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SPACECOOL in Middle East

– The Latest Cooling Solution without Energy –[i]

Summary	SPACECOOL provides a next-generation passive radiative cooling solution that lowers temperatures without using electricity. By simply being applied, SPACECOOL suppresses temperature rise in buildings and of equipment, reducing air-conditioning loads. The product has contributed to mitigation of power shortages and overheating risks in the UAE at a tennis court. In view of the Cooling Coalition's initiative, the company envisions application of SPACECOOL anytime, anywhere, going beyond this success case.
Reference	Solution case study document

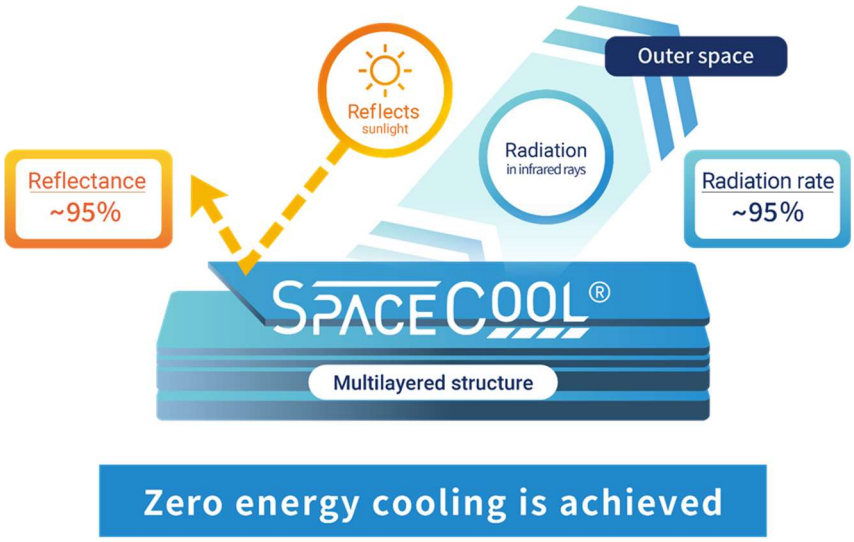
Severe Power Shortages, Heat Stress in Humans and Animals and Objective Overheating Issues

Power shortages, heat stress in humans and animals and objective overheating are threatening both economic growth and quality of life around the world. In hot and humid regions, soaring demand for cooling drives up electricity costs and GHG emissions. In emerging economies, rapid economic growth, population increase, urbanization, and

industrial development often push demand for electricity beyond the pace of infrastructure expansion. Even in developed countries, aging facilities, heatwaves, and variable renewable energy supply contribute to local power stress.
In this context, cooling technologies that require zero energy are gaining attention as a smart, sustainable solution, helping communities adapt to climate change without increasing carbon emissions.

Solutions by SPACECOOL

SPACECOOL INC. has developed an innovative radiative cooling material, “SPACECOOL”, that leverages natural phenomena for sustainable cooling. Reflecting about 95% of sunlight and radiating the heat back into space, it keeps surfaces cool even under direct sunlight, providing zero-energy cooling comparable to air conditioning.
In a study with Ritsumeikan University[ii], applying SPACECOOL to a 10,000 sqm, seven-story building showed up to a 7% reduction in cooling load providing its effectiveness as a sustainable energy-saving solution for modern buildings.



SPACECOOL Radiative Cooling Technology

Implementation Case - Play in Comfort, Even Under the Sun

In 2023, SPACECOOL INC. was approached by the world-renowned luxury resort, Emirates Palace Mandarin Hotel in Abu Dhabi, UAE, to install its innovative passive radiative cooling material, SPACECOOL, on a tent roof covering approximately 3,200 sqm of tennis courts.
The tent roof helps extend the time during the day that tennis can be played by creating a safe and thermally comfortable environment, even under direct sunlight, substantially reducing air conditioning and ventilation load.

Effectiveness

The inside of tents with SPACECOOL-laminated roof material remains significantly cooler even under direct sunlight when compared to those with standard tent fabrics. By leveraging radiative cooling, SPACECOOL successfully lowers surface temperatures and effectively reduces heat gain from solar radiation.
By applying SPACECOOL to the tent roof, we successfully lowered the surface temperature, which had previously risen to 54.3 degrees C during the day, down to 38.5 degrees C, thereby creating a more comfortable environment for playing tennis.
This success case was recently introduced at a panel discussion and workshop with Emirates Palace Mandarin Hotel, at the UAE pavilion of Expo 2025 Osaka Kansai last August, with a live connection to Emirates Palace Mandarin Hotel[iii]. In this session, Mr. SUEMITSU Masahiro, CEO of SPACECOOL INC., also shared insights into how this energy-free cooling technology is being applied and expanded across the Gulf region.

Essentials

While SPACECOOL INC. provides the material itself, local partners play roles of processing and installation. No special skills, however, are needed for those tasks and any company that handles standard tent fabrication can work with SPACECOOL products as well. SPACECOOL INC. provides detailed installation guidance and technical support directly to such partners and customers to ensure optimal results. SPACECOOL INC. also offers a thin adhesive-backed film type, which can be applied without any specialized skills, allowing easy installation by

local teams across various regions.


Left: SPACECOOL Film
Right: Providing Installation Guidance and Technical Support to Local Partners

Cost-effective Solutions Anytime, Anywhere

Implementing SPACECOOL delivers continuous cost savings by reducing electricity consumption. Its radiative cooling technology lowers air-conditioning loads, especially during summer when demand peaks, helping cut annual energy expenses.

