

Telstra Exchange Building Project Melbourne Australia

Exhaust Control Industries

Air and noise pollution control specialists

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ECI worked with Telstra to achieve reductions in noise and exhaust pollution at their flagship exchange building in Melbourne, Australia. ECI designed, engineered, manufactured and installed a complex range of product solutions and provided auditing and project management expertise.

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AUSTRALIA



Background

The Telstra Exchange Building, located in the heart of Melbourne's CBD, is the country's most important telephone exchange, providing continuous service to important clientele.

To safeguard the continual, uninterrupted operation of the Telstra Exchange Building, five MTU Detroit diesel generators take over immediately from any interruption to the mains power supply. Noise and pollution emissions from the diesel generators were significantly higher than the Victorian Environmental Protection Authority's Noise Policy for Noise Emissions from commercial plant and equipment. High-rise residential apartments recently constructed next door to the Exchange impacted on the permissible levels of noise and exhaust pollution.

ECI were commissioned by Transfield Services on behalf of Telstra to conduct an engineering audit, with the goal of attaining acoustic compliance and reducing noise and diesel exhaust emissions at the Telstra Exchange Building.

Challenges

Given the number of noise sources close to the Exchange (such as city traffic), analysing the acoustic issues was a complex process. In addition, the many different noise frequencies all required very different approaches to solve the respective noise issues.

The noise level reduction required was significant - when all five generators were running at full load, the noise generated was 28dB(A) above EPA standards!

ECI's recommended solutions would need to effectively negotiate the vast labyrinth of existing equipment and services from electrical cabling, stormwater pipe work, air handling equipment etc. Silencers and attenuators needed to be custom-designed and retrofitted into very compact spaces, some with significant accessibility issues.

Solutions

REDUCING NOISE POLLUTION

ECI identified and dealt with five noise sources to achieve maximum noise reduction within the constraints of the project:

- ECI's Super Critical SCS/A-450SP External Exhaust Silencers were fitted to each of the Telstra Exchange's five diesel generators. In addition, five custom Predator Diesel Particulate Catalysts were incorporated into the external Exhaust Silencers. The total package was then hidden from view by a visually unobtrusive façade enclosure, which was designed to blend into the existing building features.
- ECI's Acoustic Louvers were utilised to partially screen off the radiator mezzanine level open-air wall.
- Individually designed Acoustic Attenuators were installed within the basement car park, to control noise while accommodating the existing services dominating this area and ensuring there was no noise breakout.
- All of the five diesel generators' air discharge ducts and plenums were acoustically lined and fitted with ECI custom designed and built Acoustic Attenuators.

- Due to the inclusion of new acoustic and emission control products and issues associated with previously installed pipe work, ECI calculated, designed and installed thermal expansion joints, custom pipe work and transitions, spring hangers and upgraded the thermal insulation to be able to safely meet the demands of the exchange when operated at any time or duration.

REDUCING EXHAUST POLLUTION

ECI's ability to solve the Exchange's diesel pollution problems and enable Telstra to meet its EPA obligations, was thanks to our patented product, the Predator Diesel Particulate Catalyst. The Predator effectively traps and then treats diesel particulate matter so that harmful fumes and emissions do not escape into our environment.

Results

NOISE POLLUTION REDUCTION

During overall acoustic testing at the end of the project, noise from the Telstra Exchange Building was not audible or measurable as the ambient environmental noise levels of 54 dB(A) were higher than the output of the diesel generators at 100% load!

EXHAUST POLLUTION REDUCTION

The final emissions testing results for all of the basement diesel generators showed emissions reductions of 95%!



ECI's project management excellence throughout the 12 month project saw 300 hours spent in the acoustic testing, design and consultation phases and 1645 man hours spent executing each phase of the installation program without any lost time injuries or disruption to the Exchange.

The incorporation of world's best practice emissions control devices such as custom-built ECI Silencers, Attenuators and Acoustic Louvers, as well as ECI's Predator Diesel Particulate Catalyst, have made the Telstra Exchange Building and adjoining residential and commercial precincts, better environments in which to work and live.

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