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**Hyundai Motor and Kia Showcase Innovative Temperature Control Technologies to Enhance Comfort and Efficiency**

* Hyundai Motor and Kia unveil three new temperature control technologies designed to enhance passenger comfort and energy efficiency in vehicles
* Nano Cooling Film lowers interior temperature by over 12°C to significantly improve in-vehicle conditions and reduce cabin cooling requirements
* Radiant Heating System provides quick, energy-efficient warmth to passengers, enhancing comfort during cold weather while extending vehicle driving range
* Metal-Coated Heated Glass uses world-first 48V tech for fast and energy-efficient window defrosting to improve visibility and therefore safety

**SEOUL, August 23, 2024** **–** Hyundai Motor Company and Kia Corporation unveiled three technologies designed to closely regulate vehicle interior temperature to deliver enhanced passenger comfort and energy efficiency at ‘Heat Tech Day’ in Seoul, South Korea.

The event showcased Hyundai Motor and Kia’s research and development achievements in temperature control, a crucial aspect of passenger comfort. As vehicles evolve beyond simple transportation and become living spaces, the companies are developing various temperature control technologies to meet the evolving needs for comfort in mobility.

These technologies not only improve comfort but also save energy, allowing efficient management of vehicle energy in the era of electrification. The three technologies unveiled were:

* **Nano Cooling Film** – this material significantly lowers interior temperature in hot weather when applied to vehicle glass.
* **Radiant Heating System** – quickly and efficiently raises the perceived temperature around passengers in cold weather.
* **Metal-Coated Heated Glass** – a world-first 48V system quickly transmits heat from the electrically powered metal coating to the glass, removing frost and moisture.

All three technologies are at the level of technological maturity suitable for mass production.

“The three technologies unveiled today are closer to customers than any other technology,” said Young Ho Jung, Vice President and Head of Thermal Energy Total Development Group at Hyundai Motor Company. “We are developing technologies to provide the most pleasant environment, considering every moment that customers experience in mobility.”

**Nano Cooling Film: reduces temperature by up to 12°C**

In July 2023, Hyundai Motor and Kia showcased various advanced nano-material technologies – particularly Nano Cooling Film, which can significantly lower a vehicle’s interior temperature.

During testing, Hyundai Motor and Kia each prepared multiple vehicles, applying Nano Cooling Film to one and leaving the other in its original state. Vehicles with regular glass and not equipped with Nano Cooling Film recorded an interior temperature of 48.5°C, compared with 36.0°C for the vehicles fitted with Nano Cooling Film, demonstrating a maximum temperature reduction of 12.5°C with the advanced technology applied.

Nano Cooling Film not only blocks infra-red radiation from outside the vehicle, like traditional tinting films, but also allows heat to escape from inside the vehicle. It comprises three layers, including two that reflect solar energy and one that emits mid-infrared wavelength.

It can lower interior temperatures by more than 12**°**C and can be used with existing tinting films without further impacting light transmission.

Last April, Hyundai Motor also conducted a campaign called [‘Made Cooler by Hyundai’](https://www.hyundai.com/worldwide/en/newsroom/detail/%E2%80%98Made%20Cooler%20by%20Hyundai%E2%80%99%20Campaign%20Video%20Highlights%20Hyundai%20Motor%E2%80%99s%20Pioneering%20Nano%20Cooling%20Film-0000000786), in which it installed transparent Nano Cooling Film for free on around 70 vehicles in Pakistan, where tinting is legally prohibited. This led to a positive response from residents[[1]](#footnote-2).

In June, [Hyundai Motor and Kia appeared at Cannes Lions 2024](https://www.hyundai.com/worldwide/en/newsroom/detail/Hyundai%20Motor%20Group%20Showcases%20Advanced%20Technology%20and%20Innovative%20Campaign%20at%20Cannes%20Lions%20Festival-0000000785), the world’s largest advertising festival. They were invited as official seminar speakers to introduce their Nano Cooling Film technology and discuss the campaign launched in Pakistan. This marked the first time Hyundai Motor, among car manufacturers, hosted an official technology seminar at the Cannes Lions.

**Underfloor Radiant Heating System warms passengers within minutes**

Hyundai Motor and Kia also showcased the Radiant Heating System, a technology designed to quickly warm passengers during winter.

