

## **Identification of noise sources in reciprocating compressor systems**

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From a HSE (Health, Safety & Environment) perspective, a trend toward stricter legislation on noise emission is observed. Compressor manufacturers are regularly confronted with noise targets, also on a contractual level. For prediction and control of noise levels emitted by reciprocating fluid machinery, more accurate prediction models and design tools are required. Funded by the EFRC research budget, TNO has performed a survey on noise generating mechanisms, typical for reciprocating machinery. The dominant noise sources and noise transfer paths are discussed, and the relevant design parameters are illustrated. An overview on available numerical tools (for future, detailed modeling) and experimental techniques (allowing for source identification and model validation) is given. In support of the conclusions from this theoretical study, an experimental survey at an on-shore compression station has been executed. Various experimental techniques have been applied: in-line pulsation measurements, noise and vibration measurements and intensity scanning, yielding a valuable database of noise and vibration results. The main conclusions from this experimental survey will be discussed.