



*System: CORL*

# Kinetics Noise Control Solutions

## Generator Set & Cogeneration Unit – Sound Control

### Client

A manufacturer of hospital equipment

### Issues

- Installation of a 3 MW, gas-fueled, reciprocating engine, packaged generator set and cogeneration unit for power generation in close proximity to their office building.
- The sound level (122 dBA) of such a system would be of great annoyance to the surrounding building offices all separated from the noise source by glass windows as well as the surrounding walkways, parking lot and building entrances.
- The client was under a time constraint with no mitigation plan.

### Solutions

- Kinetics Noise Control, Inc. (KNC) local representative and in-house engineering team worked together to determine the client's need.
- The KNC team performed preliminary field ambient sound measurements and review local noise ordinances to educate the client of their specific need for attenuation.
- KNC's engineering team worked with the unit manufacturer to obtain reliable unit sound levels.
- A **NOISEBLOCK™** sound enclosure was proposed to house the generator which fit within the allotted space and met the city noise ordinance.



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## Advantages of Proposed Solution

- One modular **NOISEBLOCK™** custom engineered, high transmission loss enclosure allowed for factory fabricated high transmission loss panels and components to be shipped knock-down for field installation via piece-marked installation drawings. The freight savings were great over shipping a factory assembled enclosure and required a smaller crane for moving around the factory and the jobsite.
- The Kinetics Noise Control, Inc. (KNC) engineering team and representative worked closely with the unit packager to design necessary and easy access for equipment maintenance.
- The **NOISEBLOCK™** enclosure is technically a temporary or moveable structure. Permits are easier to acquire than those needed for the construction of a fixed building.

## Considerations

- Environmental noise issue
- 3 MW, gas-fueled, reciprocating engine, packaged generator
- Constant backup generator
- 70,000 cfm cooling air flow required
- Required low attenuation pressure drop
- Time constraints

## Project Goals:

- Quiet the 3 MW generator noise levels to within acceptable limits.
  - Meet 80 dBA at 3'-0" from the enclosure
  - Meet 66 dBA at commercial establishment (340'-0")
  - Meet 51 dBA at nearest residence (520'-0")
- Be the quietest equipment within the equipment yard.
- Improve client/community relations
- Make sure the equipment did not overheat during operation

## NOISEBLOCK™ Applied Products

KNC model VRS, straight and elbow ventilation silencers were incorporated into the inlet and outlet ventilation design. Special turning vanes were designed via computational fluid dynamics and KNC's own state-of-the-art, proprietary, finite element, acoustic analysis program. The walls, roof and doors were manufactured of KNC model HTL-4, high transmission loss panels with tongue and groove connections for quick and easy installation. All products are cost effective and backed by KNC's extensive, independently tested database and history of proven performance. The enclosure dimensions are 17'-0" W x 17'-0" H x 56'-0" L with a 10'-0" W x 12'-0" H removable wall section. The panels were manufactured of solid outer and perforated inner skins manufactured of satin finish (mill-phosphatised) galvanized steel, type G90 to readily accept field painting.

## Resolution

As stated, time constraints were demanding on this project. Manufacturing time took only 10 weeks after the submittal drawings were approved by the client. During that time the client installed the foundation and concrete curb. A two-phase installation time was used: 3 days for structural steel framing and 14 days for **NOISEBLOCK™** panels, silencers, doors and flashing. The client installed a roof membrane and field painted the enclosure after installation. KNC offered field supervision of the installation and the site was visited regularly by the KNC representative during installation. Additional projects are in the planning stages incorporating the **NOISEBLOCK™** system.