

INTRODUCTION

PROFILE

- > Name : Seiji Osugi
- > Birthday : 19th July 1967
- > Date of Joining : 1st Apr 1990
- > Work History : Working on the development of core window and high-performance window as a chief engineer not only in Japan but also global market since joining company.



- Development of the most premium window “ WIDE WIN “ for Japan Market in 2007
- Development of the core high insulation window ” SAMOS “ for Japan Market in 2009
- Development of all series of products for China market since 2010
 “ TA Window “ “ TD window ” “ TE window ”
 and “ TF window ”

ABOUT LIXIL

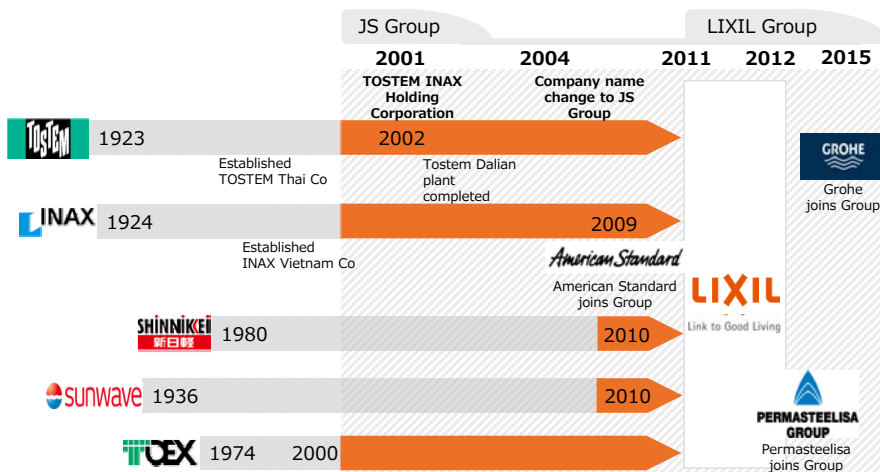
- LIXIL is the most comprehensive and connected global company in the building industry



- Every person on the planet dreams of a better home. LIXIL make that possible with pioneering water and housing products.
- LIXIL is proud that its products touch the lives of more than a billion people every day, but believes it has the potential to still do so much more.

GROUP HISTORY

- Know as LIXIL Group Since 2011, through a merger of 5 companies, LIXIL is positioned as a full service provider of Housing & Building solutions.



LIXIL BUSINESS CATEGORIES

➤ LIXIL is a ¥ 1,668 B business consisting of the following Technology Division



LIXIL Housing Technology

- AL Window / PCV Window
- Entrance Door
- Exterior products
- Wooden products

¥ 535.2 B



LIXIL Water Technology

- Sanitary
- Faucet
- Bathroom
- Exterior / Interior tile

¥ 715.9 B



LIXIL Building Technology

- Curtain wall
- Interior decorating business
- ※ not include PERMA

¥ 107.0 B

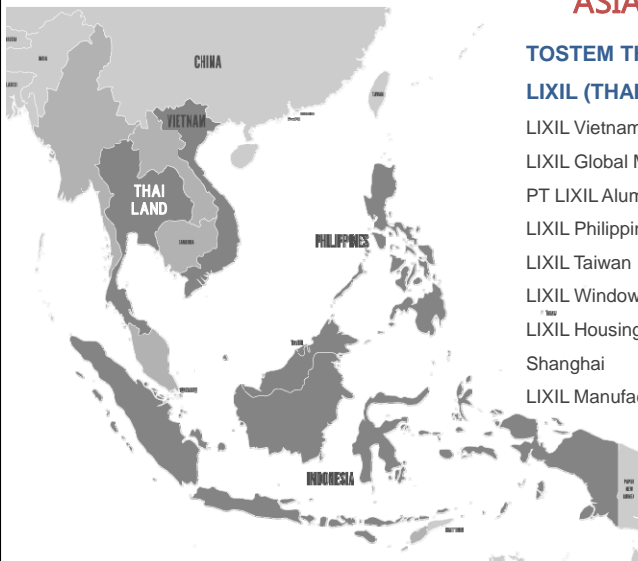


Retail, Housing & Service ,Other

- System Kitchen
- Home Center
- Housing

¥ 345.8 B

OUR LOCATIONS



ASIA -PACIFIC

TOSTEM THAI CO.,LTD.

