DESIGNING HIGH-PERFORMANCE HVAC FOR MODERN COASTAL APARTMENTS

MHIAA FDU AND KX MICRO VRF SYSTEMS

Located at 16A and 16B Llandaff Street in Bondi Junction, New South Wales, The Max is a newly constructed build-to-rent boutique residential development designed to deliver contemporary coastal living within one of Sydney's most sought-after suburbs.

Built by Kuatro and developed by Leonard Brenner, the project was constructed following the demolition of previous buildings on the site. The completed development comprises a nine-storey luxury apartment complex featuring approximately thirty residences.

The building includes a mix of one, two and three-bedroom apartments, ranging from garden residences through to premium penthouses, designed to maximise comfort and liveability for residents.

The development spans two basement levels for parking, a ground level, and eight floors of residential apartments, with Level 9 dedicated to a communal rooftop sanctuary offering panoramic views stretching from Botany Bay to the Pacific Ocean. The rooftop space incorporates BBQ areas and family-friendly gathering zones, creating a shared lifestyle hub for residents.

Additional building features include state-of-the-art security systems, lift access and basement parking for approximately thirty vehicles, supporting the development's focus on convenience, safety and high-end residential amenity.

The project's mechanical services were delivered by HVAC Industries, a boutique mechanical contracting company specialising in the design, installation and commissioning of complex HVAC systems for buildings across New South Wales and Victoria.

As a fast-growing contractor, HVAC Industries has built a strong reputation for delivering high-quality mechanical services across both government and private sector projects.

As a new-build project, the development required a climate control solution capable of delivering reliable, discreet and energy-efficient comfort throughout the building, while meeting the expectations of modern apartment living in a coastal environment.

The Challenges

Delivering comfortable indoor environments within a coastal development such as The Max presents a unique set of design considerations.

Located just minutes from the iconic Bondi coastline, the building is regularly exposed to salt-laden sea air, fluctuating coastal temperatures and seasonal humidity. These environmental conditions require HVAC systems capable of maintaining consistent performance and reliability in a demanding marine-adjacent climate.

In addition to environmental considerations, the project also required a solution that could maintain quiet, unobtrusive operation across all residences. In boutique apartment developments where occupants live in close proximity, minimising noise transmission from mechanical systems is essential to preserving the peaceful residential atmosphere expected in premium apartments.

Flexibility was also a key requirement. With a variety of apartment layouts across the building - from single-bedroom apartments through to expansive penthouses - the HVAC design needed to accommodate different floor plans and conditioning loads, while still providing residents with intuitive control over their indoor comfort.

Another design consideration was the implementation of zoning solutions within individual apartments, allowing residents to independently control different areas including living rooms and bedrooms.

The MHIAA Solution

To meet the project's performance and design requirements, HVAC Industries worked closely with Mitsubishi Heavy Industries Air-Conditioners Australia (MHIAA) to design and install a tailored air conditioning solution across the development.

Across the building, a total of 38 indoor units and 34 outdoor units were installed to deliver efficient and reliable climate control.

Apartments were equipped with ducted air-conditioning systems from the FDU and FDUT series, paired with the appropriate outdoor units to suit the system configuration. Most apartments utilised FDU series indoor units connected to FDCA outdoor units in a one-to-one configuration, providing a dedicated ducted system for each residence.

In the three-bedroom penthouses, a combination of FDU and slim-profile FDUT indoor units were connected to KX Micro VRF outdoor units, with FDU systems serving the living areas and the ultra-low-profile FDUT series serving the

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bedrooms. RC-EXZ3A controllers were installed in each zone, providing occupants with greater flexibility and control.

These systems were selected to provide discreet, whole-apartment climate control through concealed ductwork and ceiling diffusers, maintaining a clean interior aesthetic while delivering consistent airflow throughout each residence.

To further enhance comfort and energy efficiency, ducted zoning systems were implemented within the building's two-bedroom apartments. A total of 14 MH-4ZRM zoning modules were integrated into the system design, allowing residents to independently control living and bedroom areas, providing greater flexibility and personalised comfort throughout.

Residents interact with the systems through Eco-touch remote controllers, with 38 RC-EXZ3A controllers installed across the development. Larger apartments, including the penthouses, were equipped with multiple controllers to provide convenient control across multiple areas of the residence.

In addition to the residential apartments, dedicated ducted systems were installed to serve essential building infrastructure areas including the communications room and switch room, ensuring stable operating conditions for critical equipment.

All outdoor units were installed on the building rooftop, providing a centralised location that supports efficient system operation while preserving the architectural design of the residential levels.

The high performance KX Micro outdoor units include Blue Fin corrosion protection,, a specially formulated multi-layer coating designed to protect the heat exchanger from salt, moisture and harsh environmental conditions. This added protection helps extend system lifespan, preserve efficiency and ensure reliable performance -particularly important given the development's proximity to the Bondi coastline.

Throughout the project, MHIAA's technical support and service teams worked closely with HVAC Industries, providing guidance during system design, zoning configuration and commissioning. This collaborative approach helped ensure the final installation delivered reliable performance and optimal comfort across the entire building.

The result is a climate control solution that supports the development's premium residential offering - delivering quiet operation, flexible control and dependable comfort for residents enjoying life in Sydney's iconic eastern suburbs.

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