December 2023

Customer Success Story

Chinachem Adopts Trane® Air-Fi® Wireless Innovation & Technology Solution for Enhanced Energy Efficiency and Thermal Comfort in Nina Tower Offices

I. Project Overview

Nina Tower

Chinachem Group has been one of the largest property developers in Hong Kong since the mid-1970s. As a leader in the industry, Chinachem Group is known for its commitment to energy efficiency and occupant comfort in its residential, commercial, and industrial buildings.

In the case of Nina Tower – a world-class twin tower of 89-storey and 42-storey high-rise commercial buildings in Tsuen Wan, Chinachem aimed to reduce environmental impact while providing comfortable and healthy indoor spaces for occupants.

Therefore, Chinachem partnered with **Trane Hong Kong** to apply an innovation & technology solution – Trane® Air-Fi® wireless communication and control to its underfloor air-conditioning system in Nina Tower offices, integrating wireless controls, digitized operation, internet of things strategies, and innovative data analytical approaches across the design, construction, and retro-commissioning phases. This made Chinachem the first leading local developer to implement such an innovative solution.

II. The Challenge

The major challenge of retrofitting Nina Tower was adhering to a tight installation, testing, and retro-commissioning schedule. The previous underfloor cooling system, or so-called floor tile units (FTUs), had several issues to be solved, including the uneven distribution of zone temperatures and inadequate fan speed controls which couldn't satisfy the comfort requirements of the occupants.

Thus, Trane was expected to help Chinachem balance comfort and energy efficiency by installing a total of more than 400 new FTUs (dimensions: 600mm x 600mm) on four floors and adopting a remote, centralized FTU control and monitoring system using innovative technologies.

III. Trane's Solution

The core of Trane's solution is a Tracer® Air-Fi® Wireless System, which utilizes self-healing mesh technology to prevent communication loss and eliminate the risks associated with wired networks. This ensures easier, flexible, and reliable building controls, efficient performance, and cost savings. The system offers twice the signal range and four times the number of potential paths compared with other wireless systems, helping to maintain communication even when signals are obstructed.

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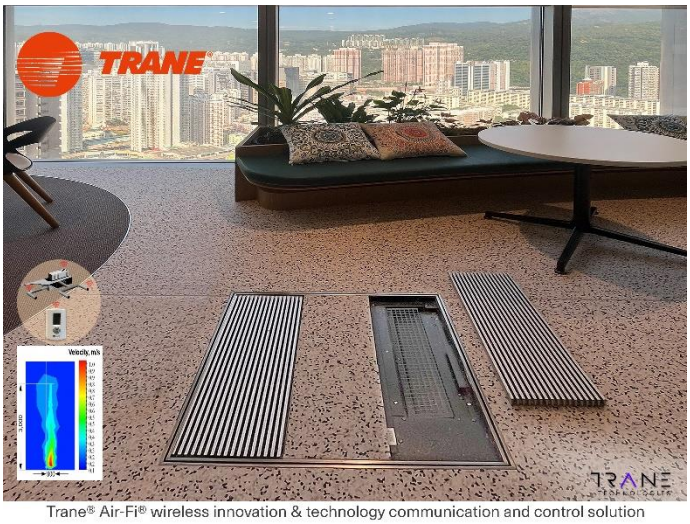
Besides, the new FTUs are equipped with Trane's programmable Tracer® Air-Fi® controllers to provide accurate and optimal supply air temperatures. Real-time data can be collected with Trane's powerful Tracer® SC+ Building Automation System, to meet engineers' daily operation and maintenance needs. Trane also made it easy and hassle-free for engineers to monitor, troubleshoot, and clean the new FTUs, and relocate them in case of renovations in the future.



Trane® Air-Fi® wireless innovation & technology communication and control solution

Furthermore, other innovative technologies adopted by Trane in the project encompassed cutting-edge computational fluid dynamics (CFD) analytical modelling, electronically commutated (EC) fans enabling variable fan speed controls, and precise control of air distribution velocity in compliance with the latest comfort standards to best meet the thermal comfort needs of the occupants.

IV. Key Outcomes

From Strategy to execution, Trane's comprehensive Air-Fi® wireless innovation and technology control solution has successfully helped Chinachem achieve excellent results in energy optimization, system reliability, and thermal comfort, boosting the overall occupant experience with premier indoor environmental quality (IEQ) and worry-free operation. Here are the key indicators:

- **Accelerated Project Delivery**: Installation time reduced by over 50% without wiring
- **Enhanced Energy Efficiency**: Achieved a reduction of 30% in power consumption
- **Excellent Indoor Air Quality (IAQ)**: Certified as "Excellent Class" by the Environmental Protection Department (EPD), meeting their stringent requirements for IAQ ratings
- **Increased Thermal Comfort**: Complied with the ASHRAE Standard 55 for buildings

"We are very impressed by Trane's Air-Fi® Wireless Mesh Network Solution, which has helped us achieve remarkable power-saving effects, and significantly enhanced the air quality and comfort in our Nina Tower offices," said Mr. David Chau, Senior Building Services Manager of Chinachem Group. "With their professionalism and expertise, Trane has also provided us with valuable insights during the project planning stage to successfully optimize our building's overall performance."

Trane has demonstrated a strong commitment to continuous innovation and sustainability in this project, which perfectly aligns with Chinachem's dedication to balancing its three fundamental principles of "People, Prosperity, and Planet". Trane's focus on energy efficiency, mitigating environmental impact, and adopting sustainable practices has played a vital role in fostering a shared vision and solidifying a mutually beneficial win-win partnership between Chinachem and Trane.

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