Technical Seminar --- Optimizing Efficiency in WWTP

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Welcome

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Conveying cycle of a two-lobe blower



Conveying cycle of a two-lobe blower



Characteristic of a 3-lobe blower



The application of the Interference process to the construction of rotary lobe blowers.

Conveying cycle of a three-lobe blower



Conveying cycle of a three-lobe blower



3-lobe blower

Advantages of the 3-lobe-blower with pre-inlet channels

- Pulsations are cancelled directly in the blower stage
- The vibration loading of the bearings, timing gears and casing is much more lower than regarding a two-lobe-blower
- The noise energy in the discharge piping is about 25 dB lower
- Lower investment outlays for buildings and system components

3-lobe blower



3-lobe blower



Housing consists of...

- Cylinder
- Side plates
- Gear- and housing cover

Adjusted by conical pins and boltet !

Ring retainers....

- Sealed by O-rings against shafts
- Large neutral chambers to avoid oil mist leakage into conveying chamber

Timing gears....

- Helical, hardened and ground
- Fixed on shaft ends by conicalpress-on taper
- Removable by oil pressure

Rotary Lobe Blower



Base frame with integrated discharge silencer

Reactive type without any absorption material

To avoid pollution of the system by absorbtion material

Discharge silencer acc. to pressure vessel equipment directive 97/23/EG

Reactive Pulsation Dampener (RPD) --- Active Silencer



Exclusively functions by means of deflections! Absorption material will <u>not</u> be used (*combustible and not suitable for the food industry*)!

Rotary Lobe Blower

Belt tensioning





Reactive Pulsation Dampener (RPD) ---

Active Vs Passive Silencer

Elimination of sound waves according



Conventional silencer:

Uncontrolled coming off of insulating material pieces in consequence of pulsation.

Rotary Lobe Compressor

Why Rotary Lobe Compressor ?

Energy efficiency is an important issue world-wide and in almost all branches

- ... not only for environmental reasons
- ... but mainly for financial reasons!



Rotary Lobe Compressor

The series Rotary Lobe Compressor combines stages with the operating principle of

Internal compression: Type **-S/-H**



- 3+4 screw rotor profile
- Pressure operation up to 1.0 bar (-S) resp. 1.5 bar (-H)
- Suction operation up to 0.7 bar

The Air Foil Bearing for High Speed Turbo Blower



<Thrust Foil Bearing >

<Radial Foil Bearing >

- Very little vibration
- Very little friction
- Permanent life time

The coating on surface of bearing is very important for life time.



Turbo stages





First Step to Industry 4.0

Are YOU prepared for Industry 4.0....

....but how can we be part of it ???

- Give the customer the best and latest interface options
- Give the customer the possibility to get process information everywhere he wants



Water 4.0 – pre-conditions & opportunities

Pre-conditions

- digitization
- automation
- connectivity



Opportunities

- increase of resource & energy efficiency
- cost reduction, increase of productivity
- flexible and competitive water management





Water 4.0 ---- Requirements

Which information does the customer get?

- Actual performance/process data
- Transfer of error codes, operating hours, etc.
- Alarm messages (via Email)
- Vibration data
- Planning of service by means of early due date information
- Presentation and evaluation of operating data / process data in pre-defined time periods

Thank you for your attention !