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Sound Noise Control of a Steam Ejector in a Typical Power Plant: Design, Manufacturing, and Testing a Silencer-Muffler

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Abstract : There are so many noise sources in power generation units that these sources can produce high-level sound noise. Therefore, sound noise reduction methods can assist these industries, especially in these days that laws related to environmental issues become more strict. In a typical power plant, so many machines and devices with high-level sound noise are arranged beside of each others. Therefore, the sound source identification and reducing the noise level can be very vital. In this paper, the procedure for designing, manufacturing and testing of a silencer-muffler used for a power plant steam vent is mentioned. This unit is placed near the residential area and so it is very important to reduce the noise emission. For this purpose, in the first step, measurements have done to identify the sound source and the frequency content of noise. The overall level of noise was so high and it was more than 120dB. Then, the appropriate noise control device is designed according to the measurement results and operational conditions. In the next step, the designed silencer-muffler has been manufactured and installed on the steam discharge of the ejector. For validation of the silencer-muffler effect, the acoustic test was done again in operating mode. Finally, the measurement results before and after the installation are compared. The results have confirmed a considerable reduction in noise level resultant of using silencer-muffler in the designed frequency range.

Keywords : silencer-muffler, sound noise control, sound measurement, steam ejector
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