

Warner Electric

Boston Gear

TB Wood's

Formsprag Clutch

Wichita Clutch

Marland Clutch

Industrial Clutch

Bauer Gear Motor

Svendborg Brakes

Nuttall Gear

Warner Linear

Delroyd Worm Gear

Stieber Clutch

Ameridrives Couplings

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Transmission

Bauer Delivers Efficiency for The Pharmaceutical Market



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Every industry aims to reduce costs and improve efficiency, but for some sectors this can prove to be more of a challenge. For those involved in the hygienic sectors, Bauer Gear Motor has not only developed market leading technology but also designed it to meet the requirements of both clean and potentially explosive atmospheres.



Bauer Gear Motor offers PMSM motors suitable for the hygiene industry that achieve significant energy savings under partial load.



The stainless steel gear motor delivers IE4 super premium efficiency along with the strength and durability of stainless steel.

It is well known that electrical motors use 70% of the energy used in industry, but a lesser known fact is that 96% of the lifetime costs of an electric motor is associated with the energy consumption. This shows the importance of the overall efficiency compared to the initial purchase cost in terms of importance of the total cost of ownership (TCO).

While safety is an overriding concern, especially within the Pharmaceutical industry, this can limit the full extent to energy savings that can be achieved using the latest motor design technology. In the case ATEX-certified equipment, the legal requirements for minimum efficiency levels in electric motors is secondary to safety requirements and thus lags well behind those for more ordinary applications. Clearly the need for safety should override the desire for efficiency; however, it is possible to achieve both goals thanks to Bauer.

Due to the special hygiene demands of industries such as pharmaceuticals, specialized components typically have to be specified which can withstand the regular cleaning regimes and guarantee clean operation without risk of contamination. However, because the return on R&D investment is slower for specialized components, the latest energy efficiency developments often filter through at a slower rate when compared to standard motor products. As such there are very few IE4 super premium efficiency geared motors suitable for these applications.

Stainless Steel

Bauer Gear Motor, which is part of Altra Industrial Motion, has brought together the tried and tested Bauer permanent magnetic synchronous motor (PMSM) and aseptic drive technologies to produce a stainless steel gear motor that delivers IE4 super premium efficiency along with the strength and durability of stainless steel.

PMSMs offer considerably improved efficiency when compared to induction motors, especially under partial load conditions. In real life application examples they have been shown to offer energy savings of over 40% when compared to a standard, IE2 asynchronous motor. Bauer is at the forefront of this technology and is committed to developing solutions for specialist industries where energy efficiency is a high priority.

The stainless steel modular geared motor from Bauer is designed with surfaces which slope by at least 3° to prevent the formation of dirt deposits and allow the run-off of cleaning agents and water. It has been designed to eliminate the need for a fan or cooling ribs to further improve sealing and reduce the risk of dirty water pooling.

The stainless steel construction eliminates the risk of the hygiene rating becoming compromised in the event of an impact or

over prolonged periods of use in heavy washdown environments, making it the perfect addition to Bauer's range of super premium efficiency motors for the pharmaceutical industry.

Aseptic Drives

Aseptic drives are carefully designed for applications where regular washdowns are required to maintain a clean environment. Like the stainless steel version, the motor is designed so that a fan and cooling ribs are not required, thereby allowing for a completely smooth outer casing with a non-drive end which is sealed. This eliminates any dirt traps on the motor casing and also prevents re-infection of the local environment caused by air movement from a cooling fan.

The design also includes a very high level of ingress protection, up to IP69K; which is a special designation for washdown applications involving high pressure, high temperature water. In addition, the aseptic drive is painted using an acid and alkali resistant formula, which can withstand chemicals with a pH range of 2 – 12. As a result, the new drive system can tolerate the cleaning solutions and disinfectants that are commonly used within the pharmaceutical industry without affecting its performance.

PMSM Advantages

The synchronous design of the PMSMs means that not only are they superior at converting electrical energy into mechanical power, but they also offer the added benefit of maintaining constant speed, independent of the load. This means that motor speed does not vary, despite overload variations, or in cases of voltage drop, as long as the mains frequency is kept constant.

The PMSM series is available in ventilated and non-ventilated configurations across the power range from 0.55kW to 15kW. They operate on 380V to 500V power supplies and are rated for inverter-duty, offering an extended speed range with constant torque.

The low operating and maintenance costs of the PMSMs mean that they provide the optimum energy saving drive for use on fans, pumps and compressors as well as for constant torque applications such as elevators and conveyors.

Bauer's engineers have set out to design a motor and gearbox combination that can deliver in terms of hygiene and efficiency, the latest IE4 motors forming an excellent basis on which to build. However, there also needs to be a compelling financial argument to support the design excellence in order to convince end users that the investment will be well advised.

For a small to medium sized electric motor that is running close to capacity for the majority of the time, such as in a continuous manufacturing process, then the additional investment in terms of purchase cost is quickly outweighed by the energy savings. While theoretical calculations can demonstrate the potential efficiencies, Bauer has also worked closely with some of the leading companies in a range of industrial sectors to prove the technology in real-life settings.

By combining the most efficient electric motor technology with proven gearbox design, Bauer has been able to demonstrate the numerous advantages of installing a matched set of components that is capable of producing the projected savings, such as TCO, and so recovering the initial investment. From this important cornerstone, it has progressed the design to bring the benefits to a wider audience that now includes pharmaceuticals.



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About Altra Industrial Motion

Altra Industrial Motion (NASDAQ:AIMC) is a leading multi-national designer, producer and marketer of a wide range of electromechanical power transmission products. The company brings together strong brands covering over 40 product lines with production facilities in nine countries.

Altra's leading brands include Boston Gear, Warner Electric, TB Wood's, Formsprag Clutch, Wichita Clutch, Industrial Clutch, Ameridrives Couplings, Kilian Manufacturing, Marland Clutch, Nuttall Gear, Bauer Gear Motor, Svendborg Brakes, Stieber Clutch, Twiflex Limited, Bibby Turboflex, Matrix International, Inertia Dynamics, Huco Dynatork, Lamiflex Couplings, Ameridrives Power Turboflex, Guardian Couplings, Delroyd Worm Gear and Warner Linear. For information on any of these technology leaders, visit www.AltraMotion.com or call 815-389-3771.



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