PARKLANE

HI-RISE RESIDENTIAL CONDOMINIUM

Air Cooled Chiller Noise Control

A plenum silencer and acoustic barrier mitigate noise from an air cooled chiller

The condominium's air-cooled rooftop chiller was emanating significant noise emissions, resulting in complaints from neighboring buildings and action imposed by the city's by-law department. The acoustical consultant assigned to the project conducted extensive testing and determined that sound levels from the unit would need to be lowered to 53 decibels from 71 to comply with local noise ordinances.

The Project Facility
A high-rise condominium tower in downtown Toronto

The Noise Source
Air Cooled Chiller

The Solution
Baffled Plenum Silencer for Exhaust Fans

Acoustic Barrier for Compressor and Intake Noise

Project Team

Property Management Firm
Acoustic Consultant

Reason for Mitigation

Provincial Ordinance; sound levels at residential receptors above permitted levels (NPC 205/300)

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Existing Site Image

The Challenge

The noise abatement solution would need to effectively integrate to the equipment and the surrounding building structure without impeding the function, capacity or operation of either. This included attenuation of the top–mounted condensing fans, side inlets, and compressors.

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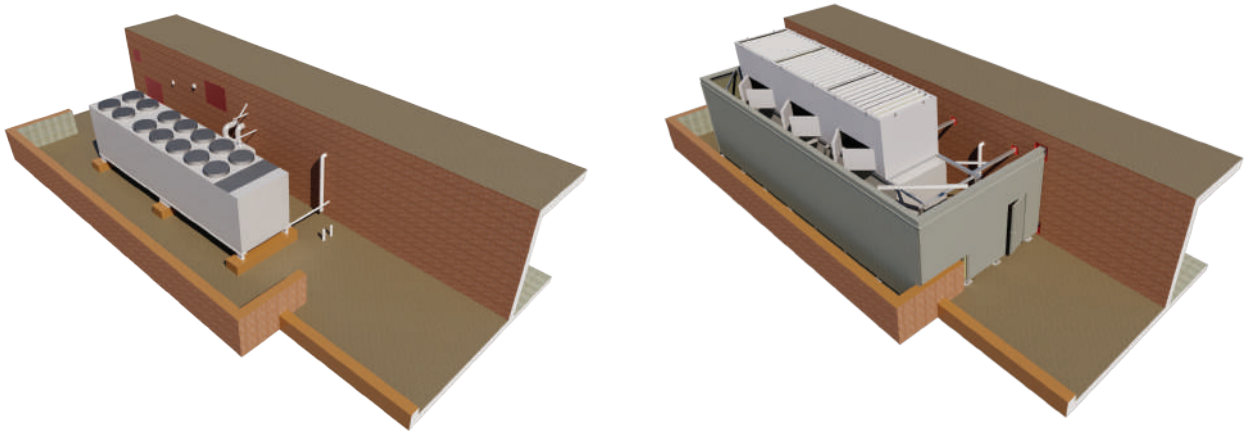
The Solution



To achieve the required attenuation, the solution included a plenum silencer at the top of the chiller with maintenance door access for its fan components, along with a perimeter acoustic barrier wall to shield the lower–level compressors.

To avoid sound reflection from one side of the chiller, we installed perforated, galvanized steel acoustic panels to absorb the remaining sound. Given the building's proximity to Lake Ontario, significant wind loads would also need to be taken into account. The uniquely designed structural array made effective use of the strongest parts of the building structure to avoid any intrusive enhancements.

To address architectural concerns, pre-finished materials for both the silencer and sound wall were carefully selected to blend into the façade of the structure. Limited on-site crane time was crucial to control both disruptions to local traffic, as well as minimizing the overall cost of the project, while the entire assembly was designed in a factory-assembled, modular fashion to reduce the need for on-site fabrication.

