AUTOMATION SOLUTIONS SIMPLIFIED

Energy Saving Solutions for Plastic Machinery and Hydraulic Press
ENERGY EFFICIENCY, PRECISION AND PRODUCTIVITY FOR:
- PLASTIC INJECTION MOULDING MACHINES
- BLOW MOULDING MACHINES
- EXTRUSION MACHINES
- HYDRAULIC PRESS

Flow: 30 LPM to 450 LPM | Pressure: 120 Bar to 320 | Bar In Single Pump - Motor Configuration

10000+ installations and growing

Complete Customized Package Comprising:
KEB Servo Drive: Intelligent and Compact
PM Servo Motor: Excellent Dynamic Response and Low Inertia
Internal Gear Pump with Cradle: Low Noise and High Efficiency
Accessories: EMC Filter, Choke, DBR, Cables, PLC, HMI

300,000 plastic machines are driven by KEB drives worldwide
CONCEPT OF ENERGY SAVINGS WITH KEB SERVO DRIVE SOLUTIONS

The Servo pump system combines a Servo motor's fast step-less speed regulation with the hydraulic pump's self pressure adjustment. This can yield high energy savings (30% to 60% depending upon cycle time) compared to with traditional constant/variable displacement pump systems.

**Position Repetition Accuracy**
Fast response guarantees mold-close/opening accuracy as well as injection accuracy.

**Pressure Control**
Fast responsive PID module of the Servo Drive achieves stable system pressure and accuracy of +/- 0.5 Bar due to close loop control. Long pressure holding times of >30 secs can be achieved using KEB Drives.

The Servo Drive-Motor operates the Servo Pump @ 3000 RPM and achieves additional energy savings of 5% compared to Servos that operate at lower speeds. These features result in overall improvement of machine performance by eliminating rejections, improving product quality and improving productivity.
The wide range of AC variable speed drives and Servo drive systems we offer in partnership with KEB Automation KG of Germany, leverages our expertise gained over 70 years in the field of rotating machines. Our modern plant at Airoli Navi Mumbai, certified ISO 9001:2015, was established for assembly and load testing of KEB Servo Drives from 15kW to 900kW. KEB drives cater to a variety of challenging applications that demand high performance with superior accuracy and dynamic response. KEB also designs and manufactures high speed multi-axis C6 motion controllers.

**Unique Features of KEB Servo Drives**

- Epoxy conformal coating on PCBs for protection against corrosion, moisture and dust
- Sensor-less motor management algorithm
- i’t and PTC motor protection
- Ambient temperature 45°C
- Compact Design
- 8 programmable parameter sets
- Wide input operating voltage
- Heatsinks with various cooling options (Fancooled, Watercooled, PushThrough, FlatRear)

The wide input operating voltage band is ideally suited to Indian conditions
- 230V Class - 180V to 260V
- 400V Class - 305V to 500V
- 690V Class - 600V to 760V

Optional Plug-in Interface Feedback Cards
- Encoder: Incremental/Absolute/Sine-cosin/Hiperface
- Resolver

Universal PC Software for all KEB Combivert F5 units
Drive parameters can easily be accessed using Combivis software that can be freely downloaded from KEB’s website www.keb.de

The software activates a laptop’s scope function, and Drive parameters can be viewed graphically and recorded during commissioning.

**Drive Networking**

KEB drives offer an extensive range of networking options.

- CANopen
- DeviceNet
- MODBUS
- INTERBUS
- SERCOS
- PROFIBUS
- ETHERNET
- ETHERCAT
- PROFINET
PERMANENT MAGNET SERVO MOTORS FOR SERVO PUMPAPPLICATIONS IN
PLASTIC MOULDING MACHINES AND HYDRAULIC PRESS

These Servo Motors are designed to handle demanding duty cycles and are manufactured to stringent quality control standards.

- Protection Class - IP55, IP65
- Ratings: upto 100 kw/1000 Nm
- Mounting: B3 or B35
- Rated speed: 1000 to 3000 RPM
- Fan cooled (standard) or (optional)
- Brake (optional)
- Ambient Design: 45°C
- Class H Insulation
- Encoder/Resolver Feedback

NEW TECHNOLOGY FOR ENERGY SAVINGS IN SCREW ROTATION FOR PLASTICS MACHINERY

Direct Drive Torque Motors can be offered as a customised energy savings solution to eliminate the gear box, for driving the screw of Plastic Extrusion Machines (Blown Film/Sheet/Pipe). It offers significant energy saving and eliminates problems like noise, oil spillage, lubrication, frequent maintenance and noise. It is compact and occupies less space than a motor+gear box combination.

