. Site). Conducted voluntary safety audits on high pressure gas.	☀️	Continue to comply with the law. Hand down safety technologies and know-how. Promote risk assessment by studying issues of other companies.
	Occupational safety and health	<ul style="list-style-type: none"> <li>Improve Yellow Cards System.</li> </ul>	Revised current cards and added new cards. Thorough delivery to drivers and recorded maintenance of the cards.	☀️	Continuous revision and renewal. Revise current cards in response to new products and add new yellow cards for containers if needed. Familiarize the carriers in charge with the card system.
		<ul style="list-style-type: none"> <li>Establish a risk management system for logistics safety.</li> <li>Educate carriers of our products.</li> </ul>	Confirmed risk management status and safe-handling education system of chemicals and product logistics in workplaces and affiliates, using an environmental safety self-check list.	☀️	Continue efforts on education and security verification. Promote risk assessment system.
		<ul style="list-style-type: none"> <li>No injury causing lost worktime.</li> <li>Enhance a risk management for occupational safety and health.</li> </ul>	Implemented the various accident-prevention campaigns on a Group-wide scale. The number of accidents accompanied by lost worktime decreased to seven on a Group-wide scale (the best performance in the last ten years). Completed the registration of OHSAS18001 certification at Ube Plant as of April 1st, 2011. Continued efforts for a risk management system for occupational safety and disaster prevention in Matsusaka Plant and Kawasaki Plant.	☁️	Implement proactive measures against accident based on analysis results of annual report on a Group-wide occupational accidents. Continue revision and establishment of disaster management system.
Environmental efforts	Prevention of global warming (energy and resource saving)	<ul style="list-style-type: none"> <li>&lt;FY 2010 target&gt;</li> <li>Reduce CO<sub>2</sub> emissions by 10% from FY 1990.</li> </ul>	CO <sub>2</sub> emissions from our main plants was 661,000 tons, down 34.0% from FY1990. Continued participating in trial emissions trading system ( Sakai Mfg. Site).	☀️	Start working on reduction of CO <sub>2</sub> emissions in 2020 by 15% from 2005. Strengthen energy management on a Group-wide scale including affiliates. Continue to respond to the applicable laws (e.g. Revised Act on the Rational Use of Energy, etc.).
	Enhanced management of chemical substances	<ul style="list-style-type: none"> <li>Promote the substitute for environmental load substances and the detoxification of them (Asbestos, PCBs and other environmental load substances).</li> </ul>	Implemented not-flying asbestos-containing materials were removed from manufacturing facilities at the renewal of them. Continued encouraging consultation for employees who previously were in the workplaces where asbestos-containing products were handled. Detoxification plan for stored PCBs were on the menu.	☀️	Ban the use of asbestos completely. Promote the revision of the standards regarding the control of chemical substances. Strengthen the control of stored PCBs and implement the disposal of them according to administrative guidance. Encourage to use low-concentrated PCBs. Promote risk assessment system.
	Reduction of waste	<ul style="list-style-type: none"> <li>&lt;FY 2010 target&gt;</li> <li>Reduce final landfill disposal volume by 80% from FY1991 on a company wide scale.</li> </ul>	Final landfill disposal volume of waste at our main plants was down 77% from FY1991. Increased the amount of recycling polluted mud into cement at Ube Plant.	☁️	Start working on reduction of the final landfill disposal volume in 2015 by 65% from 2000. Continue developing the new technology for reducing the volume of wastes.
	Creation of recycling society	<ul style="list-style-type: none"> <li>Maintain zero emission at glass division. (Final landfill disposal volume / Total waste generation ≤ 0.01)</li> <li>Establish a recycling system for waste flat glass in collaboration with the Japan Automobile Manufacturers Association and Flat Glass Manufacturers Association of Japan.</li> </ul>	Maintained zero emission at glass division. Matsusaka plant continued receiving waste flat glass as an intermediate treatment trader of industrial waste.	☀️	Maintain zero emission at glass division. Continue to develop practical technologies for recycling waste flat glass at Matsusaka plant.
Contribution to society	Social action program	<ul style="list-style-type: none"> <li>Expand communicative activities (Issue Social and Environmental annual report and Implement plant tours and regional dialogues).</li> <li>Organize the Central Glass International Architectural Design Competition.</li> <li>Participate in volunteer activities.</li> </ul>	Issued Social and Environmental annual report. Participated in the Regional Dialogue Workshop in Ube region and interacted with local residents. Organized the 45th Central Glass International Architectural Design Competition. Implemented social action programs, such as donations to NPO. Participated in local and international volunteer activities in cooperation with our labor union. Continued to sponsor the Morino Chonai-Kai (Forest Neighborhood Association).	☀️	Issue Social and Environmental annual report 2011. Participate in the community meeting in Ube region. Continue and develop current social contribution activities.

