

Put some juice in your production

Bursting with energy and vitamins, from the humble apple to exotic combinations such as lychee and guava, there are fruit juices on the market to satisfy every taste. The drinks provide countless vitamins and minerals and are perfect for the health conscious. Many scientific studies underline the connection between an ample and varied intake of fruit and vegetables and the reduction of diet-related illnesses. The initiative group "5 a day" has the goal of persuading people to eat 5 pieces of fruit or vegetables per day in order to meet all the body's needs. If you require a quick fix then the practical answer is a portion of fruit or vegetable juice.

In Germany apple juice wins the top spot as the nation's favourite soft drink followed by orange, multi-vitamin and grape juice. In 2007 around 800,000 tons of fruit were processed into 4.04 million litres of fruit juice drinks. There are 411 fruit juice manufacturers with approximately 7000 employees who belong to the German fruit juice industry's registered association. There are a great variety of fruit juice drinks on offer in supermarkets. Bottles and cartons with bright, eye-catching printed designs compete on the shelves to catch consumers' attention. One popular children's drink in an aluminium packet with attached straw has been on the market for over 40 years. Smoothies, fresh fruit mixes, are the newest trend from the USA to hit Europe and are a practical way to boost your daily fruit intake.

According to Nutritionists, most people do not drink enough, especially children. Experts state that adults need between 1.5 and 2 litres of fluid a day, children over 10 years need 1.5 litres and younger require at least 1 litre. Mineral water, unsweetened tea drinks, fruit squash, fruit juice and other fruit drinks are tasty ways to fulfil your daily fluid intake requirements. In one litre of apple juice you get the equivalent of the benefit of three kilos of apples!

Before the juice is poured into a glass, a virgin fruit is submitted to a number of processes. Today the manufacture of juice, fruit drinks and smoothies is mainly automated. Hygiene standards are very high and as is usual in the food production industry. Production and packaging of fruit juice is controlled by computers in large industrial systems which ensure high processing security. The design of these systems favours components which fulfil the hygienic requirements. The Power drives for fruit production must follow strict guidelines. Air motors must run oil-free, be impervious to extreme temperature ranges and suitable for use in clean rooms as well as being resistant to solvents for cleaning and disinfection.

It is only pure fruit juice which is directly filled into bottle or cartons. The usual practice is to remove water after pasteurisation of fresh juice so that the fruit concentrate can be stored and transported more easily. Later it is used as the base product for fruit drinks and mixes. Manufacturers then mix the fruit juice drinks with water and sugar according to their own proprietary recipe. The mixture is prepared in large containers, constantly stirred and heated to 80 degrees so it is sterile when it reaches packaging.

Automatic agitators are used for the stirring and mixing process. These devices must be equipped with heat resistant and resilient motors. Air vane motors made from stainless steel are an excellent choice for applications in the food industry. When used, for example, for stirring and mixing fruit drinks, a stainless steel air vane motor is the most robust and reliable choice. It drives a propeller mixer or magnetic agitator with a capacity of 300 watts and a nominal torque of 700 rpm.

Air vane motors are used in a wide spectrum of applications due to their diversity, simple design, low weight, high torque range and inherent safety feature with regard to

explosive environments. The principle of air motors is a simple one; the air created by a compressor causes the motor to begin rotation. In vane motors this occurs as follows: The rotor inside an eccentric cylinder is set in motion. There are vanes held in its slots which are pushed outwards against the cylinder wall by centrifugal force. Working chambers are formed for the compressed air. The expansion of the compressed air transforms the pressure energy into kinetic energy and rotational movement is generated.

DEPRAG SCHULZ GMBH & CO. in Amberg, Germany is a global supplier and specialist in the production of air vane motors. The DEPRAG Advanced Line motor range is recommended for use in the food industry. This range has a comprehensive selection of non-corrosive, sealed air vane motors suitable for oil-free use. These high quality stainless steel motors are particularly suited to use not only in the food industry but also the paper industry, chemical and pharmaceutical industry and also in medical technology. The Advanced Line air motors are small and therefore practical for assembly in both handheld machines and automation systems. The power spectrum ranges from 20 W to 1.2 kW and are available from very low speeds up to 24000 rpm. DEPRAG air motors are certified for use in potentially explosive environments, they are also equipped with ATEX certified integrated holding brakes.

Among many advantages, one of the main benefits of an air motor is its power density. Depending on design it has a fifth of the weight and a third of the size of an electric motor. This is important not only for all handheld machines but also for robot systems or NC machines which require a special purpose drive.

The performance yield of an air motor over large torque ranges is almost constant. It can therefore be optimally operated under a wide range of alternating loads. The motor power can be adjusted by regulating the incoming air pressure and the torque can be smoothly and continuously changed by throttling the air inlet. The air motor can easily be loaded to a stall, at high frequency, without being damaged. When the load is reduced the motor will restart immediately, even at a 100% duty cycle.

DEPRAG engineers have consistently updated the design and specification of their air motors to meet the demanding applications of the day. DEPRAG product manager Dagmar Hierl explains: "The Advanced Line motors of our product spectrum have been developed specifically to comply with the high hygiene standards of the food and medical industries. The smooth surfaces are easy to clean and the drive is resistant to cleaning agents". The motors are completely sealed and are designed not to allow air to leak out or contaminants to enter. Even the motor spindle is resistant to chemical cleaning agents and the drive shaft seal ring has a particularly long life-span.

The air vane motor is insensitive to heat. It is designed particularly for use in harsh environments. as a result of air decompression in the exhaust cycle, the motor actually becomes cooler as the load increases, offsetting the heating effects of friction. There is no chance for the air motor to overheat. Compressed air is also an unproblematic energy source; there are none of the hazards associated with electrical sources.

The development and construction of top quality air motors is one of the main areas of expertise of DEPRAG SCHULZ GMBH & CO. The German specialists for air motors, automation, screwdriving technology and air tools, operate with approximately 600 employees in 50 countries. Offering complete service, not only providing standard motors for systems but also offering customized air motor solutions for your individual application needs. Decades of experience enable the

DEPRAG engineers to provide valuable support for their clients in the design and implementation of quality motors.