

Endurance runners or dynamic sprinters

Robust planetary gears for high overloads

A planetary gear usually consists of a centrally mounted sun gear, a ring gear and several planetary wheels. The advantage of this design is that high torques can be transmitted by distributing the load over several planetary wheels. With their high power density, the robust and durable Optimax planetary gears from ebm-papst are particularly suitable for shuttle vehicles in intralogistics or crossbelt sorters, and can also be used as barrier or gate drives.

For industrial automation and intralogistics, ebm-papst offers a wide selection of motors, control electronics, transmissions, and brake and sensor modules in a sophisticated modular drive system that can be combined to create a customized drive. The electronically commutated ECI motors, for example, cover a power range from 30 to 750 watts in sizes 42, 63 and 80 mm. Different transmissions matched to the drives then ensure the necessary reduction ratio for the high-speed internal rotors.

High-performance robust transmissions for ECI motors

All toothed parts in Optimax planetary gears are made of hardened sintered steel. To improve their sliding properties, the planetary wheels are impregnated with synthetic oil. In order to be able to transmit the highest possible power, gears with a large wheel width are installed in all Optimax transmissions. This minimizes surface pressure and hence wear on the tooth flanks despite high torques, which in turn ensures a long service life. Even high radial loads caused by toothed belts or eccentrics, for example, are not critical. The output stage has a very rigid design with two large ball bearings and can thus withstand up to 500 N radial load in nominal operation with a maintenance-free service life expectancy of up to 10,000 hours. Thanks to the flat gaskets used, the transmissions meet the requirements for IP54 degree of protection as standard.

Small edge dimension and finely graduated reduction ratio

Despite the small edge dimension, a very large ring gear diameter has been achieved because the four axial fastening screws are placed in the corners of the square. The two flanges engage positively in the gear teeth of the ring gear, thereby ensuring both the alignment of the components relative to each other and the torque support under the housing components. The finely tuned reduction ratio range for all three variants in the single-stage range extends from 3:1 through 5:1 to 9:1. The two-stage versions are available with reduction ratios of 9:1, 15:1, 25:1 and 45:1. The transmissions have a modular design; the seven reduction variants are implemented using three individual reduction ratios.

Suitable for continuous operation or for highly dynamic applications

The transmission series has been successfully tested in both dynamic cycle operation and continuous operation. This guarantees reliable operation at all times, whether as a continuous runner, for example on belt conveyors, or when used in rapidly accelerating shuttle vehicles.

Pascal Schöpf
Trade Press Coordinator
Phone: +49 7938 81-7006
Pascal.Schoepf@de.ebmpapst.com

Corinna Schittenhelm
Trade Press Coordinator
Phone: +49 7938 81-8125
Corinna.Schittenhelm@de.ebmpapst.com

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Press Relations contact
ebm-papst Group
Phone +49 7938 81-7105

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Fig. 1: Planetary gears from the Optimax series: Robust and powerful

Fig. 1 ebm-papst
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About ebm-papst

The ebm-papst Group, a family-run company headquartered in Mulfingen/Germany, is the world's leading manufacturer of fans and drives. Since the technology company was founded in 1963, it has continuously set the global industry standard with its core competences in motor technology, electronics, digitization and aerodynamics. With over 20,000 products in its portfolio, ebm-papst provides the best energy-efficient, intelligent solution for virtually every ventilation or drive-engineering task. In fiscal year 2021/22, the "hidden champion" generated revenues of € 2,288 billion. The group employs roughly 15,000 people at 29 production sites (in Germany, China and the USA, to name but a few) and in 51 sales offices worldwide. ebm-papst sets the benchmark with their fan and drive solutions which are used in almost all industries, such as ventilation, air conditioning and refrigeration, heating, automotive, information technology, mechanical engineering, household appliances, intralogistics and medical engineering.

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Phone: +49 7938 81-7006
Pascal.Schoepf@de.ebmpapst.com

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