


Enabling Productivity, Precision and Energy Efficiency


70+
years
experience


4 million
motors


10,000
servo solutions


20,000
gearless
machines
for elevators

Editor's Note

Welcome to Issue 4 of Velocity in which I would like to share some highlights of our Magnet Technology Machines (MTM) vertical, the erstwhile Elevator Systems division at Bharat Bijlee.

From 1973 to 2004, we manufactured and installed elevators under the Olympus brand, and had over 12,000 installations across the country. This legacy left us with an understanding of the nuances of this complex business and its fast changing technologies.

By 2007, the building industry was increasingly aware of the advantages of MRL elevators and gearless machines, new technologies that were gaining rapid acceptance in other parts of the world. That year, gearless elevator machines were identified as a new line of business, leveraging our understanding of elevator applications with over six decades in the manufacture of electric motors. In 2008, in partnership with **Permagsa** of Spain, we became the first manufacturers of **Permanent Magnet Gearless Elevator Machines** in India.

Today we have supplied over 20,000 machines to the elevator industry in India, Spain, Germany, Portugal and elsewhere.

What products do we offer? Our GreenStar range of Permanent Magnet Gearless Machines is suitable for passenger, goods, and home elevators. They are compact, reliable, and relatively maintenance-free.

Over the years, several GreenStar variants have been developed for different applications, loads and rated speeds: The 18-pole GreenStar Max for goods elevators, GreenStar Mini for home

elevators, and most recently GreenStar BELT for elevators with belt suspension. These machines are available with multiple encoder options, and operate with the customer's preferred drive.

In 2016, we began to look at PMSM applications beyond elevator machines. Together with our Drives & Automation division we are actively exploring applications where we can enable improvements in productivity, precision and energy efficiency.

Our new SynchroTorq™ range of high-torque direct drive machines offers higher efficiency, significant power saving, and can improve machine output.

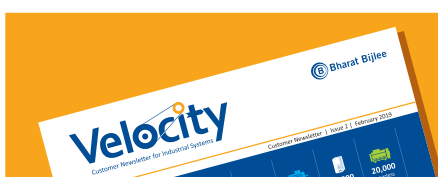
How do we support our customers? We understand that some customers need guidance in product selection, commissioning and trouble shooting. Our technical support documentation is thorough and user-friendly. We offer field service support across the country, which in turn is supported, monitored, and measured by our central ServiceLINE™ team in Airoli.

How can we add value for you? Technology is changing faster than ever before, and our goal is to continuously innovate to stay abreast or even ahead of the curve. Over the next months there will be several exciting launches of such new products and solutions for specific applications and industries. We are looking forward to working alongside customers to help SynchroTorq™ range make a positive and measurable difference.

I hope this background of our MTM business has been informative. For more information, please get in touch with me on rajaraman.r@bharatbijlee.com.

R. Rajaraman

VP - Magnet Technology Machines



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By subscribing to our newsletter on this link: <https://www.bit.ly/2EcBohF> you will receive it by e-mail as soon as it's published.

Bharat Bijlee is synonymous with electrical engineering in India. Our key business lines are Power Systems (Power Transformers, EPC Projects) and Industrial Systems (Motors, Drives & Automation, Magnet Technology Machines). Headquartered in Mumbai, we have sales and service network across India. The company's manufacturing facilities are located in Airoli, Navi Mumbai on a 1,70,000 sqm. campus.

Case Study

Automation Solution for Two for One (TFO) Textile Machines

Textile manufacturing involves conversion of fibre into yarn and yarn into fabric. The fabric is then dyed or printed. Different machines perform these processes of spinning, weaving, warping, and dyeing.

One such process is the twisting of two or more single yarns, called doubling or folding or ply twisting. Ply twisting delivers certain yarn properties that cannot be achieved by single yarns. Machines for this purpose are called doublers, ply-twisters or two-for-one (TFO) twisters.

TFO twisters are gaining preference over ring doublers and up twisters for both spun yarn and filament yarn. This is because of inherent advantages such as:

- Production of longer lengths of knot-free yarns, enabling better performance in subsequent processes
- Higher productivity.

