Vibration Analyses
Acoustic analysis

Due to their long-standing experience and the use of the latest measurement and analysis methods the experts of the MAN PrimeServ Field Diagnostic Team provide you with reliable support in the analysis and assessment of the condition of your equipment.

By using acoustic analyses the experts of the MAN PrimeServ Field Diagnostic Team can measure and specifically identify the cause of increased acoustic emissions. In addition, also gas pulsations within the machine and the piping can be detected with acoustic analyses.

Measurement of acoustic emissions

Our compressors and turbines are equipped with appropriate insulation measures as acoustic aspects are already taken into account within the respective design phase. Nevertheless, during operation all components are permanently exposed to high dynamic loads which may lead to wear and an increase of the sound power emitted into the environment over the long term. Furthermore, the limits for acoustic emissions required by relevant regulations and directives become increasingly strict, making regular monitoring measurements sensible as well for newly commissioned as for older plants.

For the measurement of acoustic emissions high-precision analyzers, measuring microphones and acoustic intensity probes are used. In case of high acoustic emissions the experts of the Field Diagnostic Team are able to specifically determine the causes by...
means of source location and spectral analyses and therefore to identify suitable remedial measures.

In individual cases where the feasibility or accuracy of direct airborne noise measurement is restricted due to local conditions, structure-borne noise measurements are performed by use of acceleration probes applied to the noise-producing surfaces. By considering the specific radiation coefficients the individual sound power contributions to the overall acoustic emission of the entire plant or respective component can be calculated.

**Measurement of gas pulsations**

The measurement of gas pulsations within the machines and the piping is a further area of application of acoustic analyses. Thereby, numerical pulsation studies considering the interactions on the surrounding structures as piping, vessels or silencers represent a significant contribution to the understanding of the overall problem and to the preparation of the measurement. Since direct pressure measurements by installation of pressure sensors in gas-carrying casing components and pipes are often not possible because of the effort involved, the calculation results can be verified by structure-borne and airborne noise measurements.

**Benefits**

Acoustic analyses facilitate a precise identification of the causes of increased acoustic emissions. Thereby, possible damages can be recognized and eliminated at an early stage. The measurement of gas pulsations allows conclusions about processes that may lead to premature wear or damage to the equipment if suitable countermeasures are not taken.
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