LIXIL (THAILAND) Public Co.,Ltd.

LIXIL Vietnam Corporation

LIXIL Global Manufacturing Vietnam Co.,Ltd

PT LIXIL Aluminium Indonesia

LIXIL Philippines Ltd. Co.

LIXIL Taiwan

LIXIL Window Systems (INDIA)


LIXIL Housing Products Manufacturing

Shanghai

LIXIL Manufacturing Dalian Cooperation


www.tostem.com

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TOSTEM TIMELINE IN THAILAND

1987




Creative Living
Founded TOSTEM THAI Factory

2007




P7
The luxury-design residential line for specialty or high-end residential properties.

2013






WE Series
Launched WE70 and WE40 to anticipate the inner needs of value-minded consumers and mid-range large scale property developers.

2014



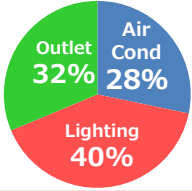
Folding Door
Combining smart design profiles and high quality for both luxury residential and commercial projects.

2015	2016	2017
		
WE-Plus Series Reshape the needs of high rise market.	GIESTA Completing exceptional low rise business.	Exterior Expand exterior business

LIXIL ZEB SOLUTION

Three major energy consumption in buildings

Primary energy consumption of buildings



Energy-saving energy creation methods

2000 MJ/year/m2

natural ventilation
Heat insulation and shielding
natural lighting

500 -600 MJ/year/m2

Photovoltaic power generation
Wind power generation

0 MJ/yr/m2

Energy consumption	Energy Conservation Methods			
Energy consumption of buildings	Air conditioning	Natural ventilation	cross venturi Ventilation using voids Ventilation in a single-sided opening for the room	
		Heat insulation shielding	Airflow Double skin vertical and horizontal fins Insulated Sash	
		Natural lighting	lighting louver lighting duct Task/Ambient Light LED lighting	
	Energy creation	Green Energy	energy creation method	
			Photovoltaic power generation	
			Wind power generation biomass power generation	

Natural ventilation (CFD analysis considering surrounding environment)

It is important to make a plan for natural ventilation.

- Consideration of the surrounding environment of the construction site
- Consideration of Seasonal Wind Direction based on Weather Data
- Consideration of wind speed by building height

Consideration of the surrounding environment of the construction site

Consideration of wind direction from meteorological data

Ambient Temp

Wind Speed

Wind Rose

Consideration of wind speed by building height

Natural ventilation Method

Choosing the right ventilation method can contribute to energy conservation.

Cross ventilation

Supply air from the windward side and exhaust air from the leeward side.

Void type ventilation

Supply air from the exterior wall and exhaust at the top of the void.

Ventilation for room in a single-sided opening

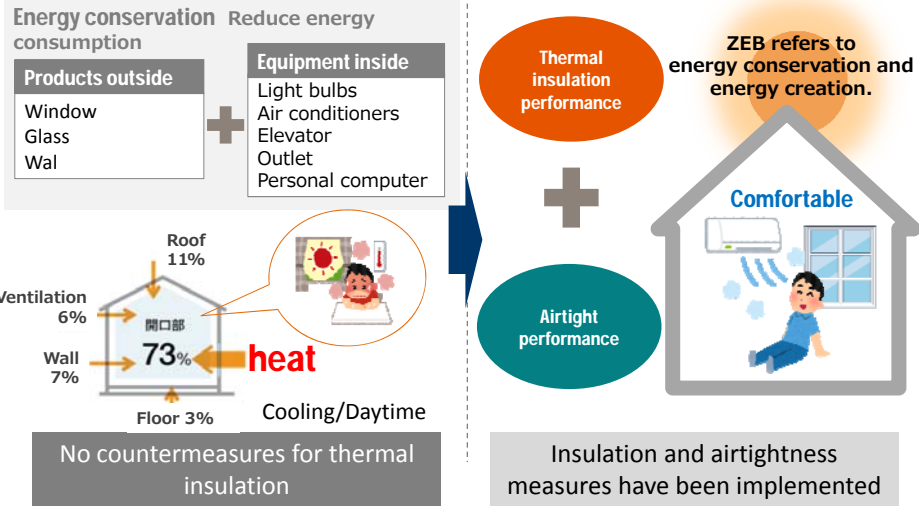
By attaching casement windows with different opening directions top and bottom, guides wind into the room and exhausts it from the other side to the outside.

