

Ameridrives

Bauer Gear Motor

Bibby Turboflex

Boston Gear

Delroyd Worm Gear

Formsprag Clutch

Guardian Couplings

Huco

Industrial Clutch

Inertia Dynamics

Kilian

Lamiflex Couplings

Marland Clutch

Matrix

Nuttall Gear

Stieber

Stromag

Svendborg Brakes

TB Wood's

Twiflex

Warner Electric

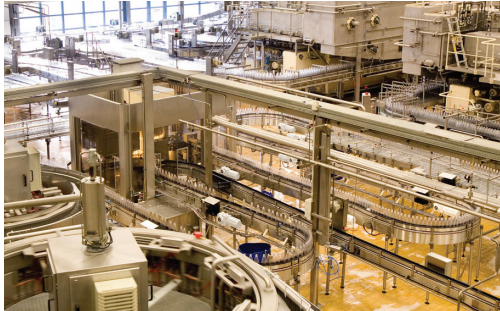
Warner Linear

Wichita Clutch

Performance & Flexibility: Bauer Delivers for the Beverage Industry



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Every manufacturing process needs to transport products through various stations to create the finished product; the beverage industry is no exception. From packaging to bulk transport, a large percentage of the work is done by conveyors, so the reliability and effectiveness of the drive systems are crucial to the productivity of the manufacturer.

Yasar Yüce, Product Manager for Bauer Gear Motor, explains how modular gear motor designs can help beverage manufacturers deliver on energy, hygiene and productivity demands.

The overall performance of a drive system can be judged on several contributing factors, each of which may be considered more or less of a priority depending on the application and production environment. For example, where a manufacturer has a large network of conveyors, energy efficiency is likely to be a key concern. Conversely, other manufacturers may prioritize hygiene performance over all else. Fortunately, modern engineering design and manufacturing has enabled all of these conditions to be met without compromise.

Ideally, production managers and maintenance managers have the same set of requirements for equipment on the site, but there can be a conflict when trying to equip different areas. Using a geared motor operated through a variable speed drive offers a range of solutions that can be tailored to each application in terms of power requirements and output speed.

Driving Innovation

Bauer Gear Motor, part of Altra Industrial Motion Corporation, is at the forefront of innovation in the design and manufacture of geared motors. Its modular design and engineering expertise has enabled it to deliver solutions which are tailored to meet the requirements of the beverage industry. By looking at the production site as a whole, experts from Bauer can offer flexible solutions that meet goals for efficiency, reliability and productivity. Production facilities will often include several different environments, such as chilled areas, hygienic zones and production lines that require regular washdowns. Each of these environments presents its own challenges in terms of the equipment being installed. While there is a range of drive solutions for each of these areas, sourcing components from several different manufacturers will create a more complex situation in terms of maintenance and spare parts.

Bauer has set out to simplify this situation by developing the HiflexDRIVE range of gear motors, a modular system that can deliver excellent energy efficiency with up to IE5 motors according to IEC TS 60034-30-2. Each model is offered in a standard painted configuration, aseptic or stainless steel versions, which means there is an available solution for almost any environment.



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Motor Performance

The HiflexDRIVE range can be specified with electrical drive motors rated from IE0 to IE5. The IE5 range uses the latest in permanent magnet synchronous motor (PMSM) technology. PMSMs offer considerably improved efficiency when compared to induction motors, especially under partial load conditions, and have the added benefit of maintaining constant speed, independent of the load. This means that the motor speed does not vary – despite overload variations or cases of voltage drop – as long as the main frequency is kept constant.

The PMSM series is an environmentally friendly range of motors, employing a highly efficient rotor design that offers several key benefits. It reduces heat loss from the rotor by 100%, total losses by approximately 25%, and increases total efficiency by 10% or more. These savings represent a significant advantage for stainless steel drives, which dissipate heat less efficiently than aluminium or cast iron.

For the PMSM user, this improved performance translates into lower total cost of ownership, a reduction in CO₂ emissions and ongoing savings that buffer against future increases in energy costs.

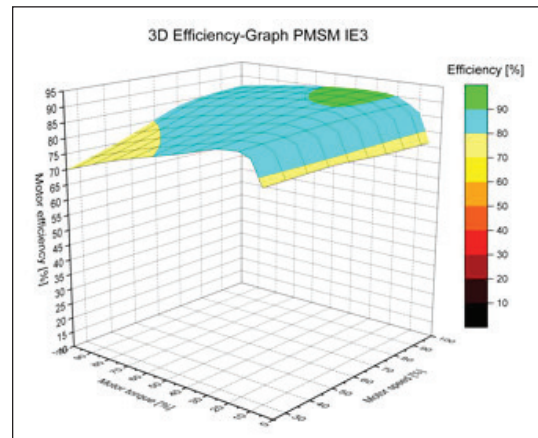
Geared Solutions

Matching the most suitable motor and gearbox combination to an application is key to delivering the most efficient and compact solution. In the standard configuration, the HiflexDRIVE gearbox offers a low-weight, high-efficiency, 2-stage gear design that offers cost effective and reliable performance.

Now available in three sizes, with rated torques from 80 Nm to 300 Nm, the gearboxes can be matched to the most suitable motor to create the ideal solution for every application. The flexibility in design means that the final output speeds can be matched exactly to each process. Also, the combination of gear ratios and variable-speed drive settings ensures a large number of applications can be satisfied by a small number of components.

Clean Living

In areas where regular washdowns are required to maintain a clean and hygienic environment, both the aseptic and stainless steel variants have several features that enable them to endure in this arduous environment. 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 prevents re-infection of the local environment caused by air movement from a cooling fan.



The PMSM series is an environmentally friendly range of motors, employing a highly efficient design of rotor that offers several key benefits.

The design also includes a very high level of ingress protection of IP67, as standard and 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, this drive system can withstand the cleaning solutions and disinfectants that are commonly used within the beverage industry without affecting its performance.

Stainless steel is also available, offering the same levels of ingress protection and specially shaped outer casing to promote hygienic conditions. In addition, the stainless steel variant offers an increased mechanical resilience, making it suitable for high-traffic areas.

The combination of the stainless steel casing and the IES PMSM motor make an ideal solution, especially in areas where ambient temperatures are carefully controlled. The reduced heat loss of the PMSM reduces the workload for the temperature control equipment, providing further savings for the manufacturer. Furthermore, Bauer's HiflexDRIVE units can operate in temperatures as low as -40 °C, making them ideal for all production areas, even frozen storage.

Minimizing Costs

Several very important aspects are required to maintain productivity, including reliability and low operating costs. While sound engineering design and high quality manufacturing enable the first, the flexibility and modular design of the HiflexDRIVE enable a small number of components to be used for a large number of drive systems within a manufacturing facility.

In order to maintain a sufficient level of spare parts to ensure minimal downtime in the event of a breakdown, only a small quantity of components need to be held in stock. This minimizes the value of the parts inventory while maintaining full serviceability for the HiflexDRIVE systems.

Bauer can assist with installation assessments and provide comprehensive advice for solutions throughout a manufacturing environment, including the use of the HiflexDRIVE for a number of conveyor applications. By applying this expertise, it is possible to implement a modular drive system that minimizes energy consumption and simplifies parts inventory, while also meeting the needs of different environments, including hygienic locations.



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