

4 Powerful Reasons to Choose a Vorecon

+ Reliable

+ Economical

+ Durable

+ Efficient



Reliable



Survey on Vorecon Reliability

- Units: 69
- Power: 600 kW up to 11 931 kW
- Speed: 495 rpm up to 16 482 rpm
- Total operating time: 2 095 921 hours
- Reported failures: 6
- Non-availability time: 546 hours

Reliability:

$(2\,095\,921 \text{ hrs} - 546 \text{ hrs}) / 2\,095\,921 \text{ hrs} = 99.97\% *$

MTBF:

$2\,095\,921 \text{ hrs} / 6 = 349\,320 \text{ hrs} \approx 39 \text{ years} *$

Availability is the most critical factor when calculating the life-cycle cost of an installation. Consider your cost for one single outage to determine how important reliability is to your business. The Vorecon offers a reliability of 99.97 %* or in other words, a MTBF of more than 39 years*. This means the probability of downtime is the lowest of all variable speed drives. By combining the Vorecon with a fixed speed electric motor – which is 5 times more reliable than a variable speed electric

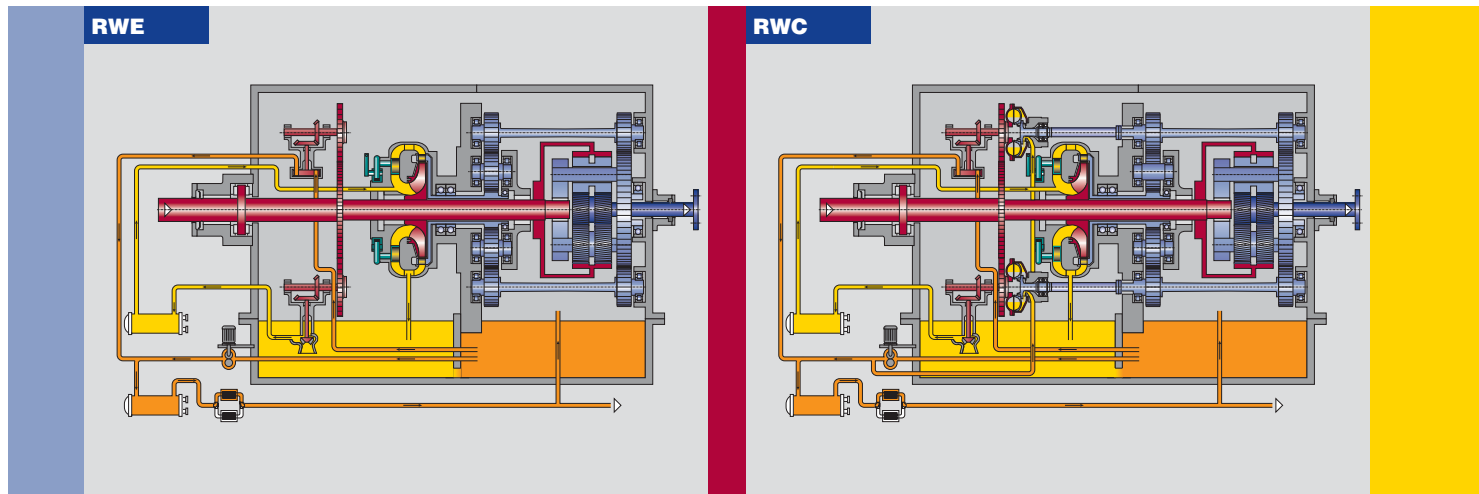
motor with VFD** – the overall drive system reliability is unmatched!

After all, nothing can replace lost production. The Vorecon variable-speed planetary gear provides the highest reliability for all kinds of processes.

* Calculation based on machines in operation.

** Based on an independent study comparing electric motors with fixed and variable speed.

Types and Applications



Type RWE

is the most compact Vorecon type. It consists of a hydrodynamic torque converter, a fixed planetary gear and a revolving planetary gear.

- Speed control range 60–100 %
- Areas of application: compressors, pumps

Type RWC

includes in addition to the torque converter two hydrodynamic couplings. This allows unloaded starting where the power supply is limited or the mass moment of inertia is high.

- Speed control range 60–100 %
- Areas of application: compressors, pumps





Type RW

includes a hydrodynamic break in addition to the torque converter and the hydrodynamic variable-speed coupling with an integral lock up clutch. This arrangement allows a large control range and completely relieved starting of the drive motor.

- Speed control range 10–100 %
- Areas of application: boiler feed pumps, fans

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Economical

<p>Vorecon ~ 45 m²</p>	 <p>Motor VORECON</p>	 <p>Cooling system</p>
<p>VFD ~ 150 m²</p>	 <p>Motor Gear</p>	 <p>Harmonic filter Isolation transformer Oil system Cooling systems Frequency Drive Overhead tank</p>

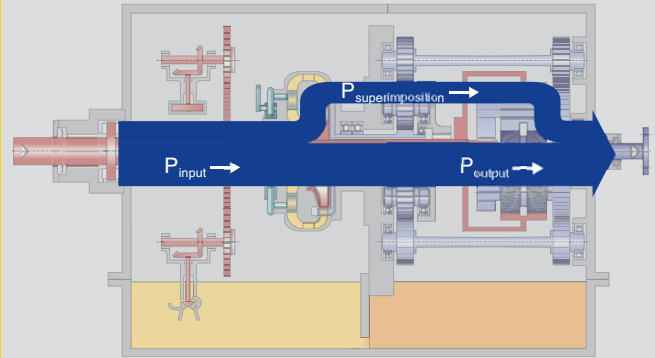
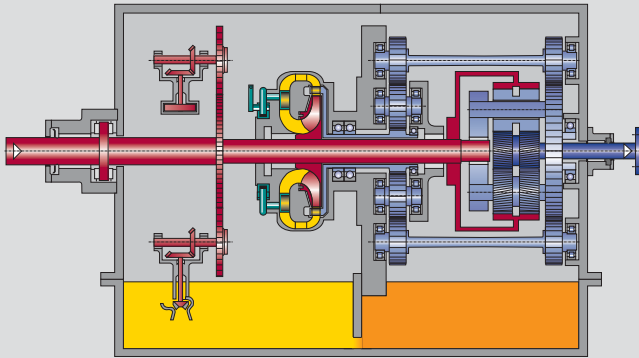
To find the most economical drive system, a thorough analysis of life-cycle cost has to be done. This analysis should include equipment cost, installation and infrastructure cost, commissioning and maintenance cost as well as operating cost (i.e. energy cost).

