

Press Release

The hygienic drive solution

Stainless steel air motors designed for the highest quality requirements

Ensuring safe processing of foodstuff

In these times of rising costs, companies are increasingly reliant on pre-processing in automation. Even in the food industry, automated production processes have gained in significance and hygiene is of equal importance as efficiency for the mechanical processing of foodstuff. Whether for the production of fruit juices or the preparation of kebab skewers, the handling of flour, the cutting of dough or the use of packaging machines, air motors are the perfect solution for all these varied drive applications.

High quality stainless steel air vane motors are especially well-suited for these challenging applications. DEPRAG is an international leading supplier of air motors, automation, screwdriving technology and air tools. The DEPRAG engineers have spent decades developing and are continuously improving the line of pneumatic motors.



Advanced Line – stainless steel – Air Motors

The ADVANCED LINE motor series provides systems-engineers with quality stainless steel drives that combine many beneficial features. The robust, sealed design of the external parts in non-corrosive top quality stainless-steel means that the vane motors are perfectly suited for the use in the food industry. The smooth surfaces are easy to clean and the drives repel steam and cleaning agents. The air-motors are completely sealed, air cannot leak out and dirt cannot penetrate. The seals are so advanced that the air motor can even be used underwater. The motor does not even need a special housing. The drive spindle also endures chemical cleaning agents and has a particularly durable seal ring on the shaft.

There are many advantages in using this pneumatic motor as a drive. The main benefit is the power density. Depending on the version it has only one fifth of the mass of an electric motor and only about one-third of its size. The air motor provides almost constant power over wide torque ranges.

The motor works along a simple principle. The compressed air generated by a compressor rotates the air motor. This functions in a vane motor by the rotor running within an off-center cylinder. There are vanes in the slots of the rotor, which are pressed against the outer cylinder wall by a centrifugal force. Working chambers are created for the expanding compressed air. It is this expansion of the compressed air that is changed into kinetic energy and the rotation begins.

The air motors have the added benefit of being cool in comparison to other drive systems when load increases. The expansion cools the created frictional heat. This is one reason that makes the air-motor particularly well-suited to applications in critical environments. They carry the ATEX conformity seal of approval and are therefore authorized for use in potentially explosive environments. This is particularly important in the food industry for the processing of flour, as flour dust could ignite once certain temperatures are exceeded. The use of an air motor prevents overheating and the ignition of gases. Compressed-air is basically an unproblematic energy source; there are no dangers from electrical wiring and no danger of a short circuit.

The air motor is very flexible; it can be optimally operated in a wide field under varying loads. Motor power can be adapted by altering the operating pressure; the speed can be smoothly controlled by throttling the air supply. For specific applications there are special vanes available. Damage from overload is basically impossible. Once the air motor reaches its stall-torque (about twice the nominal torque) the air motor just stops. As soon as the load is removed, the motor starts again without problems and this can be done as often as required.

The DEPRAG pneumatic motors can also be operated without oil, which often is essential for food-industry cleanroom environments. The range of the ADVANCED LINE stainless steel motors covers 20 W (0.02 HP) to 1.2 kW (1.6 HP) with idle speeds of between 16 to 24,000 rpm. "It is due to this wide spectrum of stainless steel motors that we are the leader in this market segment. We are able to provide the ideal solution for any job requirement", explains Dagmar Dübbelde, Product Manager for air motors at DEPRAG. The sophisticated modular principle offers an outstanding price-to-performance ratio.



Air-Motor used for the production of Fruit Juices

The air motor fulfills all sterilization and hygienic requirements for the use in the food industry. When manufacturing fruit juices, a mixture is placed in large containers, which after mixing is heated to 80 degrees and then juice cartons are filled with the sterile liquid. Agitators are used for mixing and stirring, which must be driven by heat resistant and robust motors. A DEPRAG ADVANCED LINE motor is just such a robust device and it can reliably drive a propeller mixer in a magnet agitator with a power of 300 W and nominal speed of 700 rpm. In the preparation of kebab skewers, a DEPRAG air vane motor is the perfect choice for rotating a skewer over two belts to stab pieces of meat, onions and peppers.



Heavy-duty stainless-steel Air-Motors

Winding drives are also prevalent in the production process of the food industry. Packaging machines use them to wind plastic film and keep it stretched tight. The compressed air of the motor must be constant in order to maintain this tautness. In order to reduce air consumption, the motor can be throttled using the supply air and run with reduced operating pressure as it is designed to be energy efficient.

When used in an application for winding, the air motor can be operated at 4 bars, so that the power provided remains constant when rolls of material are becoming smaller as they are used up. In order to extend the torque range even further, DEPRAG provides an option with spring-loaded vanes, which are known as forced-start-vanes. Use of these spring-

loaded vanes means that it is possible to operate the air motor at an operating pressure of less than 1 bar.

The robust, efficient air motors can be adapted to the required torque and operating speed of any application. "Around 85% of our air motor projects are custom solutions that we are able to quickly and simply adapt from our standard products for individual customers", explained Dübbelde.



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DEPRAG is based in Amberg, Germany and their engineers are renowned for their expertise in the development and manufacture of air motors. The DEPRAG motors are particularly suitable for use under extreme conditions due to their robust design and long life-span. It is due to the innovations and constant advancements in their existing product lines that the medium-sized family business with 600 employees in 50 countries has become such an internationally prominent manufacturer.

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