Ply twisting improves, at the yarn stage, evenness, strength, elongation, lustre and smoothness. At the fabric stage, it improves wear resistance, visual appearance, and foldability.

An estimated 400,000 TFO twisting positions are installed in India, with a variety of process sequences, twists per inch (TPI), number and type of spindle, twist direction and other operational parameters.

A critical and expensive threat to these machines is thread breakage when there is an unexpected power shutdown. Typically, this is addressed by:

- A UPS and battery bank to power the take-up (drum motor) drive, traverse drive and PLC.
- Proxy feedback from spindle for synchronised stopping of the drum motor.
- Multiple proxies for speed feedback from spindle and drum motor.

Bharat Bijlee's solution for TFO machines eliminates these limitations using features of the **KEB COMBIVERT F5** drive.

The F5, suitable for controlled and regulated applications, offers control solutions for both asynchronous AC motors and synchronous servo-drives. Its software delivers outstanding positioning accuracy, and meets stringent demands of speed, torque and breakaway torque - with or without encoder feedback.

A special feature of the F5 is its **Power Off** function, which provides controlled deceleration upto standstill in case of under-voltage or power failure. The kinetic energy of the rotating drive is used to support the inverter's DC-link voltage; as a result, the inverter remains in operation and decelerates the drive in a controlled manner. This has particular utility for multiple parallel-running drives whereby the serious consequences of uncontrolled running down of motors can be avoided.

This feature provides important benefits for TFO machines:

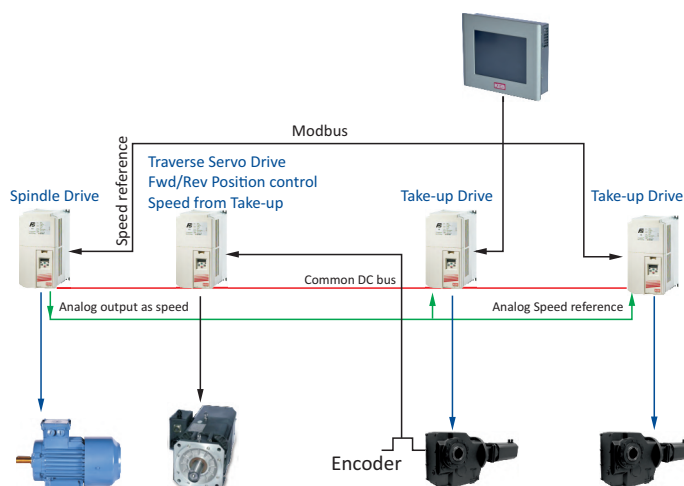
- The **Power Off** function eliminates the UPS and external battery. If power supply is interrupted, this function is activated in the spindle drive. All other drives on the common DC bus are synchronously stopped. This prevents thread breakage.
- Dedicated parameters set in the traverse servo drive and take-up drive ensure synchronised stopping with the spindle motor.
- The spindle drive's **asynchronous sensor-less closed loop (ASCL)** firmware accurately emulates rotor speed from a mathematical model of the motor using its name-plate data. This enables speed stability and torque accuracy without any need for an encoder and encoder interface.
- Inbuilt traverse logic enables precise position control and removes the need for a high end PLC.
- Speed reference is achieved through Modbus communication to the spindle drive.
- Take-up drive settings are automatically computed from the desired TPI.
- Input supply voltage range is a wide 305V AC to 500V AC.

This proven solution is successfully installed in many TFO machines across the country.

Benefits of Bharat Bijlee's KEB F5 drive solution in TFO machines

- No yarn breakage due to **Power Off** functionality
- Eliminates encoder by ASCL firmware
- Suitable for cotton and polyester yarn
- Energy-saving

Bharat Bijlee also offers products and automation solutions for a variety of textile machines: Stenter, Drum, Loop Steamer, Dyeing Jigger, Rotary Printing, Continuous Mercerizing, Hydro/Centrifugal, Flatbed Screen Printing, Texturizing and more. To view our product portfolio, please visit <https://www.bit.ly/2MiNH2g>



Partner Spotlight



Chintan Shah
M/s Nipa Agencies

When did you start Nipa? What was the impetus to start it?