### Environment and Safety Management Promotion System

As a company that manufactures and handles glass and chemical substances, Central Glass has introduced a management system based on the principles of "environmental, health and safety"

management activities throughout the lifecycle of products and promotes improvements in this system.

#### Environment and safety promotion system



#### Environmental Management System (ISO14001)

Major plants & affiliates	Day, month and year of acquisition
Ube Plant	15/12/2000
Matsusaka Plant	14/4/2000
Kawasaki Plant	28/5/2007
Carlex Glass Co.	7/9/2001
Yue Sheng Industrial Co.	4/5/2001

### Environmental Accounting

Central Glass utilizes environmental accounting as a quantitative indicator for environmental preservation activities.

#### Environmental Preservation Costs

(Unit: million yen)

Article	FY 2010		FY 2009	
	Investment	Expense	Investment	Expense
(1) Business area cost	875	3,889	584	3,841
(a) Pollution prevention cost	816	2,374	560	2,476
(b) Global environmental preservation cost	20	110	13	109
(c) Resource circulation cost	39	1,405	11	1,256
(2) Cost for curving upstream/downstream environmental impact of production and service activities	0	5	0	1
(3) Environmental preservation cost associated with management activities	6	312	0	307
(4) Environmental preservation cost associated with R&D activities	6	567	13	347
(5) Environmental preservation cost associated with social activities	0	55	0	6
(6) Cost involved in dealing with environmental damage	0	0	384	1
<b>Total</b>	<b>887</b>	<b>4,828</b>	<b>981</b>	<b>4,503</b>

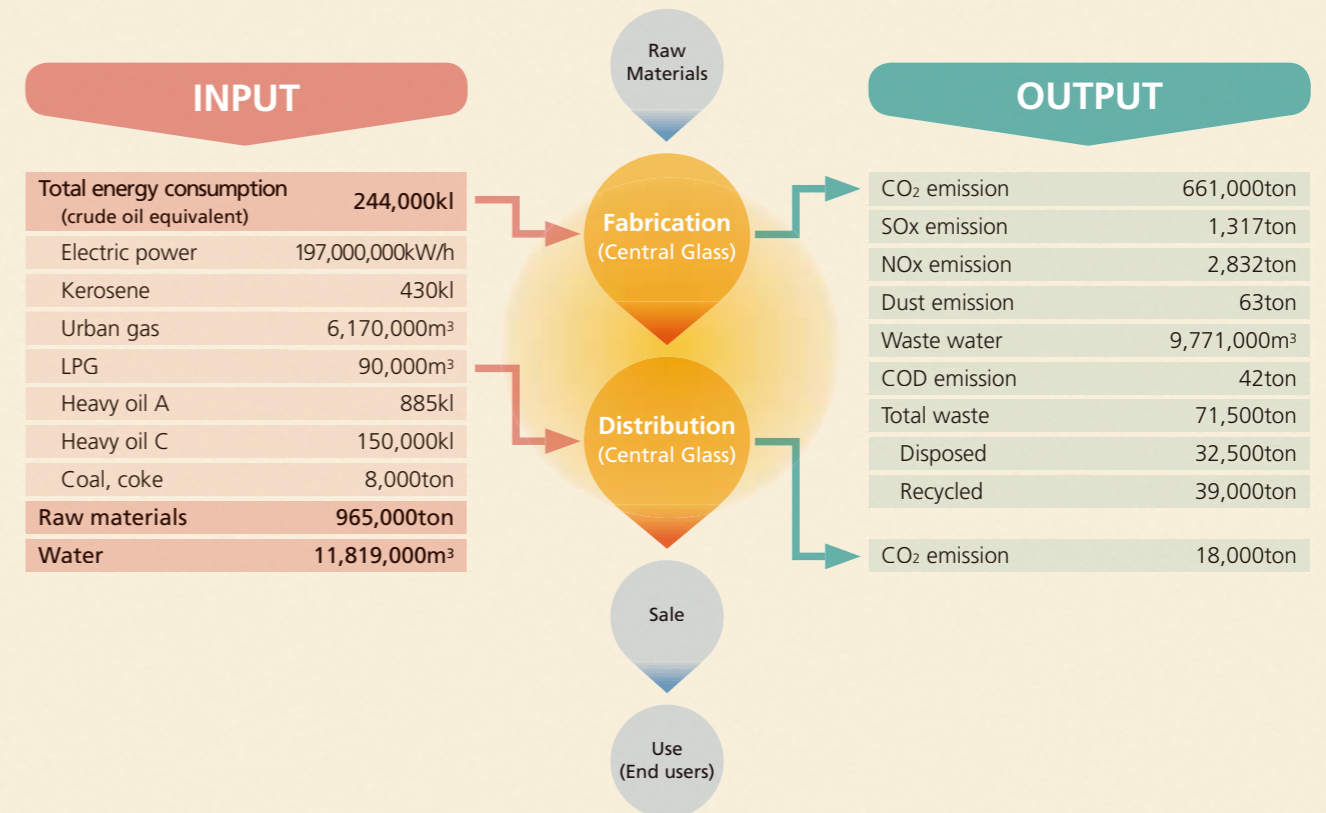
#### Environmental Preservation Effects - Environmental Impact Index