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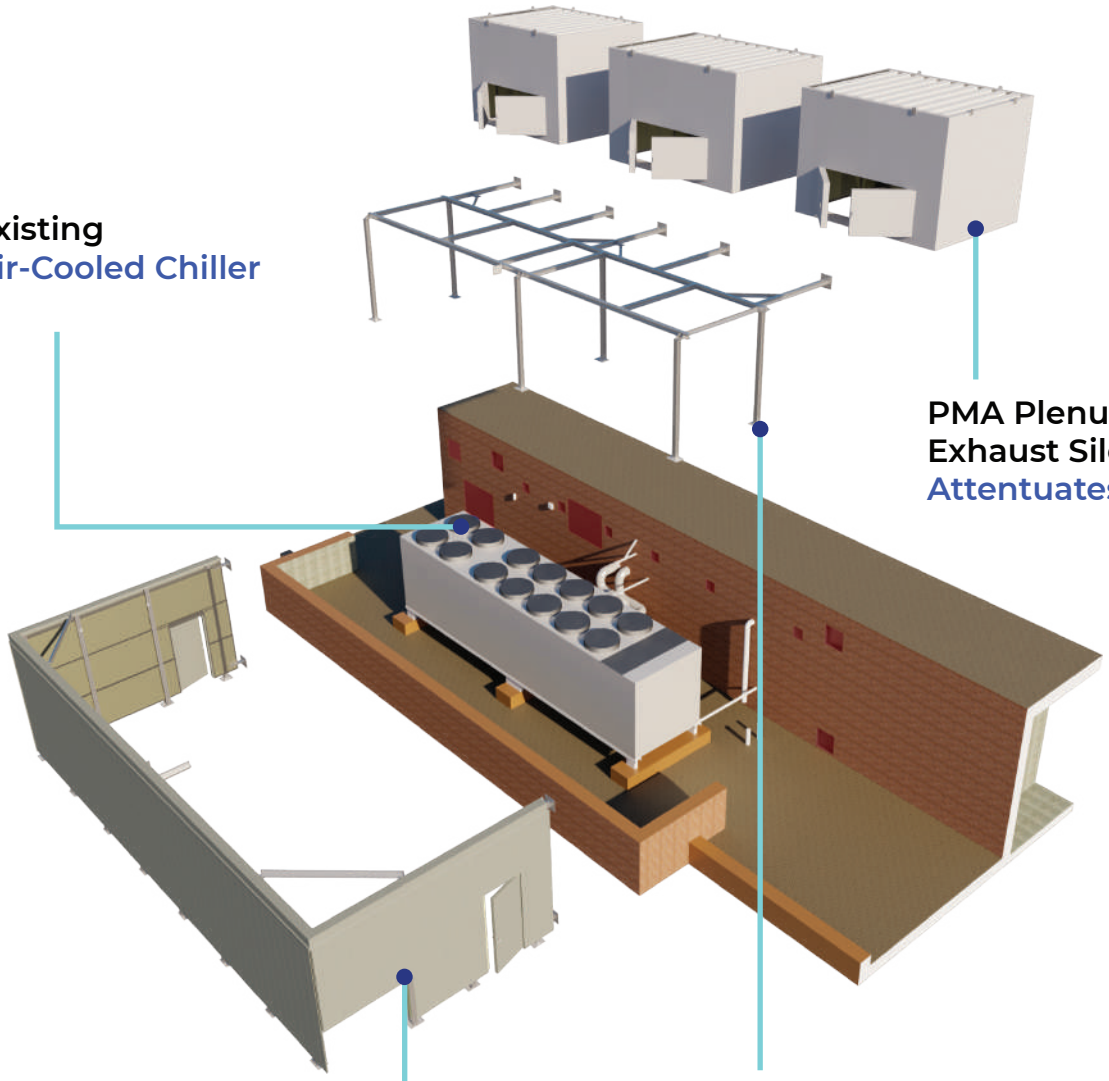
Existing
Air-Cooled Chiller
PMA Plenum
Exhaust Silencer
Attentuates fan noise
Silencer Support Framing
Transfer loads to roof structure
PMA 'AcoustaMod'
Rooftop Barrier
Attentuates Intake and
Compressor Noise

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The Result

The design and installation process was completed within the projected timelines. HVAC operations within the condominium were not disrupted during the course of the project. Most importantly, a post-installation audit performed by the acoustic consultant confirmed that the Parklane-supplied sound attenuation system effectively reduced noise levels to within municipal and provincial ordinances.

Designed Performance

		Frequency (Hz)							
Acoustic Equipment	**Unit**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Plenum Silencer insertion Loss	dB	10	15	22	37	50	51	48	28
Pressure Drop (in.wg)	**0.10**								

Noise Control Simplified

We're dedicated to your success. Whether working with industry, acoustic engineers and consultants, or contractors, we're committed to providing effective solutions to noise and vibration challenges—no matter the size or scope.

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