

# Climate change activities in NSG group

**Shiro Kobayashi**  
**Global sustainability director**  
**NSG (Nippon Sheet Glass co.) Group**

# NSG Business structure



## Architectural

CO<sub>2</sub> emissions  
62 percent

## Automotive

CO<sub>2</sub> emissions  
33 percent

## Technical Glass

CO<sub>2</sub> emissions  
5 percent

VA products and services

Glass for photovoltaics  
Vacuum glazing  
Digital Signage  
Fire protection glass

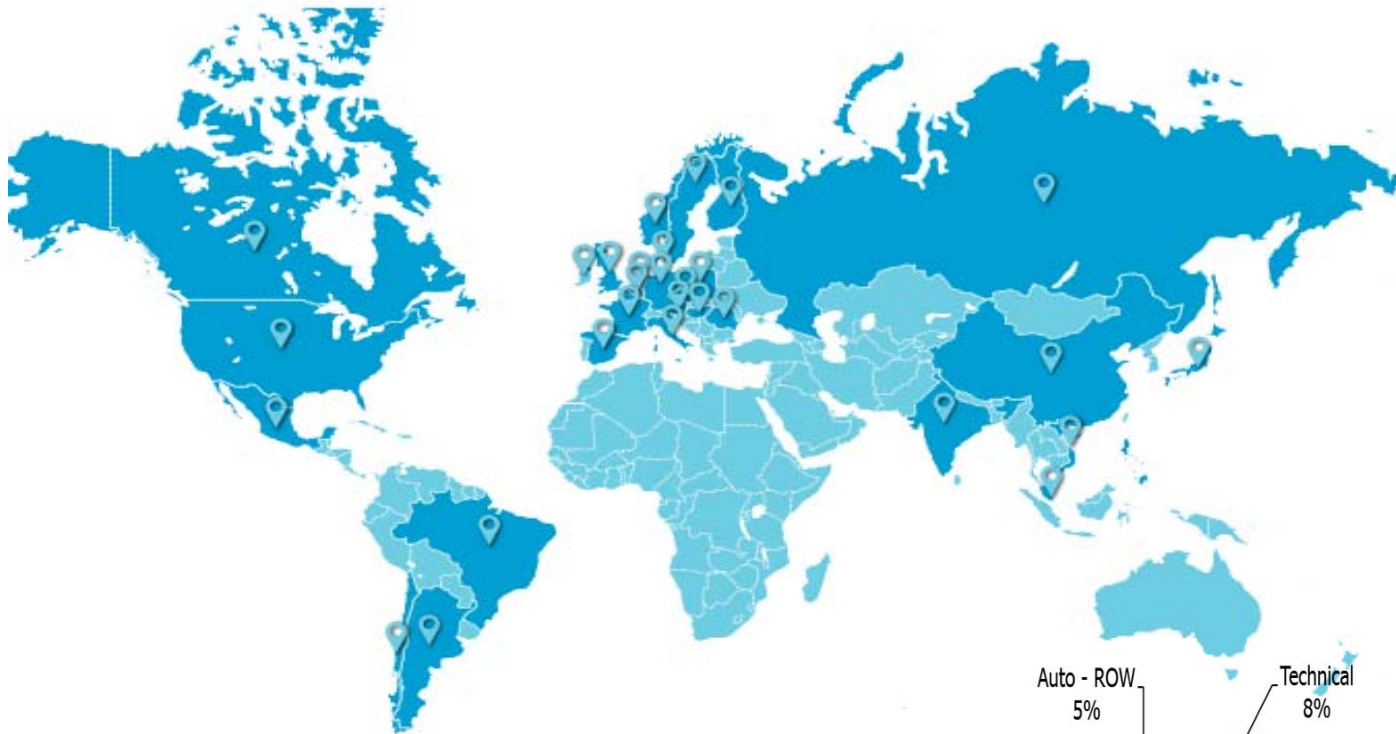
Solar control technology  
HUD and camera systems  
Lightweight glazing  
Aftermarket Glass Replacement

Battery technology  
Engine timing belts  
Anti-corrosion coatings  
Lens for LED print