Article	Environmental impact substances	Emission in FY 2010 (ton)	Emission in FY 2009 (ton)	Change (%)
Greenhouse gas	CO <sub>2</sub>	660,579	669,689	-1.4%
	SO <sub>x</sub>	1,317	1,361	-3.2%
Environmental pollutants	NO <sub>x</sub>	2,832	2,857	-0.9%
	Ash Dust	63	53	18.9%
	COD	42	35	20.0%

### Relationship between Our Business Activities and the Environment

We quantitatively measure the environmental impact of our business activities to determine our environmental issues. We will implement activities for conservation and for construction of recycling systems. Specifically, the Glass Division

focuses on reduction of the environmental impact and prevention of global warming and the Chemical Division focuses on the development of environmentally-friendly products and the reduction of wastes.



### Our efforts to prevent global warming

Our targeted reduction of CO<sub>2</sub> emissions by fiscal year 2010 was 10% less than the level of emissions recorded in 1990, and we were able to achieve that goal by reducing our emissions by no less than 34% compared with 1990. From now on, we will set a new emission reduction target and continue our activities to reduce CO<sub>2</sub> emissions.

Moreover, the Sakai Manufacturing Site is participating in the "Japan's Voluntary Emissions Trading Scheme" initiative promoted by the Ministry of Economy, Trade and Industry and the Ministry of the Environment, and each place of business of the Central Glass group is working hard to reduce their individual CO<sub>2</sub> emissions.

#### Emission of environmental impact substances

FY	CO <sub>2</sub>	SO <sub>x</sub>	NO <sub>x</sub>	Dust	Waste Disposal	COD	Total Nitrogen*1	Total Phosphate*2
1990	1,004,000	—	—	—	—	—	—	—
2006	904,000	1,923	3,722	69	61,900	47	80	2
2007	896,000	2,533	3,730	84	62,800	42	70	1
2008	862,000	2,231	3,828	88	52,000	43	56	1
2009	670,000	1,361	2,857	53	36,300	35	51	1
2010	661,000	1,317	2,832	63	32,500	42	50	1

\*1 means total amount of amino acid, polypeptide, organic nitrogen (i.g. Urea) and protein and nitrogen of inorganic nitrogen (i.g. nitrous nitrogen) in water  
\*2 means total amount of organic / inorganic phosphate in water

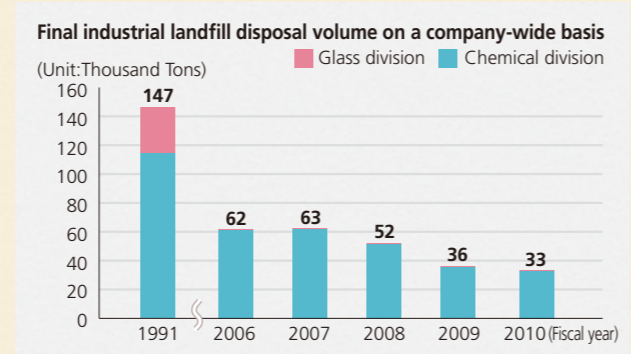
### Activities for waste reduction

Central Glass, as a waste generator, strictly complies with relevant laws and regulations (such as the Wastes Disposal and Public Cleansing Act) in waste sorting, storing, properly subcontracting waste processing to and monitoring industrial waste disposers, and management of manifestos.

Our chemical division accounts for most of the industrial waste discharged from plants and other manufacturing sites, with the glass division accounting for about one percent of waste discharge.

