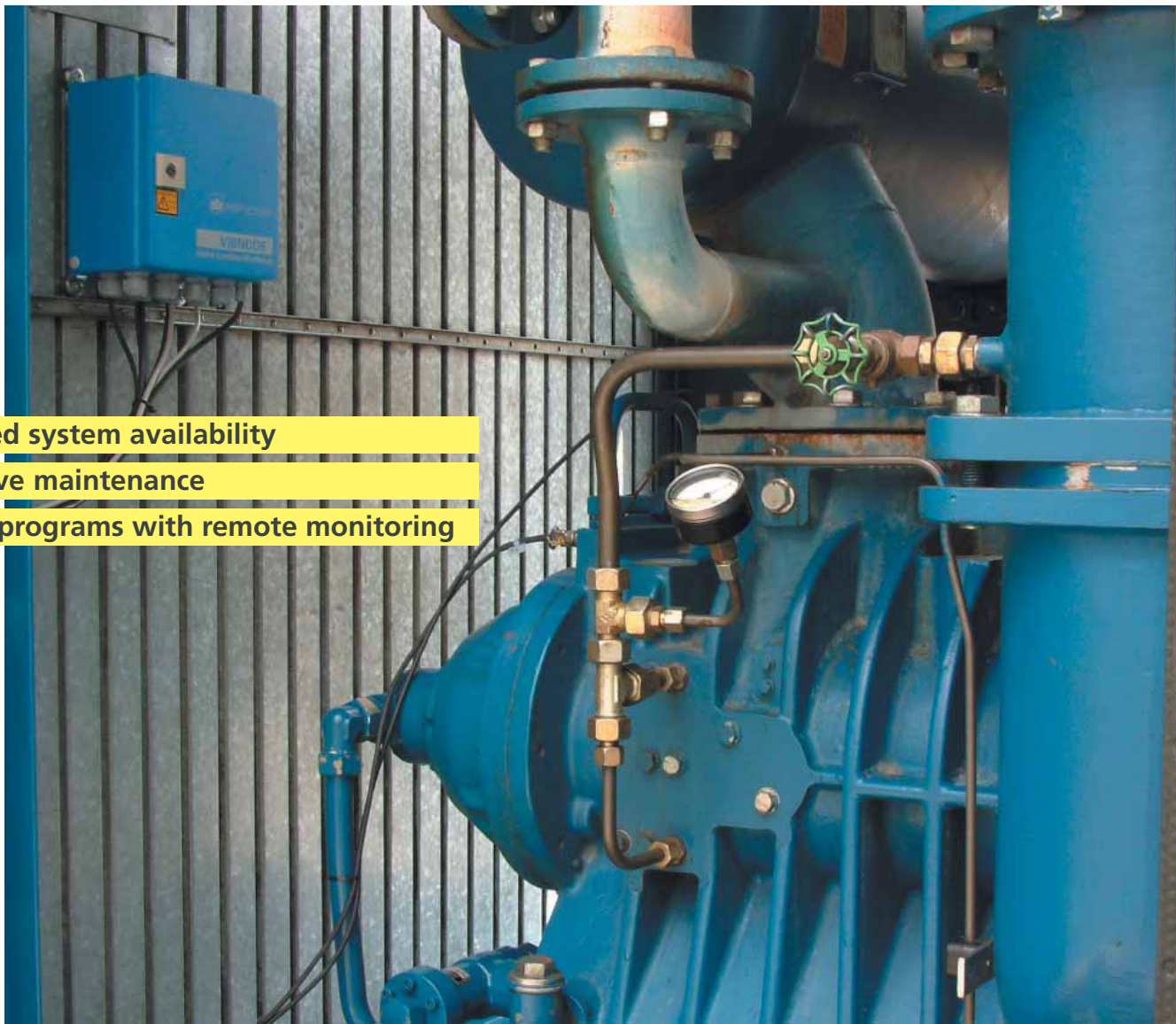




APPLICATION

Online Condition Monitoring of Rotary Screw Compressors



Increased system availability

Predictive maintenance

Service programs with remote monitoring

Process assurance and availability increase in rotary

Rotary screw compressors

In rotary screw compressors, the medium is compressed by means of two rotors. Due to their cyclical operation, screw compressors are grouped between reciprocating compressors and turbo compressors. Their vibration behavior is dominated by the discharge frequency of the charge output.

VDI 3836 differentiates screw compressors into four machine groups:

- Group 1

Screw compressors with plain bearings and synchromesh gears (usually for compressing process gases)

- Group 2

Screw compressors with roller bearings, or roller and plain bearings, and synchromesh gears (usually oil-free compressors for generating compressed air)