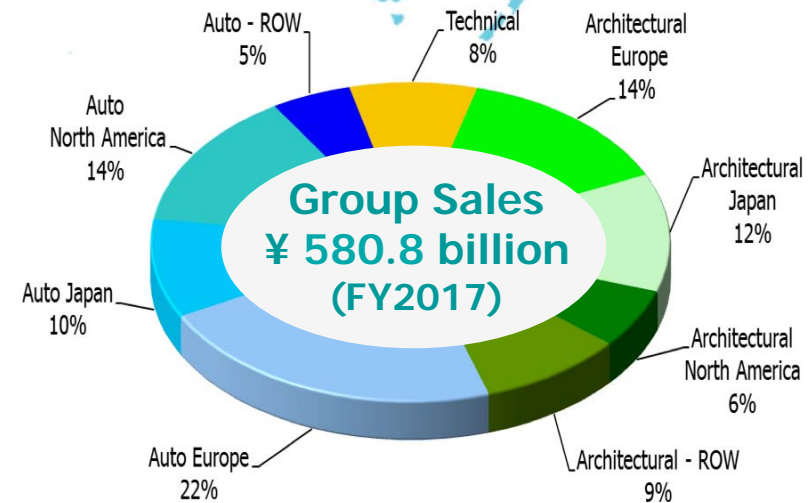
## Social and Environmental Benefits

# Company profile and location map



**Number of employees ... 27,000**  
**Principal operations ... 29 countries**  
**Principal sales ... over 100 countries**

**CO<sub>2</sub> emission -- 4 million tonnes/yr**

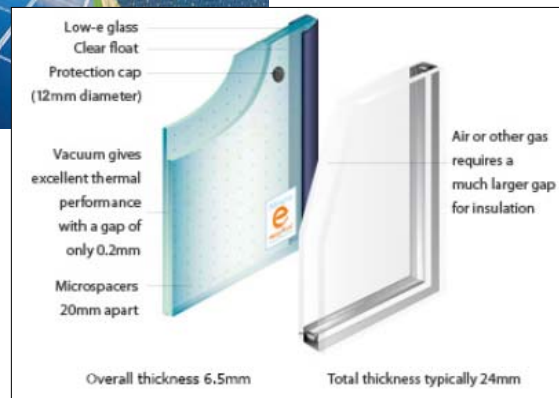


# Our products contribute to energy generation and conservation

## Energy generation / conservation



**Glass for Thin Film Photovoltaic**



**Vacuum glazing glass**  
(for window /refrigerators)

## Solar control glasses



**Solar control**



**Battery Separator**

**Our products are necessary for Decarbonising society**

# Roadmap to reduce CO<sub>2</sub> emissions from our processes

## Time scale

## Action Plans

**Short term**  
(Existing technology)

- **Conventional measures**  
(Fuel switch/inverters/submeters /renewables / oxy fuel/ heat recovery/ training )  
<Target> **Reduce specific CO<sub>2</sub> emission at least 1%/year**

**Medium term**  
(R&D required)

- **Combustion methods**  
(Furnace design and alternative fuels)
- **Raw material**  
(Increase quality of end of life cullet)

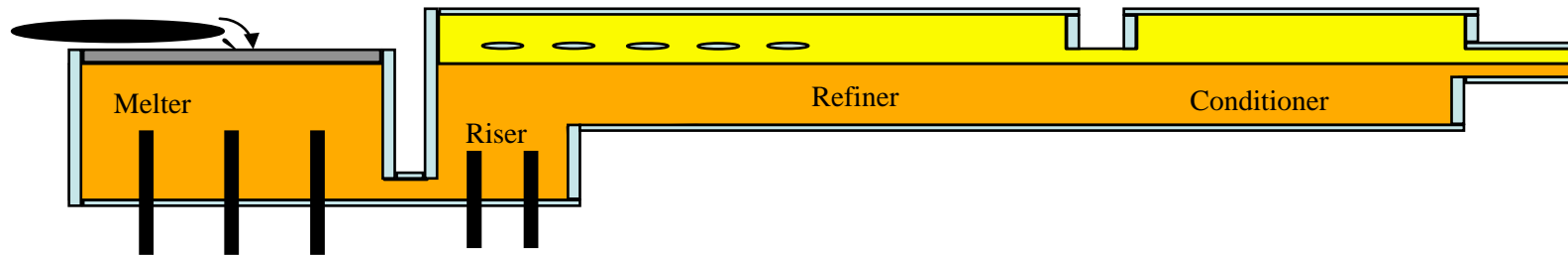
**Long term**  
(Innovative change)

- **CCS /CCU**
- **Electrical melting**

# Float Glass Electric Melter

## Operation

- Float glass electric melting operated in the past  
Electricity more efficient than gas firing by a factor of 2:1



## Technical Barriers

- Scale up Issues
  - Number of electrodes
  - Electrode life/advancement
- Refining
  - Development is required to refine large volumes of glass using only electric heating.

## Economic challenges

- Cost of electricity high and currently still linked to oil/gas price



# Japan-CLP

Japan Climate Leaders' Partnership



## Since 2009.

A network of Japanese companies that aim to create a net zero society, seizing on the idea that low-carbon development is a prerequisite for economic activity.



43  
Members  
as of Sept.  
2017

# To Become Companies Necessary for the Net Zero Society