We have set our goal at reducing the amount of final waste disposed companywide by more than 65% compared with FY2000, and achieve zero emissions from the glass division

(Definition at Central Glass: 1% or less of the total waste discharge in FY2002) by FY2015.



### Safety of Chemical Substances

Taking environmental initiatives is now common world wide and the management of chemical substances is not exceptional. Central Glass co-shares data base such as Material Safety Data Sheet (MSDS) among parties concerned and works for upgrading technology infrastructure and managing and co-sharing the information of toxicity and risk assessment, in order to manage the risk of chemical substances properly and promote understanding of parties concerned. In addition, we designate persons responsible for management at the plants and research centers where the chemical substances are handled. We implement stricter control on the use and disposal, needless to say, complying with laws and regulations.

In Europe, restriction on used vehicle (ELV: End of Life Vehicle) which concerns the disposal of used cars and Restriction of the use of certain Hazardous Substances (RoHS) which restricts chemical substances used in electric and electronic products were enforced. In addition, we expect a new system, Globally Harmonized System of Classification and Labeling of Chemicals (GHS) to be promoted as a new global rule for the purpose of ensuring health and promoting international transactions. We are progressively working for the GHS as well.

We are storing the PCB-containing equipments under our strict rule based on the law related to PCB, and we are disposing the equipments appropriately in accordance with the law.

### Material Safety Data Sheets (MSDS)

MSDS are data sheets designed for the supplier of chemical substances to provide users with information on chemical substances such as their properties, so as to assure the safety and health of the person handling such chemicals substances.

Central Glass also encourages the sharing of information concerning safety on a Group-wide scale by posting MSDS on its in-company database.

### The Initiative for Green Procurement

Upon increasing global interest in environment including regulations and others, we newly prepared "Green Procurement Guidelines". As an initiative on a company wide scale, we request our suppliers to answer the following two survey items for future reference.

- ① Whether suppliers have established an environmental management system.
- ② Whether raw materials or components purchased contain the voluntarily restricted substances (such as cadmium and others) specified by Central Glass.

In addition, we have established Green Procurement Database and utilize it in order to share the survey results. In the backdrop of RoHS directive in the EU, not only environmental friendliness at the plants but also environmental friendly approach to products themselves is now required. In another word, it is required that procured materials such as upstream materials and components do not contain substances with environmental impact to assure that our products do not contain and incorporate any substances with environmental impact.

### Security and Disaster Prevention

Since most major plants of Central Glass are located in areas designated according to the "Act on the Prevention of Disaster in Petroleum Industrial Complexes and other Petroleum Facilities", each plant has established a full-scale security and disaster prevention system under the guidance of the authorities concerned with the environment, security, and disaster prevention.

We implement regular disaster drills, such as fire extinguishing, report and call-out as countermeasures against supposed emergencies such as earthquakes, fire or explosion.

We enhance our employee's awareness of disaster prevention through not only office-scale disaster drills in accordance with the job nature and annual plan each office makes, but also through workplace-scale drills and joint drills with local fire

stations as well.



Practicing treatment of gas leakage during disaster drill with Ube Central fire station (at Ube Plant)

### Logistics Safety

If the accident occurs at the time of transporting chemical substances, it might cause tremendous damage and inconvenience to people in the neighborhood and clients.

Central Glass implements periodical training and education not only for its employees but also employees in the workplaces to which we consign transporting in order to prevent accidents in transportation and to minimize the damage if accident occurs. For transportation of chemical substances such as toxic

materials, we prepared an emergency contact card in line with the Logistics Safety Guidelines, to limit the extent of the damage in case of accidents and mandate drivers of relevant vehicle to carry the card. On the card, the measures to be taken and contents to be reported are clarified so that person concerning transportation or person from the fire station or the police station can take an appropriate and prompt action at the occurrence of accident in transportation.

### Occupational Safety and Health

Central Glass Group promotes occupational safety and health activities in all workplaces, including affiliates, based on the understanding that assurance of safety, security and environmental protection serves as the foundation of all business activities.