The Radiant Heating System uses a heating element that emits radiant heat towards passengers’ legs, quickly warming them during cold weather.

Alongside the vehicle’s existing heating system, the Radiant Heating System could conserve up to 17 percent more energy to reach a desired temperature, also saving time to reach this condition; the system delivers warmth to the lower body within three minutes, greatly enhancing passenger comfort.

Combined, the Radiant Heating System is expected to significantly extend the driving range of electric vehicles in winter by reducing energy used for climate control.

The system comprises a high-temperature film-type heating element and a burn prevention system. The heating element, which can reach 110°C, is wrapped in a fabric material that emits infra-red rays and adjusts the heat to a comfortable level. A burn prevention system detects body contact and immediately lowers the temperature, improving safety by eliminating burn risks.

On Kia’s Radiant Heating System-equipped EV9, nine heating panels are installed, including on the steering column base, driver’s door and center console, as well as the passenger door and glove box base.

Hyundai Motor and Kia plan to incorporate the Radiant Heating System in future models.

**Metal-Coated Heated Glass: removes frost and moisture to improve visibility**

The pioneering Metal-Coated Heated Glass system quickly removes frost or moisture from a vehicle windshield during winter, offering improved visibility and increased safety compared with regular tungsten wire heating elements. Metal-Coated Heated Glass is invisible, providing a clear, undistorted view for occupants.

The 48V system can completely defrost the glass surface within five minutes at -18°C, up to four times faster and consuming around 10 percent less energy compared with conventional air-conditioning systems. Additionally, on hot days, the metal coating can passively block at least 60 percent of solar energy, reducing cabin cooling requirement to significantly improve energy efficiency.

Hyundai Motor and Kia have applied for patents for Metal-Coated Heated Glass in major domestic and foreign markets, with plans to implement the technology in future vehicles.

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**About Hyundai Motor Group**

Hyundai Motor Group is a global enterprise that has created a value chain based on mobility, steel and construction as well as logistics, finance, IT and service. With about 250,000 employees worldwide, the Group’s mobility brands include Hyundai, Kia, and Genesis. Armed with creative thinking, cooperative communication and the will to take on any challenges, we strive to create a better future for all.

More information about Hyundai Motor Group can be found at:

<http://www.hyundaimotorgroup.com> or [Newsroom: Media Hub by Hyundai](https://www.hyundai.com/worldwide/en/newsroom), [Kia Global Media Center (kianewscenter.com)](https://www.kianewscenter.com/), [Genesis Newsroom](https://newsroom.genesis.com/)

**Contact:**

Seoyong Choi

Global PR / Hyundai Motor Group

[syc@kia.com](mailto:syc@kia.com)

**About Kia Europe**

Kia Europe is the European sales and manufacturing division of Kia Corporation – a global mobility brand that is creating innovative, pioneering and leading sustainable mobility solutions for consumers, communities and societies around the world. As a Sustainable Mobility Solutions Provider, Kia is spearheading the popularization of electrified and battery electric vehicles and developing a growing range of mobility services, encouraging people around the world to explore the best ways of getting around.

Kia Europe, headquartered in Frankfurt, Germany, employs in total over 5,500 employees from 40 nationalities in 39 markets across Europe and the Caucasus. It also oversees European production at the company’s state-of-the-art facility in Zilina, Slovakia.

Kia’s innovative products continue to attract great acclaim, notably the EV6 battery electric vehicle becoming the first Korean car to be named European Car of the Year in 2022.

Further information can be found here: [www.press.kia.com](https://deu01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.press.kia.com%2F&data=05%7C01%7CPGHuerta%40kia-europe.com%7C02ad41a8d23f4c4839fd08da2f631625%7C815142b99d2f4d9283c365e5740e49aa%7C0%7C0%7C637874399860348373%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=r0GDqWEVa%2FMjWrJFPsvCxJ8Jw5xmm8JJYQE24POw6B4%3D&reserved=0)

**Kia Europe Contact:**

**Pablo González Huerta**

Manager Public Relations & Communications

[pghuerta@kia-europe.com](mailto:pghuerta@kia-europe.com)

1. See related video link: <https://www.youtube.com/watch?v=R9zXGsPBOlg&t=13s> [↑](#footnote-ref-2)