PARKROYAL
ON KITCHENER ROAD
SINGAPORE

GBIC2.0 Thematic Challenge Call

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ON KITCHENER ROAD
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PARKROYAL on Kitchener Road is primarily a 4-star hotel located at the heart of Little India. Apart from its hotel operation, it also consists of 1 level of retail shops.

This hotel consists of a 21-storey high building and a basement.

In total, its gross floor area of 37,721 m^2.

Case 1

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Current Situation

The aircon from the lobby and restaurant is being exhausted by the restaurant kitchen exhaust. That, sucking in untreated fresh air through the auto glass door entrance and blowing out cold air out of the building. This creates a warm lobby and a waste of energy. Condensation and mouldiness was also created due to the untreated warm air ingress.

Challenge Statement

To develop solutions to the problem through better air circulation design to counter the negative pressure into the lobby and to be more energy-efficient and adapt energy saving technologies to push boundaries of energy performance

Gaps to be addressed

Significantly improve the energy efficiency of ventilation technologies without compromising thermal comfort, IEQ requirements and occupant satisfaction and comfort

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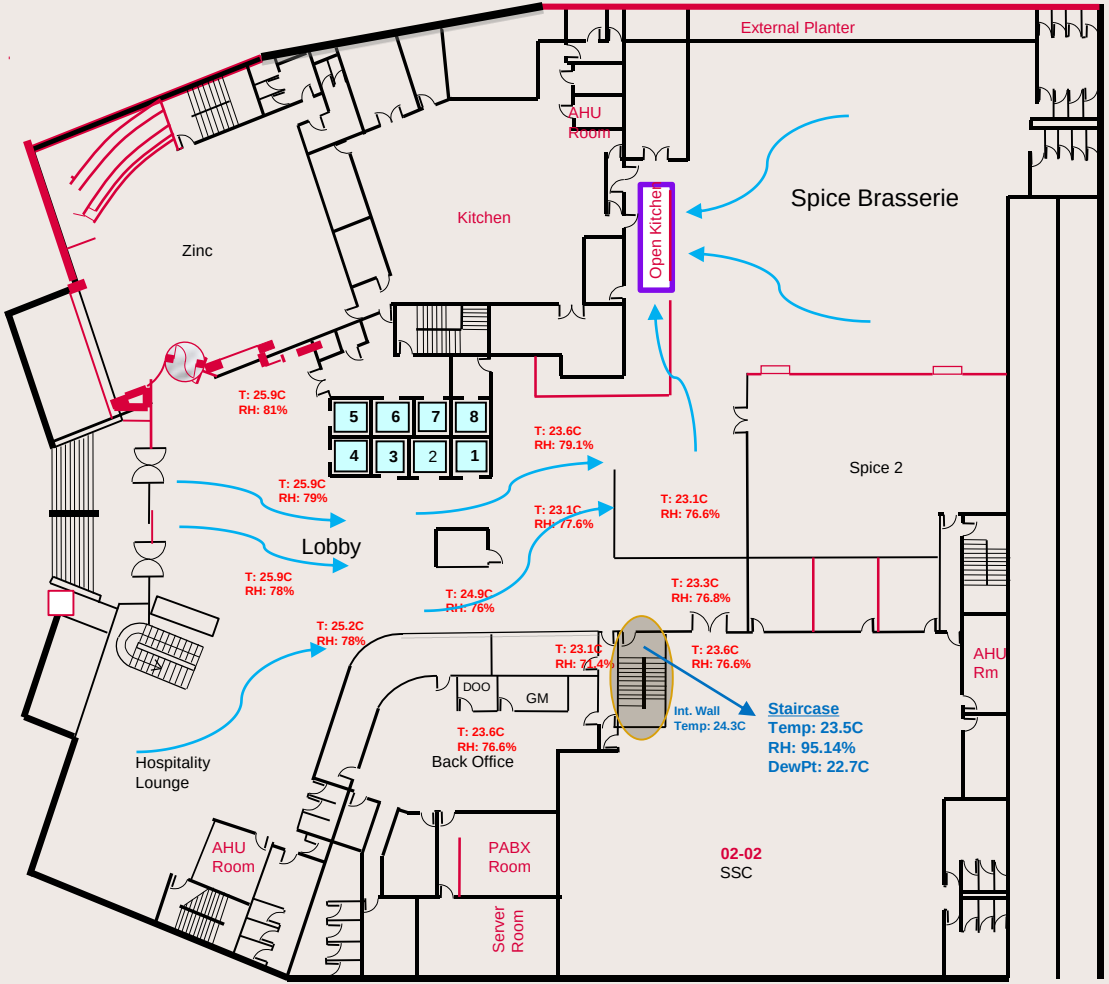
2nd STOREY PLAN



- Balancing Exhaust & Fresh Air
- Bringing down RH to < 65%
- Thermal Comfort

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Case 2

Current Situation

The present heat pump system for hot water production throws out the evaporator air on the roof. This energy can be recovered and be pumped back to the chiller as part of heat recovery.