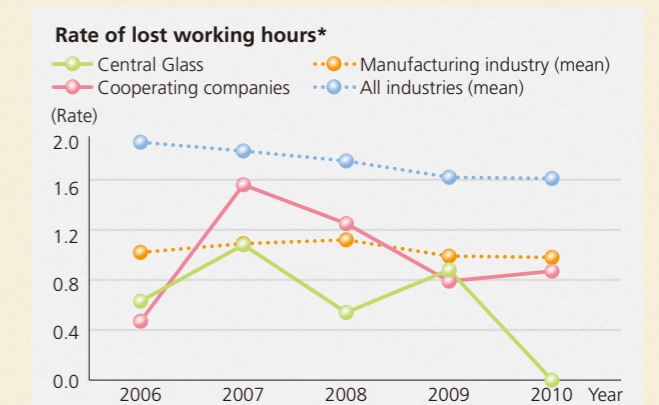
During 2010, by means of a summer-time accident-prevention campaign or by issuing a white paper on "Occupational Accident" we called attention to safety measures. Furthermore, we presented safety operation awards to particularly safe operations to further motivate the awareness of occupational safety.

(Kawasaki Plant and Sakai Mfg. Site in Matsusaka Plant received safety operation awards in 2010.)

As the graph shows, the rate of lost working hours at Central Glass achieved 0.0 (0.8 in 2009), marking the best results achieved in recent ten years.

Occupational accidents at Central Glass tend to be fairly similar.

We therefore consider it important to continue expanding activities where employees can learn from the collected case examples of accidents.



Rate of lost working hours = (Number of deaths and injuries / Total work hours) x 1,000,000  
 (\*Incidence of occupational accidents associated with lost working hours per one million working hours)



### ● Participation in RC (Responsible Care) Regional Dialogue Workshop

Every year, four chemical companies located in the Ube district hold a regional dialogue workshop known as the “Ube District Regional Dialogue Workshop.” This year’s workshop was held in February at the Ube Chemical Factory of Ube Industries, Ltd., and 62 people participated, including representatives from NPOs and local citizens from the district. As part of the introduction by Ube Industries, Ltd., the participants were taken on a bus tour of the Ube Chemical Factory premises. At the subsequent general plenary meeting, the four participating companies presented their company profiles and described their efforts to protect the environment. The participants were later divided into two groups and exchanged opinions on (1) odor

annoyance and (2) factories and community renovation. Both groups engaged in spirited debate on each subject, thus making this dialogue workshop a very productive one.

We intend to continue communicating with the people in our communities, in order to hear their opinions and to assure them that we are operating in the safest and the most secure manner as much as possible.



Scene from the general plenary meeting

### ● Central Glass International Architectural Design Competition

Since 1966, Central Glass has been hosting the idea competition for architectural design. Since the 10th competition in 1975, applications have been widely accepted from all over the world, and the event is now known as the “Central Glass International Architectural Design Competition.”

A number of local leading architects—who are qualified to be called authorities in the Japanese architectural field—serve as judges in the competition. A large number of applications have been received from students aspiring to become architects, and designers and architects already working actively in business fields, such as design offices and design divisions at construction firms. The competition is firmly established under the name of “Gla-Con” (short for Competition hosted by Glass).

The theme of the 45th Competition in 2010 was “Housing for Better Urban Environments,” and there were a total of 527 applications (339 from Japan and 188 from overseas).

The theme of the 46th Competition in 2011 is “Glass Architecture in 2050.” This year, an open screening event was also held on September 28th, 2011 in cooperation with UIA (The International Union of Architects) World Congress 2011 Tokyo, with screening results to be announced in *New Architecture* in December 2011 and in Volume 84 of the quarterly journal *JA*. And as in the past, prize-winning works

are also published on our Web site.

We believe it is very significant that Central Glass, as an enterprise supporting architectural culture, offers opportunities to motivate people to ponder about what the ideal society and environment look like today. Through this design competition, we encourage visionary thinking that combines the pursuit of economic efficiency and rationality simultaneously, along with preserving the natural environment and conserving historical and traditional culture. We are proud to have been continuously hosting this design competition for such a long time beyond severe environmental changes and challenges around us.



Secondary examination scenery

**The chief judge:** Riken Yamamoto (Riken Yamamoto & FIELDSHOP)  
**Judges:** Masaru Okamoto (Kume Sekkei), Kiyoshi Sakurai (Nikken Sekkei), Taro Ashihara (Taro Ashihara Architects), Hiroshi Naito (Naito Architect & Associates), Kengo Kuma (Kengo Kuma and Associates)  
 (Titles omitted, in random order)

#### Support Activities & Mutual Aid

Donation to Central Community Chest of Japan for the Great East Japan Earthquake victims (Voluntary donation from management executives and employees of Central Glass Group Approx. ¥ 3.51 mil)	¥ 50 mil
Assistance grant funding to Peoples' HOPE Japan for supporting Pediatric Cardiovascular Surgery Program (Thailand)	¥ 2 mil
Contributions to Yamaguchi Prefecture for supporting National Sports Festival	¥ 10 mil
Contributions to The International Union of Architects for the 24 <sup>th</sup> World Congress of Architecture (Tokyo, 2011)	¥ 2 mil

### ● Overseas afforestation volunteer activities (Philippines)

As part of our social contribution activities, we conducted volunteer afforestation activities at overseas locations in October 2010. The activities were hosted by JEC, the umbrella organization of our labor union. From Japan, 11 people, participated in tree-planting activities in Luzon in the Philippines.

