> CaseStudy

OIL & GAS

Pump Station Expansion

Sector
Oil and Gas

Focus Area
Midstream Operations

Service
Noise Impact Assessment

Challenge

In 2015, a leading energy transportation and midstream service provider retained Patching Associates to conduct a Noise Impact Assessment (NIA) for the addition of proposed equipment to an existing Pump Station. The project was awarded in May 2015 and the final report submitted in September 2015.

The objectives of the study were to:

- Ensure cumulative noise emissions from the normal operations of the facility, after the expansion, met Alberta Energy Regulator (AER) Directive 038 noise control requirements. In order to receive AER approval to install the new proposed equipment, it must be demonstrated through an NIA that the cumulative noise from the proposed equipment addition, together with all existing facilities in the study area, falls within the Permissible Sound Level (PSL) of 40 dBA Leq nighttime at the most impacted residence.
- Measure and quantify existing sound levels at the facility and at the residence of concern.
- Utilize accurate and more realistic noise emissions data in the facility's noise model in order to minimize the amount of conservative assumptions made in the NIA.
- Recommend practical and cost-effective noise control measures to meet AER Directive 038 at the most impacted residence.

Significant noise control cost savings were realized due to the accurate field measurements and practical processes adopted by Patching Associates.

Solution

Patching Associates completed a detailed NIA, including performing up-to-date field diagnostic measurements to determine the sound power levels of the operating equipment, and field reconnaissance of the other existing facilities in the area. A 3-day continuous sound monitoring study was conducted at the facility fence line and the residence of interest, to quantify existing sound levels. Patching Associates conducted a follow-up 3-day survey after the installation, and a meeting with residents of interest was held to discuss noise concerns and mitigation plans.

Patching Associates incorporated detailed field diagnostic sound measurements to ensure that realistic and accurate sound power levels were utilized in the noise model for the existing and proposed equipment. This minimized conservative assumptions, thereby improving the model accuracy and the efficiency of the recommended noise control measures. Based on the study results, Patching Associates recommended practical noise control measures to meet AER Directive 038 at the most impacted residence.

Result

The assessment determined that, after the installation of the recommended noise control measures, the cumulative noise emission from the operation of the facility, after the expansion, met the 40 dBA Leq nighttime PSL at the most impacted residence. The 3-day continuous sound level measurements completed after the proposed installation, as requested by the resident in January 2016, indicated that the sound levels measured at the residence of concern were consistently below the PSL during the survey period.

Significant noise control cost savings were realized by the client due to the accurate field measurements and practical processes adopted by Patching Associates.

Key Tasks

- Field diagnostic measurements to determine sound power levels.
- 3-day continuous sound monitoring at fence line and residence.
- 3-day follow up survey and meeting with residents.
- Practical noise control recommendations to meet AER Directive 038.

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