The energy cost for the Vorecon is similar to a VFD when comparing the entire drive system including all components. The Vorecon drive system is very simple

and requires few components, compared to a variable frequency drive system. This results in less required space, less building cost and simpler installation and commissioning. The equipment cost are significantly lower, especially for higher power applications. Due to the high reliability of the Vorecon, maintenance and repair cost are extremely low.

The Vorecon is the most economic drive solution.

Function



The Vorecon combines hydrodynamic components and a superimposed planetary gear within a single housing, perfectly combining the advantages of hydrodynamics and mechanics.

The operation of the Vorecon is based on the principle of power splitting. Most of the power is transmitted mechanically directly via the main shaft and the rotating planetary gear. Only the power necessary for adjusting

the speed of the driven machine is split off from the main shaft through the hydrodynamic torque converter and superimposed into the planetary gear. Due to the high portion of mechanically transmitted power, an overall unit efficiency of more than 95 % is achieved.

Lube oil for the motor, driven machine and Vorecon can be provided by the Vorecon integral lube oil system.

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Durable



Should a state-of-the-art drive system not have the same life time as the whole plant? Should it be necessary to exchange the drive system after a few years? We don't think so! Therefore we design our Vorecon variable-speed planetary gear for a life time of more than 25 years.

While electronic components are changing rapidly and spare parts will not be available in a few years, the

Vorecon utilizes mechanical components that will still be available 30 years from today. Our proven systems don't keep changing, but we keep making the best – a little bit better.

No matter how tough your environmental requirements are – heat, cold, dust or explosion hazards – the robust Vorecon can handle them!

References



Complete drive system for refrigeration compressor in a gas treatment plant in Middle East.

Vorecon type RWE

Power: 6966 kW
Speed: 8879 rpm



Reinjection compressor on an offshore platform in Norway.

Vorecon type RWE

Power: 7794 kW
Speed: 14049 rpm



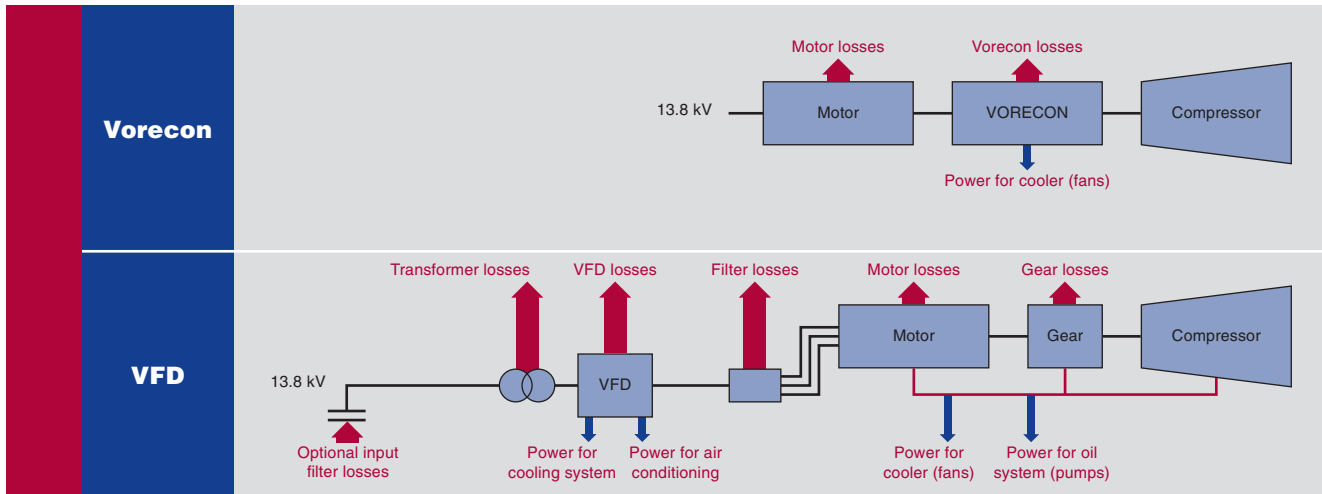
Compressor test facility in China.

Vorecon type RWC

Power: 30000 kW
Speed: 6000 rpm

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Efficient



Why waste energy and run your process with fixed speed and not precisely adjust your process to the current needs with variable speed? Save money by running more efficiently and also contribute to a better environment with the Vorecon variable-speed planetary gear. Realize significant cost savings that can be proven by objective pay-back calculations – with our variable speed solution, pay-back time can be less than one year. A true comparison between the two different solutions can only be

done by considering the entire system, which includes all relevant component efficiencies. Many users have performed such an analysis and are convinced that the Vorecon is the most economic drive solution. Find out for yourself.

Excellent efficiency over a wide range of load levels isn't only a Vorecon claim – it's a proven fact, worldwide.

Reliable



Efficient

Economical

Durable

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