In Luzon, flooding, soil erosion or other disasters is attacking one after the other due to forest destruction caused by illegal commercial logging, posing threats to the livelihood of local farmers and causing problems relating to the preservation of diversities of life. We collaborated with local staff in planting trees or farming. We woke up at 6:30 a.m. every morning, left the hotel, visited schools at several locations, and planted nursery trees with scoops in our hands together with students. We were received with an enthusiastic welcome from related

people and students everywhere we visited. We then physically felt that our various volunteer activities so far had been well received by the local people.

During activities of this visit, we confirmed that the trees we had planted in previous year were growing steadily and we keenly felt the importance of continuing such volunteer activities, even though they are inconspicuous.



Tree-planting with students

### ● Activities for making firebreaks for the mountain-burning event at Akiyoshidai

Ube Branch of Central Glass' labor union actively engages in various volunteer activities in collaboration with neighboring communities. As one of these activities, we participate as a “grass mowing volunteer” to make firebreaks (organized by Japanese Trade Union Confederation (RENGO) Yamaguchi) every year. The firebreaks are intended to prevent fire from spreading during the mountain-burning event held at Akiyoshidai, one of the sight-seeing spots in Yamaguchi Prefecture.

Before the traditional mountain-burning event at Akiyoshidai, people gather to mow grass over an area of 5 - 10 meters in width and 17 kilometers in length to prevent the fire from spreading to the trees. Mine City, in which Akiyoshidai is located, has been seeing in recent years the decrease and

aging of its population. In response to a request for help from the city, this volunteer activity was started as a solution to manpower shortage and our union has participated in the event over the last seven years as of the fall in 2010. Every year some 400 volunteers—mainly people working in Yamaguchi Prefecture—take part in this activity, fighting against head-high grass with a sickle or mowing machine in their hands, with sweat on their foreheads. They cooperate to protect Akiyoshidai's beautiful natural environment.



Grass mowing before mountain-burning event

### ● Charity Store at Flea Market

The Central Glass Labor Union Head Office is opening a store at a flea market as a charity volunteer. Thus, we would like to kindly ask our employees to contribute any daily necessities and similar items that they no longer use at home or at the workplace, sell those items at our store booth at the flea market venue at Shinagawa Intercity, and then donate the sales proceeds to volunteer organizations or charities as part of our social welfare activities.

This has become an annual event held in early summer. We pull our weight at the hot venue and sell almost all of our items every year.

We sell a wide variety of things, with soaps, detergents, and towels used as summer and year-end gifts being the most popular. We also sell nostalgic antiques from different eras, as

well as unique artifacts and much more. Every year, we have fun with selling from our treasure trove.

The sales proceeds sometimes exceed 50,000 yen, such as in our record year of 2010 when we reached 62,000 yen. Although it is a low-profile effort, we want to continue these activities in the future as a member of the Labor Union and the society, in the belief that even a small contribution will inevitably amount to something great, as long as many people apply their strength in the same direction.



Flea Market scenery

### ● Current support for fostering next-generation and the future...

With the Japanese population continuing to foster fewer and fewer children, it is absolutely imperative for all of us—including companies—to do whatever we can to raise the coming generations of children who will support Japan in the future. The Japanese government enacted related laws and regulations in 2003, and we formulated the third next-generation fostering support action plan to work toward achieving our targets.

