# iFORCOM Co., Ltd.

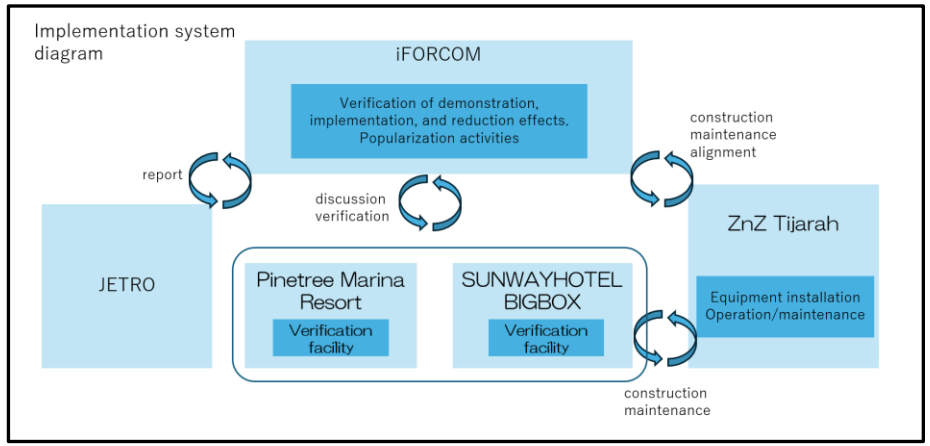
## Pilot Project of Decarbonization Technology to Achieve Carbon Neutrality in Tourist Facilities in Malaysia

### Objective of the project

In Kota Kinabalu, a tourist destination in Malaysia, we introduced and demonstrated decarbonization technologies in hotels, which are expected to increase in number in the future. This project selected two hotels with different air conditioning systems. At PINE TREE Hotel, room air conditioning was controlled online based on demand forecasts, while at SUNWAY Hotel, the chiller was manually controlled considering the facility's load conditions, temperature, and humidity. The results obtained will be utilized to promote further adoption of these technologies.

### Cooperation with local companies/governments

The structure and coordination for this project is as shown in the diagram below.




### Targeted economic/social issues

According to the "Green City Action Plan Kota Kinabalu" (GCAP) compiled by the Asian Development Bank (ADB) in 2019, one of the key challenges related to energy consumption is the high energy usage in commercial facilities. The report states that, as of 2017–2018, commercial facilities in Kota Kinabalu consumed a total of 4,781,776 gigajoules (GJ) of energy, making it the second-largest sector in energy consumption after the urban transportation sector. The commercial facilities sector accounts for approximately 18% of total energy consumption, making it a crucial area to address for the sustainable development of the city.

Additionally, as a major tourist destination in Malaysia, Kota Kinabalu is expected to face a shortage of 1,000 hotel rooms over the next two years due to the increasing number of tourists. This will likely lead to a rise in the number of new hotels and, consequently, an increase in energy demand. The energy consumption challenge is not simply a matter of efficiency in energy use, but should be positioned as an important factor in increasing the economic competitiveness of the entire region and building a sustainable infrastructure. Thus, promoting energy efficiency in commercial facilities is regarded as a key measure. This initiative is expected to facilitate a stable energy supply, contribute to achieving decarbonization goals, and enhance regional economic growth and investment opportunities.

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### Demonstration period

August 2023 – January 2025

### Details of demonstration

This project conducted demonstrations of decarbonization solutions for the following two hotels.
At PINETREE Hotel: an EMS controller was connected to the existing cyclic control system, allowing for online adjustments to the air conditioning schedule. Based on indoor power consumption data, the system operated under an optimized schedule to enhance energy efficiency.
At SUNWAY Hotel: power consumption and room temperature data were utilized to implement demand control for chillers (Eco-Kaizen). In consultation with the hotel, an operation plan was developed considering facility load conditions, temperature, humidity, and chilled water temperature. A system was established for local staff to control the operation of the equipment.
Additionally, we exhibited at CAFEO42 organized by the Malaysia Engineering Association, where we showcased iFORCOM's technology and its implementation at Pine Tree Hotel, directly approaching numerous potential customers. Focusing on Sabah, we promoted technology adoption and new customer acquisition while achieving tangible results in initiating discussions with engineering associations in ASEAN countries.

### Project outcome/ future plans

In this project, a cyclic control device was connected to the outdoor air conditioning unit at PINETREE Hotel, adjusting the control time of the outdoor unit dynamically with AI analysis via an EMS cloud system. At SUNWAY Hotel, chiller operations were optimized based on BEMS data, improving energy management efficiency. As a result, the reduction in electricity costs and CO2 emissions exceeded initial expectations (see table below).
On the other hand, Eco-kaizen, a solution for chiller types, has been facing issues with the high costs associated with providing the solution. It became evident that developing cost-effective mechanisms and technologies is essential to overcome this issue. Addressing this challenge will allow for a broader market expansion of the solution and improved profitability.
Moving forward, we aim to promote the technology across the ASEAN region by leveraging the demonstration results. This will be achieved by expanding partnerships through exhibitions and seminars and advancing the development of AI-driven automated equipment control.

| | PINETREEホテル | SUNWAYホテルBIGBOX |
|---|---|---|
| Control method | cyclic control | Eco-kaizen |
| Control area (target equipment) | Guest room (2 packaged air conditioners) | Entire facility (1 chiller) |
| Reduction amount (forecast) | 85RM/y | 7,320RM/y |
| Reduction amount (actual) | 453RM/y・room | 21,874 RM/y・room |
| Reduction amount (actual results for the entire hotel) | 11,780RM/y | Same as above |
| CO2 reduction amount (forecast) | 0.05ton-CO2/y | 15.8ton-CO2/y |
| CO2 reduction amount (actual) | 0.97（ton-CO2/room・y） | 47ton-CO2/y |
| CO2 reduction amount (actual results for the entire hotel) | 25.4（ton-CO2/y） | Same as above |