

## Press Release

Germany's paper industry is No. 1 in Europe, and with a turnover of approximately 14.9 Billion Euro annually, No. 4 worldwide behind the United States, China and Japan. A total of 3,000 different kinds of paper are manufactured at around 180 production locations, with 44,000 employees working to produce around 23.2 million tons of paper per year. The industry's innovative paper manufacturing machinery ensures that the ravenous paper appetite of the industrialized world is continuously satisfied.

### Drive Solution for the Paper Industry

How did paper originate? The procedure has changed very little since 105 AD, the date when the process of paper manufacture was first recorded. Fibres are moistened in water and then scooped out with a sieve. This paper web is then pressed and dried. Today, gigantic paper machines are used to automatically perform the various processing steps that turn the pulp into paper.

This is an enormous challenge for machine builders because the individual components making up their products have to be able to withstand extreme pressures. To this end, DEPRAG SCHULZ GmbH & Co. in Amberg, Germany, manufactures a range of air vane motors made from stainless steel that are proven to be the optimal drive solution for this kind of manufacturing.

Early on in the process, for example, pulp, wood pulp and waste paper fibres are all mixed together, diluted in water and then treated with a chemical bulking agent. The resulting mixture needs to be "stirred" again and again. DEPRAG air vane motors made from stainless steel are ideal for this job. In fact, they were expressly designed for use in these kinds of extreme conditions, being water-vapour resistant, insensitive to acids and heat, and highly durable.

Long renowned for its work in high-quality air motors, DEPRAG SCHULZ's series-67 motors come standard with stainless steel housings. All motors for use in the paper industry are totally sealed and configured so that exhaust air cannot escape and dirt from the motor's surroundings cannot get in. Drive spindles are made from high-quality non-corrosive stainless steel and include a highly resistant radial shaft sealing. The stainless steel motors are ideal for use in wet rooms and bear up against the acidic materials used in fibre preparation at paper factories.

Air motors can be applied in a wide spectrum of fields due to their diverse design versions, simple construction, light weight, wide speed ranges and explosion safety. They work on a simple principle: The air created by a compressor is used to rotate a shaft.

In a vane motor, as the rotor starts to turn in an eccentric cylinder, a number of vanes held in the rotor's slits are pushed to the edge of the cylinder wall by centrifugal force. This creates another series of working chambers for the expanding air. The expansion of compressed supply air then changes into kinetic energy and rotational movement is generated.

There are many advantages to using air motors as a drive, including high performance density. Depending on the exact design, air motors are typically only about a fifth of the weight and a third of the size of a standard electric motor.



In addition, generated performance is almost constant over wide speed ranges. An air motor can also be operated over a wide load range. Motor performance can be modified by altering the operational pressure, while speed can be smoothly controlled by throttling the air quantity. An air motor can also be loaded to a standstill without causing any kind of damage. Once the load is reduced, the motor restarts immediately. This can be done as many times as required, even at high duty cycles.

Yet another advantage of this type of drive is that the same decompressing air driving the motor keeps it cool, even when heavily loaded, so that overheating is almost impossible. Additionally the inner excess pressure prevents the intrusion of dust and dirt.

Oil-free operation, as is often required by the food industry, is also possible with low performance loss.

All DEPRAG stainless steel motors are fitted with stainless-steel planetary gears. A 1.2 kW motor with a speed of 4500 U/min can also be delivered with various planetary gear speeds of 1250 U/min, 550 U/min, 350 U/min, 160 U/min or 100 U/min as standard.

Air motors are far superior to standard electric motors in their compactness and performance. A 1.2 kW strength vane motor with integrated planetary gear with nominal torque of 350 U/min is only 268 millimetres long and 82 millimetres in diameter.

Using an air motor also eliminates the possibility of a short circuit, yet another advantage over the electric drive.



DEPRAG SCHULZ GmbH & Co. even offers an ATEX certified stainless steel motor with an integrated holding brake as standard.

“Whether used for material preparation in paper manufacture, the transporting unit of a paper machine or for cutting the base paper into strips, the stainless steel air vane motor is an all-purpose piece of equipment,” says Product Manager Dagmar Hierl.

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