- Group 3

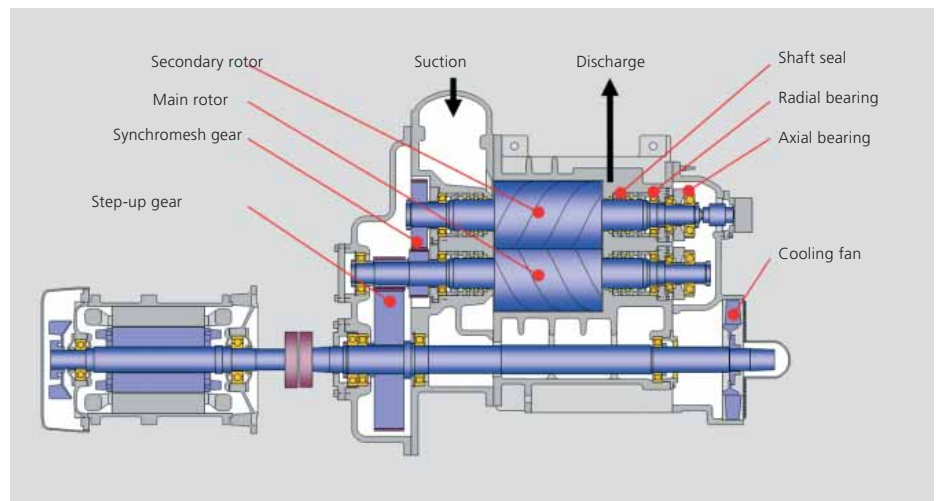
Screw compressors without synchromesh gears (usually oil-flooded screw compressors)

- Group 4

Roots-type superchargers with roller bearings and synchromesh gears (usually for generating compressed air at high volumes).



Screw compressor in a plastics plant



Dry-running screw compressor (Group 2 as per VDI 3836)

High availability requirements

The availability demands placed on screw compressors are extremely high for many production processes. Failure of non-redundant machines can result in the standstill of an entire production line, with loss-of-production costs quickly reaching six-digit figures per hour. Screw compressors are frequently used for compressing air and refrigerant. Another major field of

application is process gas compression in refineries and in oil and gas production. Machine protection also plays an important role. Unrecognized unallowably high machine vibrations, bearing damage and lubrication problems can lead to catastrophic failure of compressor units.

Condition monitoring during operation helps prevent faults, enables

the early detection of wear processes and lets operators take full advantage of the component service life.

VIBNODE® provides reliable and cost-effective online condition monitoring for screw compressors.

ry screw compressors

Reliable monitoring with the VIBNODE® online monitoring system

For the following components, condition monitoring is performed using frequency-selective monitoring of the specific machine vibrations and of structure-borne sound in roller bearings. These values are tracked in combination with operating parameters such as operating pressure, speed, output and temperatures:

- Main rotor / secondary rotor with rotor mesh
- Step-up and synchromesh gears
- Roller bearings
- Compression of charge
- Drive machine with coupling / belt drive

The condition information is automatically transmitted to the higher level system of the operator or to a service partner via a network connection or via eMail.

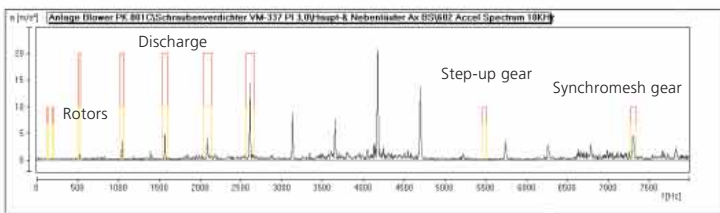


Monitoring with the VIBNODE® online monitoring system

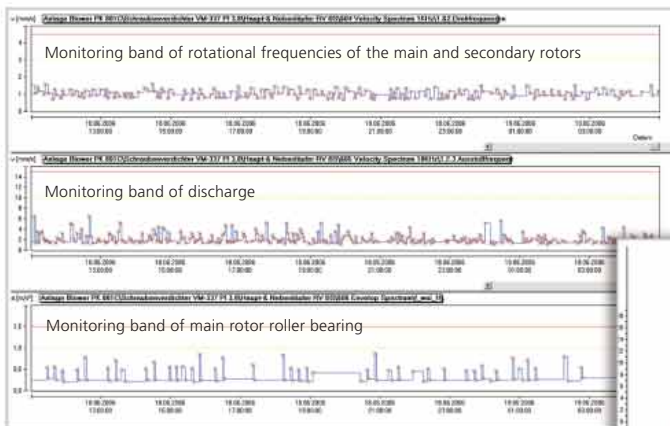


Vibration sensor on bearing of main and secondary rotors

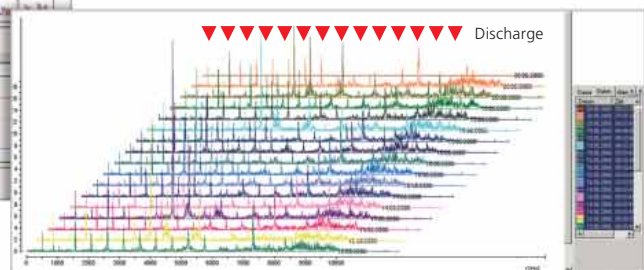
OMNITREND® diagnosis software



Frequency-selected monitoring with 8 alarm bands.



Multidiagram



Waterfall diagram

– Level 1 –

Overall value monitoring
VIBNODE tracks the trend of the characteristic vibration values along with the operating parameters. On the basis of a rise in the trend, predictions can be made on how other condition parameters will develop. An alarm is output if a limit value is exceeded.

– Level 2 –

In-depth diagnosis
The possible causes for condition deterioration are narrowed down using in-depth diagnosis functions. This permits condition-based and cost-optimized planning of maintenance measures.



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and from the **extensive experience**
of our **worldwide PRÜFTECHNIK**

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