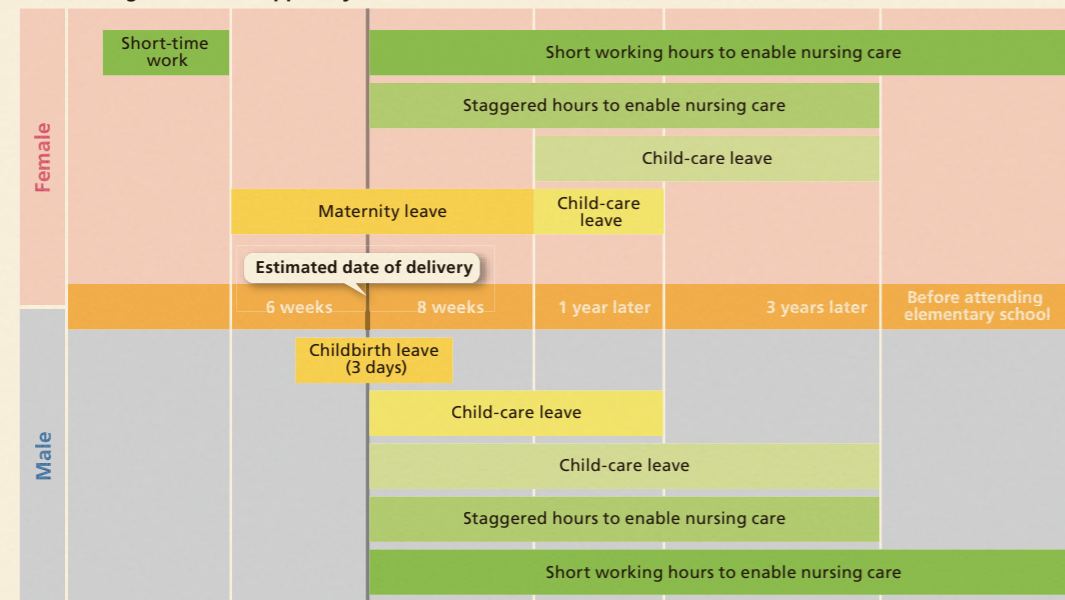
First of all, we are making efforts to ensure that our employees understand the system better and follow the prescribed rules. Secondly, we provide bi-directional information provision/communication tools for employees on maternity leave. By using these tools, the employees can easily return to the workplace, and an environment where employees well understand each other's situation can be established. In other words, we are working to formulate a structure enabling company-wide efforts to support childbirth and nursing care by our employees.

In order to establish an environment that also allows male employees to take active part in child rearing, we try to make our systems easier to use for our employees by widening the range of target child ages and providing opportunities for talking about any issues, so that the workplace can cooperate in child rearing by employees. With these efforts, we promote the formation of a company-wide support system that provides not only the infrastructure but also the environment for child rearing.

As this system spreads, our male employees are using it at a steadily increasing frequency, and use of the system is gradually expanding throughout the entire company.

We consider support for fostering the coming generations of citizens to be a natural responsibility of companies. Allowing our employees to actively participate in child rearing will strike a good balance in a fulfilling work life and help create a climate where employees can enjoy more active lives.

Chart listing birth/child support systems



### ● Employing and fostering diversified human resources

At Central Glass, we consider it an absolutely imperative part of our corporate responsibility to expand the diversity of our human resources. Only by doing so will we be able to remain a dynamic organization that can respond to our customer's needs and contribute to society during these times of advancing



Analysis work (Matsusaka plant)

globalization. We actively make use of female employees and employees of all ages, and work on the employment and cultivation of diverse human resources.

Another important part of our corporate responsibility is to employ the socially vulnerable, and we promote the employment of disabled people. As the population ages and

with fewer babies being born, the Japanese workforce will decrease; thus, employing diverse human resources is also very important to our survival as a company.

We employ women as engineers at production sites, in offices, and at our research laboratories that provide our advanced manufacturing technologies. Moreover, we are working on making our facilities progressively barrier-free.



Example of barrier-free entrance (Matsusaka plant)

While promoting the diversification of human resources, we also actively promote the formulation of a framework where our employees can gain a deeper interpersonal understanding and form circles of friendship and mutual interests, so that our diverse employees can work together as a coherent group.

### ● Introduction of Education System

Central Glass recently established a system for dispatching employees to educational institutions in and outside Japan, in order to foster specialists with sophisticated expertise, in addition to OJT, group training, and other in-house education initiatives. The system enables many people to receive master's degrees (particularly MBA and MOT) every year.

The purpose of the MBA overseas education system is to cultivate high-level executive candidates who can shoulder our

future development. Employees build up high motivation and ambition, and strive to systematically absorb quality business economics, a comprehensive faculty, and the power of ideas in two years. In the MOT education system, we aim to foster experts in both technology and management who can promote strategic research and technological development to commercialization, as well as contribute to improving our corporate value.