Challenge Statement

To develop solutions to replace the heat pump system or recover the heat for useful area using environmental friendly refrigerant, in accordance to our ISO 14001 policy, to achieve the best heating & cooling COP using the most efficient equipment to date.

Gaps to be addressed

Significantly improve the energy performance of the building while heating the domestic water without compromising thermal comfort, IEQ requirements and occupant satisfaction and comfort.

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The air to water heat pump system was installed in 2006. That include 5 heat pump units & 2 storage tanks. Hot water circulation pumps (**39 years**) not have not been replaced since the use of boilers, from the beginning of this hotel operation.

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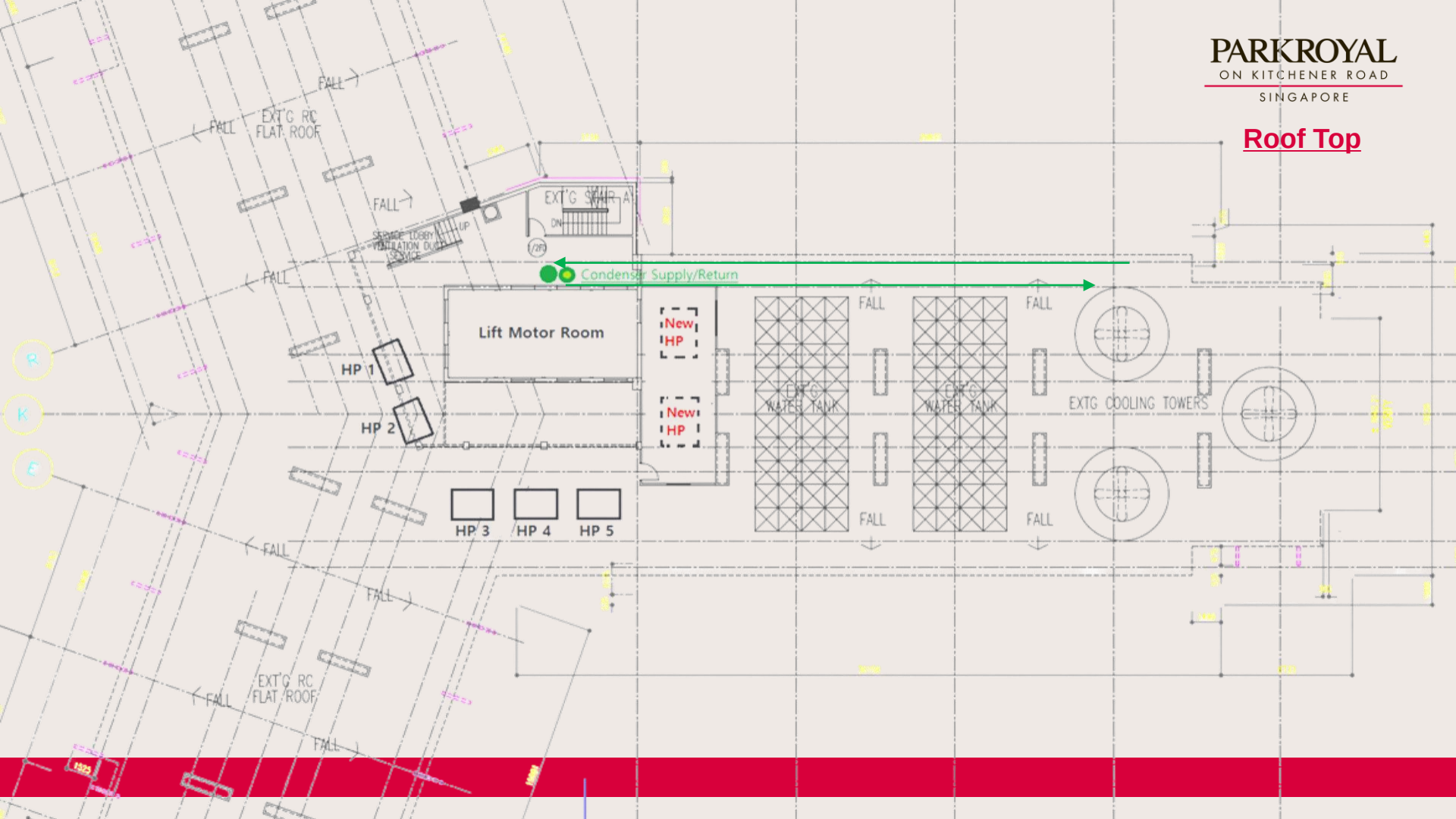
Roof Top



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DEMO Key Areas of Focus for Demo 2023

To convert a 42-yr old building into the most energy efficient hotel through the use of innovative and smart building to achieve 75% energy efficiency. This will include the best-in-class cooling & lighting system, and renewal energy to offset energy consumption. This has to result in lowering monthly OPEX and allow easy maintenance. The hotel is Green Mark Platinum Building since 2014.