Hybrid ventilation

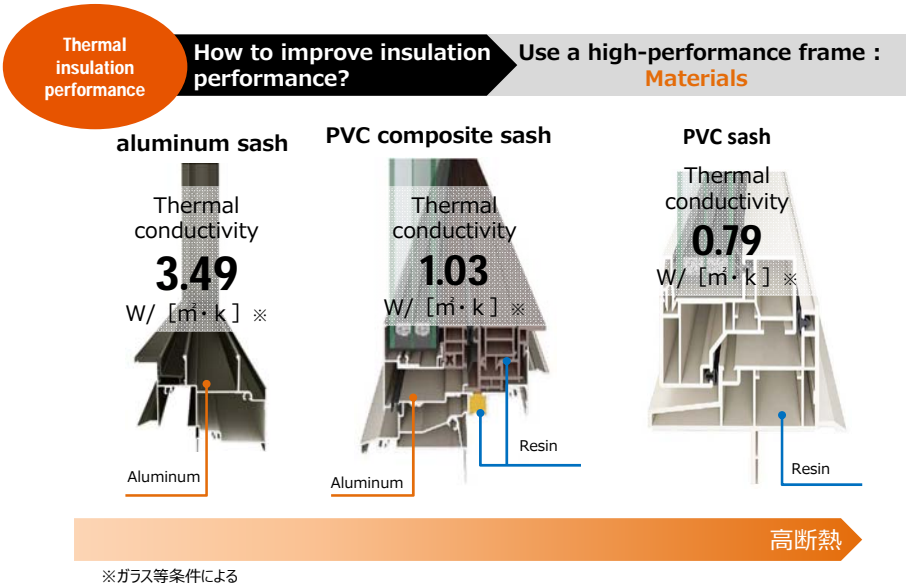
Reducing Air conditioning load by introducing outside Air while operating air conditioning in the room.

To realize ZEB > "windows" are important for energy conservation

Hot air from outside penetrates 73% through the window.
Improving the performance of windows leads to a healthy and comfortable life.



Window to ZEB > Thermal Insulation Performance

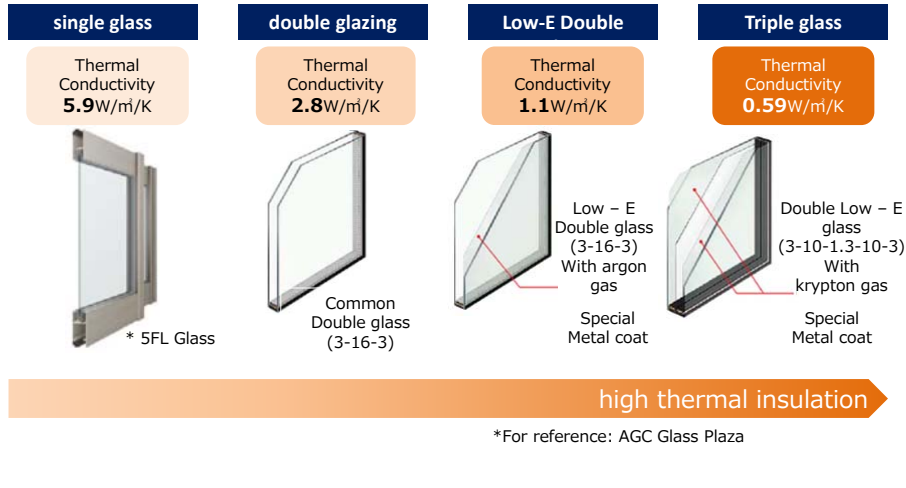


Window to ZEB > Insulation Performance

Thermal insulation performance

How to improve insulation performance?

