

Electromagnetically ventilated and operated brakes with clamping forces of up to 24 kN are now available at RINGSPANN.

Brake better with electric potential

Industrial disc brakes are currently exhibiting a general market trend towards further electrification. In particular when no pneumatics or hydraulics are available, then versions of products that can be operated directly using the power supply are unbeatably cheap. Even if the brake itself is more expensive, it works out as the more cost-effective solution by way of saving on a hydraulic or pneumatic aggregate and on the respective pipework system.

This applies particularly if the electrical brakes are constructed in a very compact design, as in the present case. The electrical solutions that are currently available on the market are often very heavy and require a large fitting space. In comparison, the new brakes to join RINGSPANN's portfolio are particularly impressive thanks to their compact design. For applications where the brake needs to be moved as well, the low weight is naturally a crucial advantage.

Numerous different versions available

RINGSPANN offers both spring-actuated/electromagnetically ventilated and electromagnetically operated versions. This enables the various applied concepts to be implemented with an active or passive brake. The RINGSPANN brakes shine thanks to especially low power consumption in the holding phase. This is an important feature, especially for electromagnetically

ventilated brakes. This aspect plays a big role in determining whether it is possible to design an environmentally friendly, energy efficient construction. The approx. 10 watts of holding power are an outstanding figure that is not easy to find elsewhere on the market.

These brakes are particularly suitable as a holding brake or as an emergency stop brake. There are no limits with regards to the scope of applications. The universally applicable brakes are available in four different sizes and are available with clamping forces of up to 24 kN. The respective size designations are 018, 024, 028 and 038. These four sizes cover the scope of services of the well-known RINGSPANN brake pliers. The usual mounting options of V (extension level parallel to the brake disc) and H (extension level perpendicular to the brake disc) are also available with the electrical brakes.

Special features

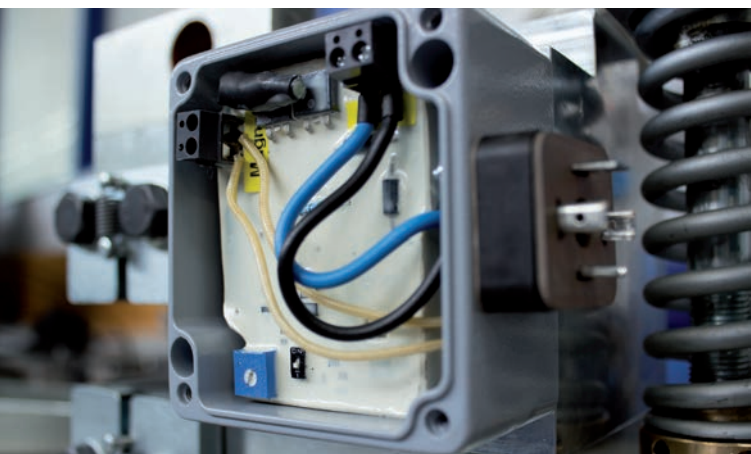
Further important options for the user have been integrated in the electrical brakes. The clamping forces are adjustable via an adjusting nut within a certain range. This enables the brake torques to be adapted very precisely to the application requirements. The brake can moreover be adapted to different brake disc thicknesses. This range spans from a brake disc thickness of 8 to 30 mm. This is especially advantageous if it is not possible to freely select the brake disc thickness and diameter.

It is also important to mention the installation possibilities of sensors. Besides the monitoring functions for open or closed brakes, it is also possible to detect whether the maximum permissible brake lining wear has been reached. Thanks to the monitoring functions, the brake can very simply be merged into the full concept of the facility's control system. A sensor that monitors the brake lining wear is very helpful, in particular when the brake in the machine or facility is not easily accessible.

Control electronics

The integrated electronics that are crucial for the function are operable at the usual voltage ratings of 230 to 400V. Depending on the power frequency available, the user can simply switch between 50 and 60 Hz at the electronics. The electronics can otherwise be put into operation without any additional adjustment measures. The brake can thus be operated easily at all common power grids. Optimal performance data results occur when operating at a supply voltage of 400V.

Essential details regarding the electronics are usually not perceived by the user. For example, the electronics are fused multiple times against voltage peaks from the mains. Even in the



Control electronics of the brake

event of the occurrence of such disturbances, the safe operation of the generous switching transistors is possible. The reduction of the required inrush power by up to 20% compared with previous versions has been achieved thanks to the systematic implementation of the experience gained in the market. Naturally, the optimisation of the magnetic circuit was carried out with use of FEM calculations. This finally enables the very compact construction method of the magnet and optimal interaction between the magnet and the electronics. All in all, the electronics work reliably and ensure the functional operation of the brake.

Applications

One example of the multitude of possibilities for use of these electromagnetic brakes is large ventilators for the aeration and ventilation of tunnels or mining sites. The ventilation is required for example in case of a vehicle traffic jam in a road tunnel. In the field of mining, the brake is used in certain operating conditions as a stop brake in order to bring the ventilator to a halt very quickly. It can subsequently be increased to the desired operating condition in the plant. There are often no hydraulics or pneumatics present in these applications, while one also avoids using oil. Reasons for this are e.g. fire protection and environmental aspects. The employment of an electromagnetic brake is thus a simple method of implementing the necessary stop function required especially for the prescribed maintenance work. The high corrosion protection of the brakes and IP65 protection class for electronics enable the problem-free deployment in sheltered outdoor areas.

The suitability of these brakes for the employment in sheltered outdoor areas also enables their use in small wind-power plants. The extremely low energy consumption in the holding phase is naturally a crucial aspect for this type of application. After all, one would like to generate energy and not waste it on unnecessarily keeping the brake open. The possibility of being able to use sensors for status and wear monitoring hereby increases the working reliability of the wind-power plant. In addition, the built-in emergency ventilation possibility is important with such an application in order to specifically be able to open the brake when carrying out maintenance work on the facility. These two examples are only representative of many further application types. No matter whether it is used for individual test bench or in a machine tool series, whenever a stop brake or in particular a holding brake is required, an electromagnetic brake can be an excellent choice.

Years of brake technology experience

Finally, it is worth mentioning that RINGSPANN's years of knowhow in the field of brake technology has naturally also gone into the implementation of these electrical brakes. This is reflected for example in the materials used for the brake linings. The wealth of experience garnered over the years on the behaviour of possible materials employed as brake linings has also been applied to these new brakes. The user can thus rely on the fact that proven technology will be used where it matters, namely the friction surface. In summary, these electrical brakes provide fresh evidence of RINGSPANN's high level of competence in the field of industrial disc brakes. The user has been provided with a variety of excellent new possibilities thanks to these new electrical brakes.

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