- **Installation of Efficient EC Fan & Controller for AHU & PAHU**
- **Installation of Building Management System**
- **Replacement of Chiller x 1 (Improve overall Chiller Efficiency)**
- **Replacement of Heat Pumps (with Heat Recovery)**

- In 2018, our EUI was at 180 kWh/m^2.
- In 2019, EUI was at 173 kWh/m^2.
- In 2020, EUI was at 159.73 kWh/m^2
- In 2023, EUI target < 118 kWh/m^2 per year,
  Green Mark Platinum (Zero Energy) building or Green Mark Super Low Energy standard.

Chiller Plant

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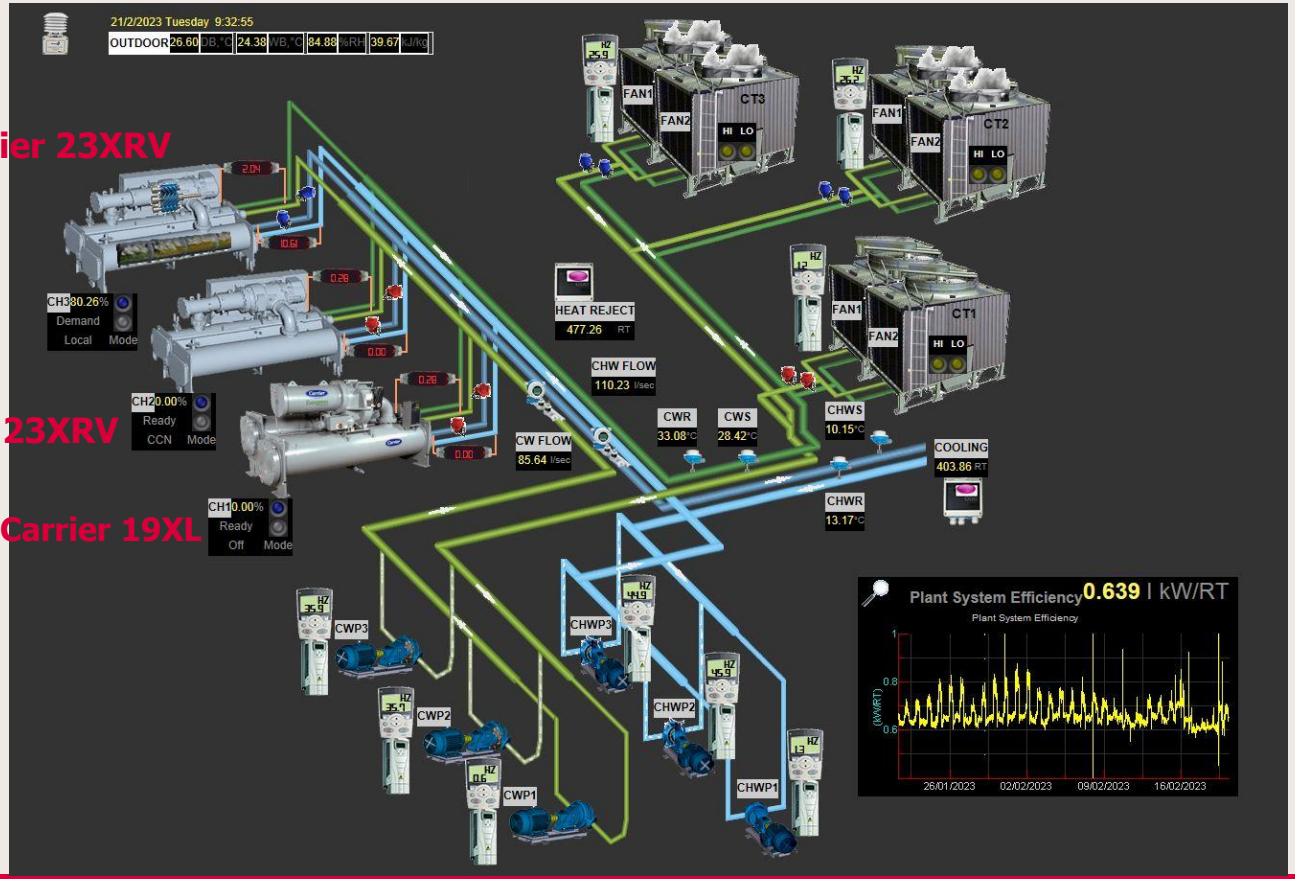
Chiller 3 – Carrier 23XRV

Chiller 2 – Carrier 23XRV

Chiller 1 – Old Carrier 19XL