Use high performance Glass

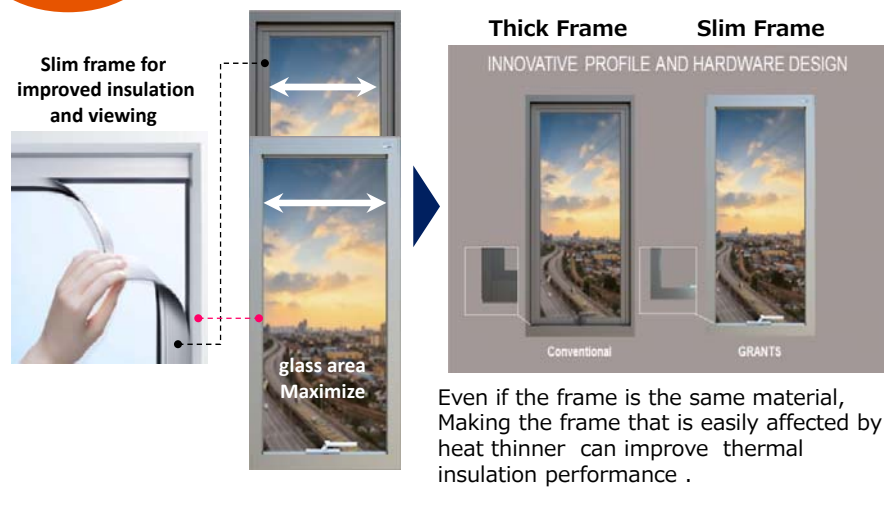


Window to ZEB > Insulation Performance


Thermal insulation performance

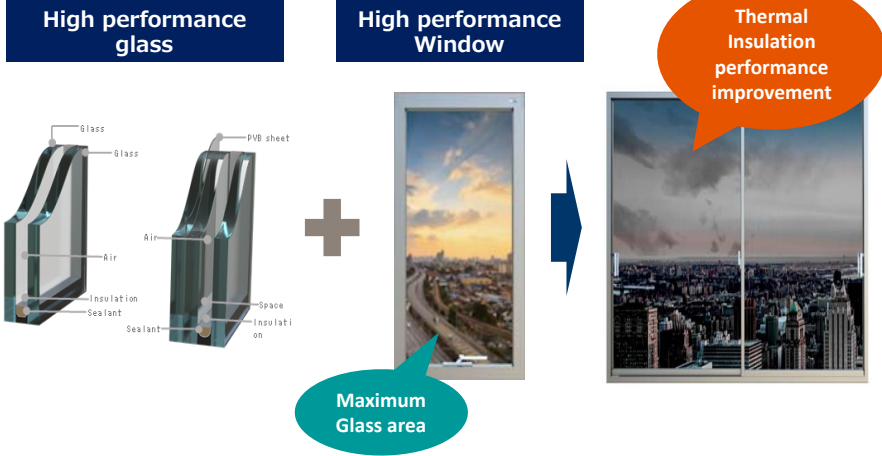
How to improve insulation performance?

Use High-Performance Frames: **Frame Thinner**

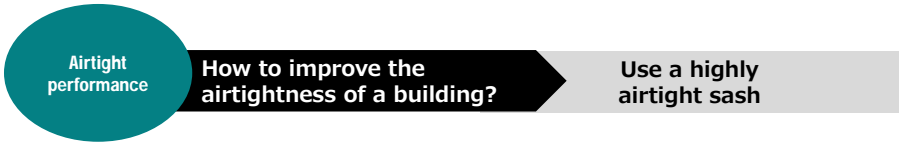


For ZEB realization > Thermal insulation performance

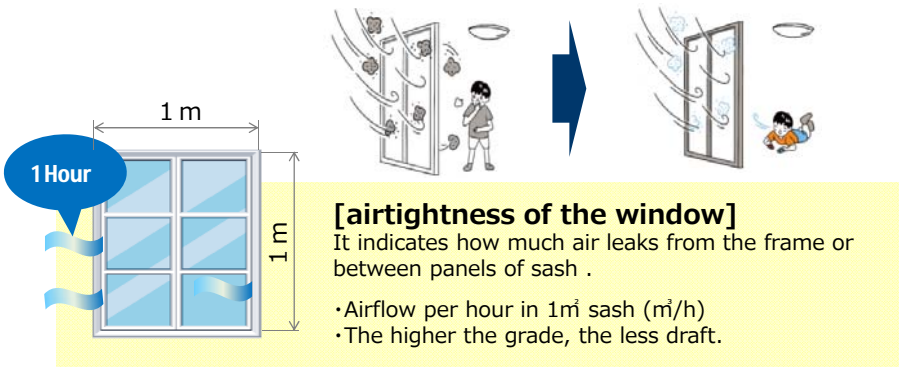
 In summary, the combination of high-performance sash and high-performance glass is the key to improving insulation performance.



