

VADS 250

Vari Air Direct Spindle



Vacuum Thermoforming

Threats with oil lubricated vane pumps

Vacuum pumps in vacuum thermoforming machines for sheet material face the problem, that the ABS generates fumes during the heating process. The fumes start to condensate on all kind of cold surfaces, especially inside the oil lubricated vacuum pump. Not only the vacuum pump oil has to be exchanged often (multiple times /a) as well the vacuum pump has to be completely maintained at least 1-2 /a. This bounds a lot of capacity of the service personel, at least causes increased maintenance cost.



after 1 year operation barely no condensation of plastic fumes

Benefits by using VADS 250

Dry compression inside the VADS 250 does neither distribute the condensate inside the pump (oil), nor causes too much condensation inside the compression chamber. Condensation inside the compression chamber would create a growing of plastics coating. After one year of 24/7 operation the VADS 250 has shown minor or even no condensation inside compression element.

**Service intervals will be dramatically extended vs oil lubricated vane pump
Reduced rpm of VADS250 will cause additional extension of bearing life time >> 20.000 hours.**

Speed regulation is expected to draw less power than standard speed vane pump.

Different operation modes for speed control or vacuum constant can easily be selected according to customers preferences.

Due to characteristic curve the VADS250 could provide vacuum for multiple machine installation.

Centralisation of vacuum supply for vacuum thermoforming by VADS 250

All benefits achieved with the replacement of one single lubricated vane vacuum pump by spindle screw VADS250 can be extended with even more efficiency to a multiple machine installation using a centralised vacuum supply.

The total piping volume finally decides about utilization of an additional vacuum tank.

Generally the centralized system should be build as a ring system, that is connected to the VADS and should be operated in pressure (vacuum) constant mode, that is adjustable to the most convenient vacuum level to operate all connected vacuum thermoforming machines. Since the pump is able to reach even < 1 mbar abs there is always enough pressure band to keep the vacuum level as low as necessary to operate the thermoforming machines even considering leakage in the system. Any leakage will be compensated by the closed loop control and speed regulation automatically.

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The machines connection are normally solenoid operated. Instead of starting the single vacuum pump the valve will be opened to the vacuum system by the machine controller.

The centralized system can be optimised by using a sequencer (controller) to operate each single pump of any multiple pump installation (e.g. 2-3 VADS250). The controller allows to customize the system to achieve optimised (extended) service intervals.

Alert control (red alert light) possible.

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As follows the example of the test system with a straight vacuum pipe connection of $d=75$ mm. Due to the limited pipeline volume this system is extended by a vacuum tank (500 l).



System benefits

- + Quick installation (no additional connection ports and control units like water cooling etc)**
- + High suction volume flow at low pressure > very long service intervals for the thermoforming machine**
- + Speed regulation gives most efficiency and good compensation of leakage inside the machine (mold age; flexible vacuum connections etc)**
- + Exceptionel low service costs in comparison to oil lubricated vane pumps**
- + Oil free compression means oil change only according to service interval max 1 /a (standard gear box oil)**
- + Very low noise level**
- + Barely condensation of plastics fumes inside vacuum pump**