

CASE STUDY

ACOUSTIC LOUVERS FOR CAR PARK SUPPLY FANS IN RAS AL KHAIMAH RESORT

THE BACKGROUND

A luxury resort in Ras Al Khaimah, UAE partnered with Kinetics Acoustics Technical Services (KATS) to address excessive noise generated by its car park supply fans. KATS was entrusted to implement acoustic solutions that would effectively reduce sound levels and help maintain a peaceful and comfortable atmosphere for both guests and staff across the property.

THE CHALLENGE

The resort invited KATS for an acoustic noise control mitigation solution for the entire basement and valet

level of the resort's car park, which includes 11 fan rooms. The ground floor fan rooms reach 90 dB based on a source room analysis done, a level considered disruptive and potentially exceeding typical regulatory targets for building basements, where recommended limits often range from 65 to 75 dB(A) to protect both staff and guests from excessive noise exposure. This challenge is heightened by the luxury standards of the resort, the need to maintain a comfortable environment for visitors and staff, and the technical complexity of mitigating noise from multiple high-capacity ventilation systems within a large, enclosed space.

AT A GLANCE

LOCATION	Ras Al Khaimah, UAE
KINETICS GROUP SOLUTIONS	Acoustic Louvers
TURNAROUND DAYS	8-10 Weeks from Inception to Delivery

THE SOLUTION

On-Site Inspection and Site Measurements

The Kinetics Acoustics Technical Services (KATS) team conducted a comprehensive site visit to evaluate the physical layout and orientation of the fan systems, room configurations and airflow directions, and potential breakout noise zones.

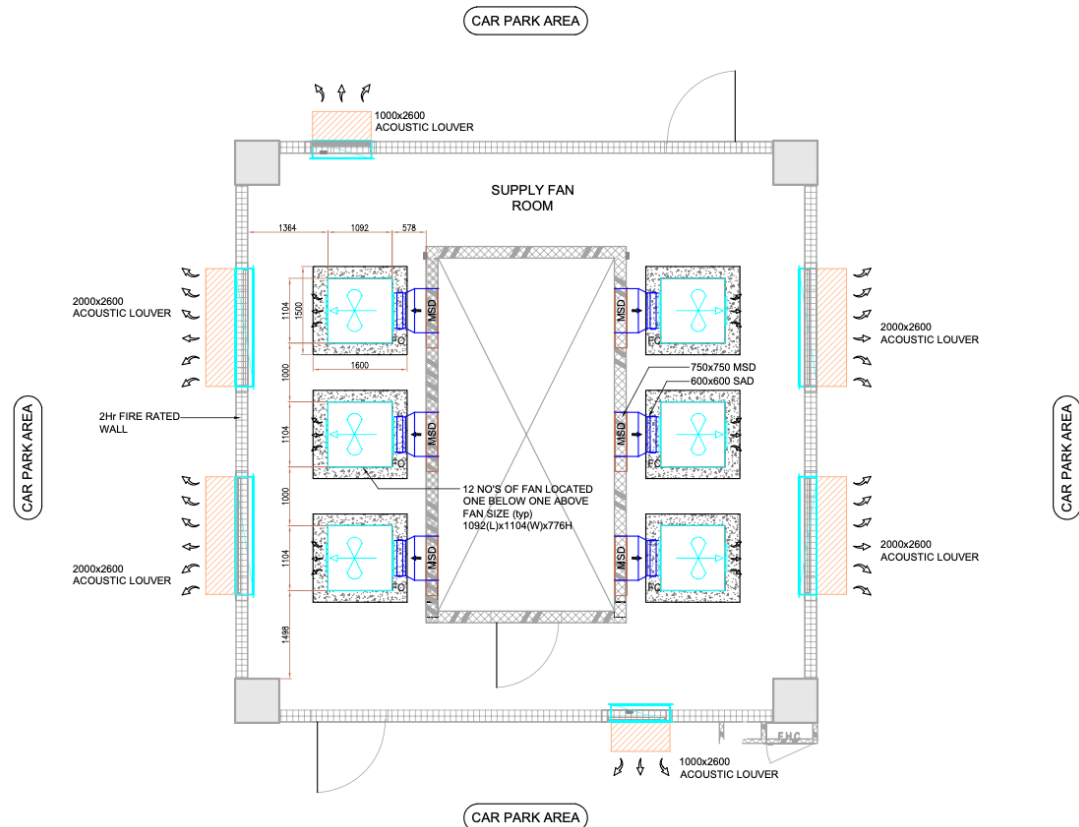
Part of the site inspection was also collection of site measurements that are considered necessary for the acoustics analysis.

Acoustics Analysis

KATS is using the KNC Acoustic Analysis Software (USA-developed), where we modelled our acoustic louvers to determine the required specifications like thickness, velocity and pressure drop. This also includes predicted insertion losses and system pressure performance.

Acoustics Solution

Based on the acoustic analysis and performance requirements, we designed and installed high-efficiency acoustic louvers for each of the 11 fan rooms.



**Car Park Supply Fan
Arrangement for Basement 02, 01 & Valet 2**

These were selected to ensure:

- Maximum face velocity not exceeding 5 m/s
- Optimized free area and minimal pressure drop
- Adequate insertion loss for noise control during both normal and emergency ventilation operation

Based on the analysis, it is also recommended to use double bank acoustic louvers, to provide enhanced sound attenuation while allowing airflow through ventilation systems, building façades, mechanical rooms, or ventilation openings. These louvers are ideal for noise-sensitive applications where single bank solutions are insufficient.

Acoustic Louver Fabrication

Following the completion of the acoustic technical assessment and requirements, the acoustic louvers designed for each room were fabricated at Kinetics Metal Construction Industries in Umm Al Quwain, UAE. A total of 84 double bank acoustic louvers with a depth of 300 mm were successfully delivered, serving 11 fan rooms. The louver sizes for this project were determined based on available wall space and required airflow rates, ensuring that each fan room was acoustically treated without compromising ventilation performance.



Fabricated 300mm Depth Double Bank Acoustic Louvers

THE RESULTS

The installed acoustic louvers achieved a significant reduction in noise breakout to the surrounding environment, specifically the car park—from 90 dB without treatment to 60 dB after the installation of double bank acoustic louvers. This solution also complied with the project-specific acoustic performance criteria while maintaining airflow efficiency.



Installed 300mm Depth Double Bank Acoustic Louvers