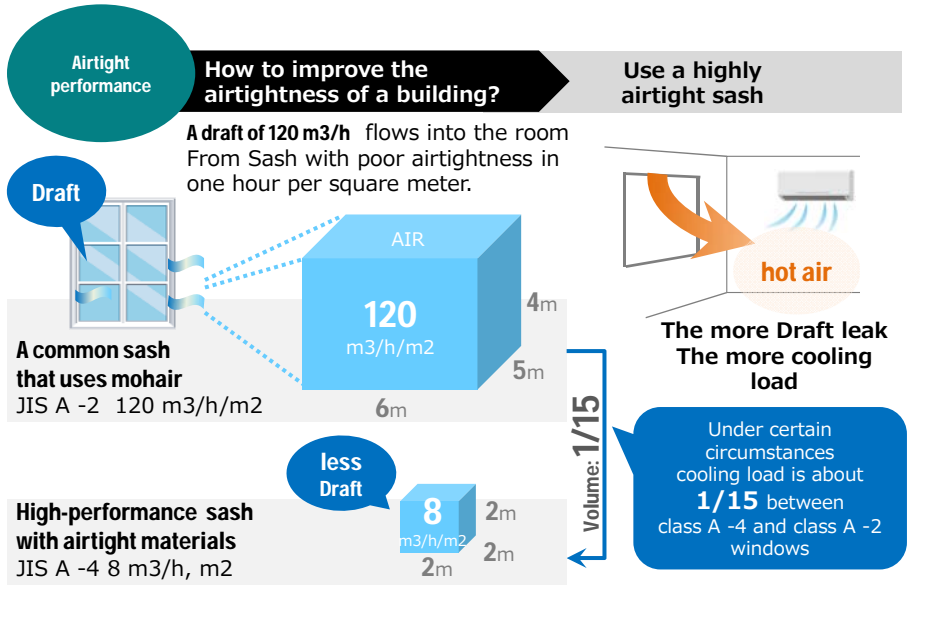
From Window to ZEB > Airtightness



Thermal insulation performance is also improved by enhancing airtightness performance of window while suppressing inflow of cold air and warm air

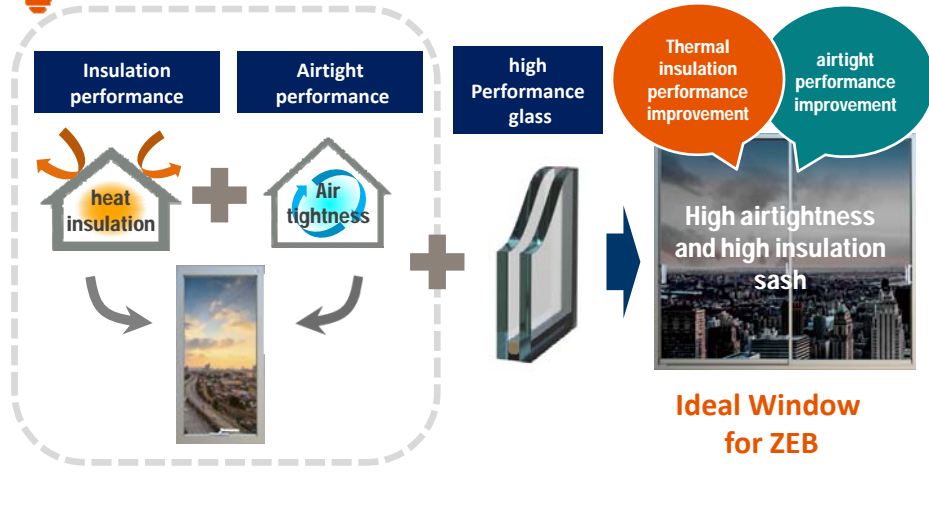


From Window to ZEB > Airtightness



For the realization of ZEB

In summary, in order to save energy, it is important to use a window with high heat insulation and airtightness.






INNOVATIVE PROFILE AND HARDWARE DESIGN



Conventional **GRANTS**

Allow seamless transition between outdoor and indoor
No screw hole or caps appearance.



GRANTS
Innovative Ideas