# Corporate Outline & Overseas Subsidiaries and Affiliates

## Corporate Outline

<b>Company Name</b>	Central Glass Co., Ltd.
<b>Established</b>	October 10, 1936
<b>Head Office</b>	Kowa-Hitotsubashi Building 7-1, Kanda-nishikicho 3-chome Chiyoda-ku, Tokyo 101-0054, Japan <a href="http://www.cgco.co.jp/">http://www.cgco.co.jp/</a> <a href="http://www.cgco.jp.com/">http://www.cgco.jp.com/</a>
<b>Paid-In Capital</b>	¥18,168 million
<b>Number of Employees</b>	4,174 (consolidated)
<b>Common Shares</b>	Authorized 867,944,000 Issued 214,879,975
<b>Business activities</b>	Manufacture and sale of flat glass, fabricated glass and other glass products; soda, chlorine, organic and inorganic fluorine compounds, fertilizers, high-purity gas, solvents, medical and agricultural products; fiberglass products; and synthetic resins.

<b>Members of the Board</b>	President & CEO Shuichi Sarasawa Senior Executive Managing Officer Keiji Kaneko Executive Managing Officers Tatsuya Mori Hajime Nakai Yoshiyuki Takahara Isamu Kato Takao Ayama Corporate Auditors Yoichi Fujita Ken Tomonari Shin Kawahara Yoshio Ide
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## Overseas Subsidiaries and Affiliates

Carlex Glass Company (U.S.A.)	Tel. +1-423-884-1105	Fax. +1-423-884-1041
Carlex Glass America, LLC (U.S.A.)	Tel. +1-615-350-7500	Fax. +1-615-350-7685
Central Glass America, Inc. (U.S.A.)	Tel. +1-423-884-1105	Fax. +1-423-884-1041
Central Glass International, Inc. (U.S.A.)	Tel. +1-408-573-6909	Fax. +1-408-573-6911
SynQuest Laboratories, Inc. (U.S.A.)	Tel. +1-386-462-0788	Fax. +1-386-462-7097
Northwestern Industries, Inc. (U.S.A.)	Tel. +1-206-285-3140	Fax. +1-206-285-3603
Yue Sheng Industrial Co.,Ltd. (Taiwan)	Tel. +886-37-871-811	Fax. +886-37-874-154
Taiwan Central Glass Co.,Ltd. (Taiwan)	Tel. +886-37-876-586	Fax. +886-37-876-448
Giga Gas & Electronic Materials Company (Taiwan)	Tel. +886-2-2311-6602	Fax. +886-2-2311-6607
Central Glass Trading (Shanghai) Co.,Ltd. (China)	Tel. +86-21-6219-9791	Fax. +86-21-6275-2691
Zhejiang Central Glass Chemspec Company Ltd. (China)	Tel. +86-570-388-8333	Fax. +86-570-388-8333
C&S Energy Materials Co.,Ltd. (China)	Tel. +86-546-839-1256	
Central Glass Europe Limited (U.K.)	Tel. +44-161-406-0888	Fax. +44-161-406-0999
Apollo Scientific Limited (U.K.)	Tel. +44-161-406-0505	Fax. +44-161-406-0506
Central Glass Germany GmbH (Germany)	Tel. +49-5201-6613-0	Fax. +49-5201-6613-118
Thai Central Chemical Public Co.,Ltd. (Thailand)	Tel. +66-2-639-8888	Fax. +66-2-639-8999
Japan Vietnam Fertilizer Company (Vietnam)	Tel. +84-8-6290-5069	Fax. +84-8-6290-5066

### Central Glass Germany GmbH (Germany)



Central Glass Germany GmbH is dedicated to process development, up scaling and production of active ingredients and intermediates for the pharmaceutical and cosmetic industry. We acquired the

facility in Halle-Kunsebeck from Girindus in June 2008 and operate under a EU GMP certificate issued in April 2009 and successfully passed an FDA cGMP systems and pre-approval inspection in June 2009. City Halle is located in the state of Nordrhein-Westfalen (NRW) which state capital is Dusseldorf. NRW is one of the biggest business hubs in Germany but as a young leaf and its fresh green color characterize our home page, we are located in chemical park surrounded by beautiful trees and grass. We adhere to the strictest

environmental standards to make sure that there is no pollution of air, ground and water due to our activities. All exhausts from chemical reactors are scrubbed and the waste water passes a 2-stage waste water treatment plant operating on our site. All other wastes are collected for special external treatment. CGG has special trainings and programs in place to ensure workers safety to avoid recordable incidents. Our target is ZERO recordable incidents. In the circumstances the experienced and highly skilled team of organic chemists and support functions, such as analytical specialists and QA/QC team ensure success of our customers with a wide range of chemical reactions and technologies.