Direct Drive Motors can also be offered for driving the screw of Plastic Injection Moulding Machines eliminating the hydraulic motor. Hydraulic motors often have inconsistent speeds with torque pulsations and are prone to wear and tear.

This reduces energy costs and also improves productivity by reducing overall cycle time.

These motors can be driven by KEB’s SCL technology that does not need Encoder feedback.

**Direct Drive Motor Technical Specification:**
- Torque Range: 300 Nm to 5000 Nm
- Speed Range: 100 RPM to 500 RPM
- Power Range: upto 150 kW
*higher ratings also offered.*
BBVERT BL51/BL52 AC VARIABLE FREQUENCY DRIVES

We offer a series of AC Variable Frequency Drives (VFDs) under the name BBVERT BL51/BL52. BBVERT Drives are compact, easy to install and operate, and deliver superior performance and high reliability. They can be used for applications such as Extruders, Pumps, Blowers, Chillers, Conveyors and Mixers for speed and torque control of induction motors. These drives can be used in V/F control as well as in Sensorless Vector Control (SLV) mode.

Unique Features:

- Ambient Temperature upto 50°C (without derating).
- Built in EMI filter in compliance with IEC standard EN61800-3 & EN 61800-5-1.
- Conformal coated electronic boards for protection against dust, corrosion and moisture.
- Built-in standard protective functions like 150% overload for 60 seconds, stall prevention, under-voltage/over-voltage protection and Motor PTC protection.
- Supports communication protocols like Profibus, Devicenet, CANopen and Modbus for Interface with PLC.
- 32 bit high speed CPU for faster dynamic response and accuracy.

READY FOR INDUSTRY 4.0

IIOT solutions are available for predictive and preventive maintenance of Plastic Injection Moulding Machines:

- Sensors and gateways at machine level.
- Compressed data storage and data manipulation on cloud server.
- Remote display at shopfloor; cell phones and monitors at strategic locations.

- Time-based and alarm-based customised dashboards for OEE (Overall Equipment Efficiency), Availability of machine, Productivity data, Power consumption.
- Predictive maintenance enabling condition monitoring of electrical and electronic subsystems and rotating equipment.
MOTORS PRODUCT RANGE

LV MOTORS: SAFE AREA
Motor Type | Frame        | Power (kW)  
---|--------------|-------------
IE2 Motors  | 71 to 355    | 0.37 to 355  
IE3 Motors  | 80 to 355    | 0.55 to 355  
IE4 Motors  | 112 to 225   | 0.55 to 45   
Large LV Motors (DCCA) | 355 to 450 | 280 to 1250  

LV MOTORS: HAZARDOUS AREA
Motor Type                  |Frame | Power (kW)  
---|------|-------------
IE2 Flame Proof Motors     | 80 to 315 | 0.37 to 200  
IE3 Flame Proof Motors     | 80 to 315 | 0.75 to 180  
IE2 Non Sparking Motors    | 71 to 355 | 0.37 to 355  

LV MOTORS: SPECIAL PURPOSE
Motor Type                  |Frame        | Power (kW)  
---|--------------|-------------
Crane & Hoist Duty Motors   | 71 to 355    | 0.37 to 400  
Cane Unloader Motors       | 160 to 225   | 11 to 30     
Brake Motors               | 71 to 132    | 0.25 to 9.3  
Slip ring Motors           | 100 to 160   | 1.10 to 10   
Textile Motors             | 100 to 160   | 1.1 to 15    

MEDIUM VOLTAGE MOTORS UPTO 1250 kW

IE4 Motors
Winner of CII’s ‘Most Innovative Energy Saving Product’ 2016

Super Premium IE4 class of efficiency as per IEC 60034-30-1-2014
Operates without a VFD
Line Start Permanent Magnet Synchronous Motor (LSPMSM) technology*
Remarkably short payback periods

To calculate energy saving and payback period for IE4 motor visit www.bharatbijlee.com/ie4-motors-synchrovert

*Patent Pending