Installation is simple: just apply the material. No equipment upgrades or large-scale construction required. This keeps upfront costs low while providing multiple benefits, including energy savings, extended equipment lifespan, and reduced failure risk, making it a highly effective initial investment.

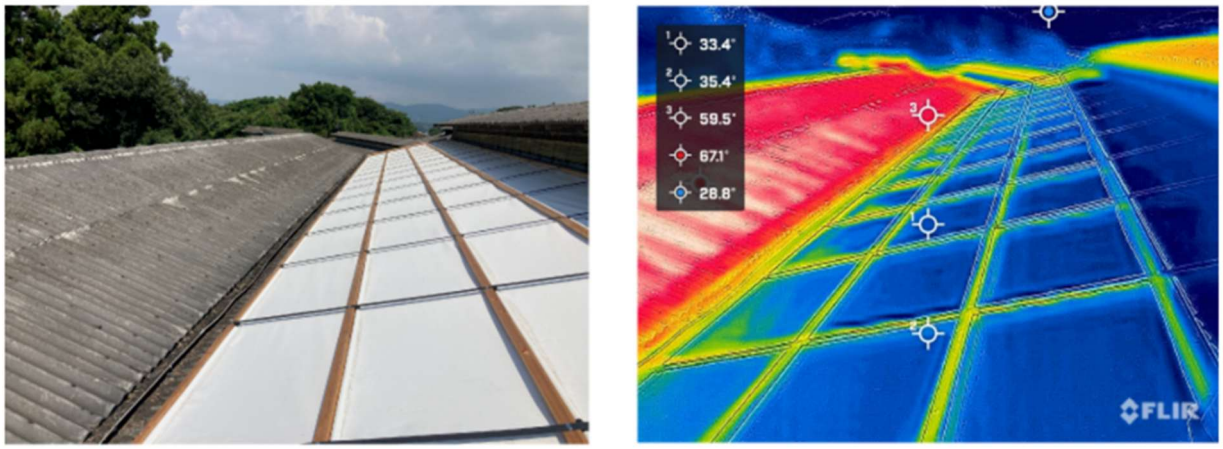
With energy reduction and risk mitigation beginning immediately after installation, SPACECOOL offers strong long-term payback and a high return on investment (ROI).

Additionally, to give an example from another field, SPACECOOL can further enhance productivity in sectors such as livestock farming and manufacturing, enabling improved animal performance and extended operating hours for more efficient production activities by reducing daytime heat stress.

Highlight

SPACECOOL provides a solution for every kind of heat challenge; from off-grid regions and low-power communities to disaster-relief shelters where air-conditioning isn't an option. SPACECOOL can be utilized anywhere in the world where there is sunlight and surface temperatures rise. It offers a universal cooling option that anyone, anywhere can access directly from the ground.

In fact, SPACECOOL goes far beyond CO2 reduction. It cuts air-conditioning loads, protects infrastructure, and supports temperature control in agriculture and livestock. From preventing heat stress and reducing equipment failures to extending the freshness of produce and stabilizing egg production, SPACECOOL solves a wide range of heat-related challenges.



Comparison of Roof Temperatures With and Without Application of SPACECOOL

SPACECOOL INC. offers flexible solutions customized to each location's unique needs through on-site assessments. Even a simple request for "energy savings" can stem from diverse goals—such as advancing decarbonization or reducing operational costs. By thoroughly understanding these underlying objectives, SPACECOOL INC. provides optimal, effective proposals that support practical, sustainable value creation.

Future Outlook

SPACECOOL INC. is a member of the Cooling Coalition[iv], a global initiative aiming to promote sustainable and efficient cooling while reducing emissions from air-conditioning and cooling systems by 2050. The Cool Coalition's mission includes expanding equitable access to cooling, improving the energy efficiency of air-conditioning, advancing passive or low-energy cooling solutions, and reducing the global warming potential (GWP) of refrigerants. To contribute to materializing Cool Coalition's vision of an efficient and equitable cooling society, SPACECOOL offers a practical passive cooling solution that either reduces reliance on air-conditioning or minimizes the need for it altogether, making it a compelling option for sustainable cooling.

Amid rising global temperatures, SPACECOOL envisions significant potential with technological development and further deployment in international markets. Moving forward, our company plans to collaborate with local partners and optimize its product lineup for country-specific climates, accelerating expansion into multiple sectors including construction, infrastructure, livestock agriculture, and logistics.

Contact

Mr. KIJIMA Yuto

info@spacecool.jp

Manager, International Market Development

SPACECOOL INC.

[i] Tennis Court Tent with SPACECOOL Exterior

[i] This article is prepared by SPACECOOL INC. with its permission

[ii] Study on Heat Load Reduction by Radiative Cooling Sheets Installed on Roof Surfaces and Thermal Environment Analysis of Membrane Tents Using CFD Simulation (Information only in Japanese)

[iii] SPACECOOL and Emirates Palace Mandarin Hotel to Jointly Host an Event at the UAE Pavilion at Expo 2025 — Panel Discussion & Workshop on the Future of Comfort
https://spacecool.jp/en/news/20250801/

[iv] Cool Coalition operated by UNEP
https://www.unep.org/topics/cities/cooling-and-heating-cities/cool-coalition