



Phase I tower (right)  
and Phase II tower (left)

*The word “hyundai” means “modernity” in Korean. Hyundai refers to a group of companies and related organizations founded in 1947 as a construction firm eventually branching into other market segments. The Hyundai organization eventually became the Hyundai Motor Company.*

**Location:** Seoul, Korea

**Type:** Multi-tower high rise

**Architect:**

Jong Hyun Engineering

**General contractor:**

Hyundai AMCO Corp. - Seoul.

**Glass & Glazing contractor:**

KCC Corporation - Seoul.

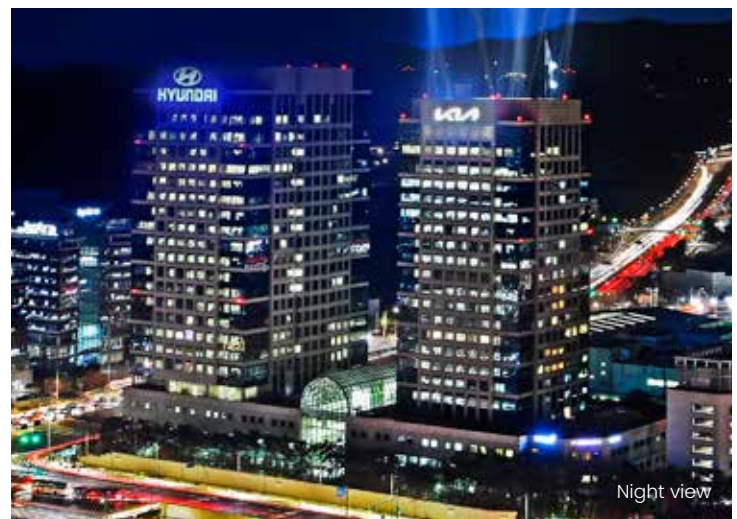
**Window system manufacturer:**

KN Walldex Co. Ltd., Sungham-Si, Kyungki-Do Prov.

**Products used:**

Warm-Light warm-edge spacer, and pour and debridge thermal barrier by AZON - Kalamazoo, MI

**AZON Technology/Machinery:** 



Night view

# Hyundai Motors - KIA World Headquarters

After purchasing Kia Motor in 1998, the Hyundai-Kia Automotive Group was formed as South Korea's largest automobile manufacturer, the second largest automaker in Asia and one of the world's top four automakers.

Phase I of the Hyundai-Kia Automotive Group World Headquarters building project opened in the year 2000. The fenestration products in Phase I consist of clear glass with an aluminum spacer and polyamide aluminum framing.

In 2005, the automotive giant's growth needed additional facilities, and Hyundai began designing an expansion project that would more than double the headquarters' campus. The existing building had 82,344 m<sup>2</sup> and the new building would add 60,856 m<sup>2</sup> of which 21 stories were new construction.

The completed comparison study resulted in a potential heating and cooling savings for the newest Hyundai-Kia Automotive Group tower in excess of \$91,000 annually (chart below). Other benefits with the advanced products included saving non-renewable fossil fuels and a reduction in carbon emissions. Based on the significant energy cost savings potential demonstrated in the study, the improved fenestration system was chosen for the Phase II building project.

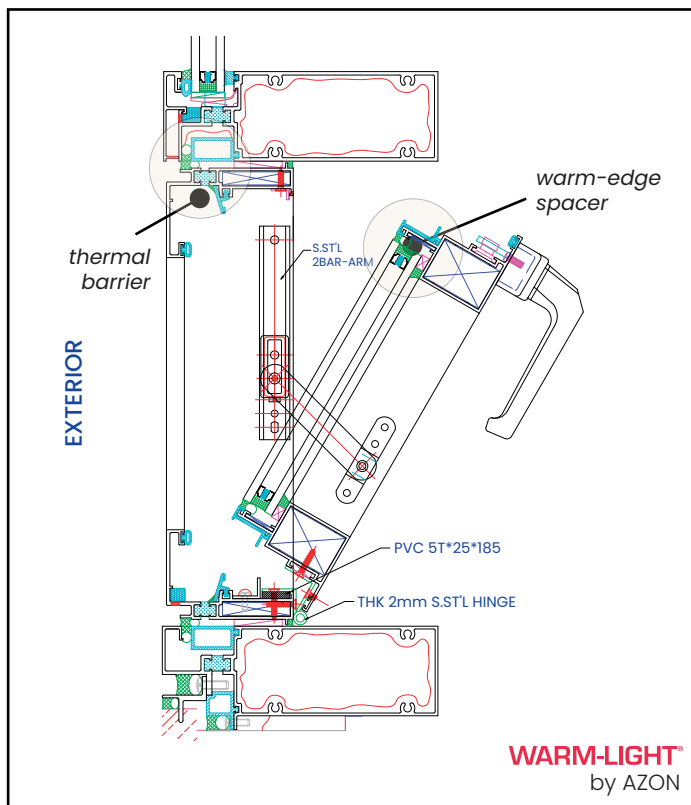
## The action plan

Realizing advanced technology had emerged since the year 2000, the Hyundai Development Company consulted with the Azon AZO/Tec® technical services team to request a study in energy savings for the new Phase II addition. The resulting study compared the old fenestration system to modern, more advanced framing and glazing system components. The insulating glass units in the Phase II tower were to include low-E glass and Warm-Light® by AZON warm-edge spacer. The aluminum framing material would also utilize an Azon polyurethane polymer, the thermal barrier system with the lowest conductivity of any insulant material used for that purpose.

## Energy assessment comparison:

Benefit	Savings
Cost/returns	\$91,000
Energy/fuel	643,500+ kWh
Carbon emissions/ environment	Twenty percent reduction CO <sub>2</sub>
Social	Natural daylighting, greater comfort, healthier indoor air, less absenteeism

Energy use outcomes during a 1-year cycle based on the Hyundai-Kia Automotive Group Phase II building structure as compared to the Phase I when using *more efficient fenestration components* in the façade.



## The fenestration products

Most of the curtain wall products manufactured in Korea are custom made specifically for the individual project. Typically the manufacturer produces different extrusion dies based on performance criteria. Window materials selected for the Hyundai-Kia Automotive Group Phase II were manufactured by KN Walldex Co. Ltd. KCC World, produced the low-E insulating glass with warm-edge spacer at their Yeosu plant.

To aid in verifying the success of the constituent materials used in the curtain wall system\* to mitigate thermal transfer, eliminate air infiltration and to resist condensation, a mock-up of the final product was tested for air, water, structural and thermal performance. (\*Shown as a project-in ventilating window and curtain wall frame in image on the left)

## Sources and Photo Credits

<https://www.kianewscenter.com/gallery/corporate-footage>  
(main pl, bottom pl)

AZO/Tec®

Chart and frame cross cut drawing (top right p2, bottom left p2)