Nipa has been associated with electric motors market since 1970. We were working as Carrying & Forwarding agent for NGEF-make electric motors for Gujarat region; they had seen working culture, infrastructure and finance capacity of our company and initiated dealership agreement in 1971.

What are the focus areas of your business?

We are working with Fan & Blower, Pump, Road Construction, Textile machinery manufacturers in Ahmedabad and surrounding areas. We cater to small and medium scale machine manufacturers and end users. 60% of our business volume comes from big OEMs and 40% from retail sector. We have developed many sub-dealers, contractors and pump dealers and they are supplying our motors with their products such as Gear Box, Pumps, Belt-Pulley and others.

Since when have you been associated with Bharat Bijlee? What have been some of the key highlights of this association?

We have been associated with Bharat Bijlee since 2002. We started our journey with very low volume and stock in 2002. In the last decade, we have observed a lot of changes in BB. They have developed excellent market in our area with lot of effort and co-operation with the dealer network. We continuously take guidance on road map for growth with BB team. We are doing more than 10 cr. sales volume with BB at present.

What do you look forward to going ahead in your journey with Bharat Bijlee?

We have been investing in manpower, infrastructure and raising our stock availability for last seven years. We are growing with BB @25% CAGR since last five years. We are targeting sales volume of Rs. 25 cr. in the next five years with BB products.



Kuldeep Singh
M/s Fair Electro Sales

When did you start Fair Electro? What was the impetus to start it?

Our firm M/S Fair Electro Sales was incorporated in the year 1988. After completing my B.E. (Electrical) and gaining experience in this industry, I was motivated to build my own electrical goods business in Ludhiana. We took dealership for Bharat Bijlee motors in 1991 and thereafter there was no looking back.

What are the focus areas of your business?

We cater to a wide range of market in and around Ludhiana and focus on only two products i.e. electrical motors and switchgear. We cater to assorted machine tool and special purpose machine OEMs like wood working and expeller OEMs, end-users, crane manufacturers, rice sheller machinery manufacturers in and around Ludhiana.

Since when have you been associated with Bharat Bijlee? What have been some of the key highlights of this association?

We have been working exclusively for BB motors since inception and seen the company developing its product range. We have grown exponentially with Bharat Bijlee in these 29 years of association. We have added a range of customers and delivered quality products along with prompt service in this very competitive industrial market of Ludhiana. We have been awarded recently with Silver award for Sales Excellence in Northern region for the year 2018 at International Partner Conference in Malaysia.

What do you look forward to going ahead in your journey with Bharat Bijlee?

We wish to grow together with Bharat Bijlee. My son Surajdeep Singh has recently joined our business and is a qualified engineer. We look forward to expanding business for standard and non-standard motors in and around Ludhiana and becoming the no. 1 Distributor in Northern Region.

Welcoming Drives & Automation Solution Partners



Thirumalaivasan
Sri Ganesh
Engineering,
Chennai



K. Narayanan
Kutti & Nathan,
Chennai



Mahesh Tyagi
Elite Engineers,
Delhi

BB in the News



Our flameproof motors are now IECEx and ATEX certified! This is an international certification of standards relating to equipment used in explosive atmospheres. The certification encompasses a wide range of our flameproof motors available for both domestic and overseas markets.

Smiling faces from our Drives & Automation Partner Conference 2019. Over 2 days at an offsite location, our top achieving partners and the BB team reflected on the year gone by and planned next year's strategy to achieve high growth with high josh!



We successfully delivered a big order for the Kaleshwaram Project implementation, a major lift irrigation project any country has seen till date. This engineering marvel will make use of a wide range of BB motors to lift the dam gates in Medigadda and Annaram pump houses.



We got great response at Indexpo Nashik held in June 2019. We participated along with our channel partner, M/S. Mahalaxmi Enterprise and showcased our safe area and FLP motors.