

PAPER & FOREST PRODUCTS

Industry Solutions



BALDOR
A MEMBER OF THE ABB GROUP

The Industry's Most Preferred

Now more than ever, it is vital that Paper & Forest Products companies choose supplier partners that understand their processes and offer a full range of solutions. At Baldor, we understand that all products (electric motors, variable frequency drives and mechanical power transmission products) must perform reliably – at maximum efficiency – around the clock. We not only supply these products but also work with customers to improve plant reliability and achieve sustainability goals in order for them to remain competitive and profitable.

Baldor Electric is your dependable and dedicated source for a complete line of value solutions that lower your total cost of ownership:

- Reducing energy consumption
- Increasing equipment uptime
- Eliminating wasteful maintenance
- Reducing on site inventory

Baldor•Reliance, Baldor•Dodge, and Baldor•Maska brands are at work all over the globe in harsh, demanding and extreme environmental conditions. We offer the industry leading full line of field proven, premium efficient Baldor•Reliance motors designed for maximized operation in the Paper & Forest Products industry. Baldor•Dodge large gear reducers such as our Motorized Torque-Arm II, MagnaGear and Maxum XTR provide excellent operation in both wet and dry applications along with our heavy duty bearings, couplings, sheaves and bushings.

As a member of the ABB group, Baldor and ABB can provide all your product needs including PLCs and robotics for a complete automation system.

Wherever the application, our extensive stock product lines are backed up by many years in custom-engineered solutions. This kind of flexibility allows Baldor to meet the individual needs of any Paper & Forest Products application, anytime.....anywhere.

BALDOR • RELIANCE

BALDOR • DODGE **BALDOR • MASKA**

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$$V_p = \frac{Q_p \times S_p^{\text{®}}}{C \times T}$$

Q = Quality
C = Cost

S = Service
T = Time

P = Perceived

The Value Formula illustrates the importance of
Quality, Service, Cost and Time
in shaping our customers' perception of Value.



About ABB:

ABB is a global leader in power and automation technologies that enable customers to improve performance while lowering environmental impact. Based in Zurich, Switzerland, the company employs 150,000 people and operates in approximately 100 countries, including nearly 30,000 employees in more than 50 locations in North America.

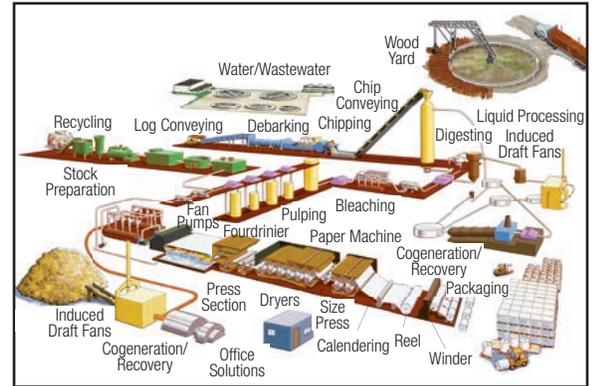
ABB's business is comprised of five divisions that are in turn organized in relation to the customers and industries served. The Discrete Automation and Motion division is focused on energy efficiency, automation and lowest total cost of ownership. A very broad line of products, services and solutions are provided from these families:

- Motors and generators
- Drives and controls
- Mechanical power transmission products
- Robotics
- Power conversion
- Electric vehicle charging infrastructure

About Baldor:

From our home office in Fort Smith, Arkansas, we support the sales offices/warehouses that stock Baldor products worldwide, selling to distributors and original equipment manufacturers in more than 70 countries. Baldor products are available from 50 sales offices/warehouses in North America and 26 offices serving international markets. These products are produced at 26 plants in the U.S., Canada, England, Mexico and China. Products brands include Baldor•Reliance, Baldor•Dodge and Baldor•Maska.

About Industry Solutions:



The Industry Solutions Group is dedicated to meeting customers' needs for proven industry expertise, problem-solving products and strong sales support. As a result, the teams are comprised of members who have lived and worked in those industries and have real-life experience to understand the users' applications and challenges.

They also have the technical knowledge and expertise to recommend solutions that will lower total cost of ownership and maximize uptime. By developing specific industry application solutions around products within the division, these solutions can be shared with like processes and facilities. Technical expertise is available in the following areas:

- Pulp, Paper and Forest Products
- Aggregate and Cement
- Air Handling
- Food, Beverage and Pharmaceutical
- Mining and Metals
- Power Generation
- Unit Handling
- Water and Wastewater
- Energy Efficiency

As part of ABB, the Industry Solutions Group can offer a diverse range of solutions for your applications.



Discrete Automation and Motion

Four global business units

Motors and Generators



- Low voltage motors from 0.25 to 1000 kW
- High voltage motors and generators up to 70 MW
- High speed motors
- Traction motors
- Mechanical power transmission
- Wind power generators
- Diesel generators
- Gas and steam turbine generators
- Hydro generators, tidal waves, etc.
- Service

Drives and Controls



- Low voltage AC drives from 0.12 to 5600 kW
- Medium voltage drives from 315 kW to more than 100 MW
- DC Drives from 4 kW to 15,000 kW
- PLCs, HMIs, and wireless sensors and actuators
- Software tools
- Energy saving tools
- Service

Robotics



- Industrial robots
- Robot controllers and software
- Industrial software products
- Application equipment and accessories
- Robot applications and automation systems for automotive, foundry, packaging, metal, solar, wood, plastics, etc. Industries
- Service

Power Conversion



- Advanced power electronics
- Converter products
- Excitation and synchronizing systems
- High power rectifiers
- Power quality and power protection products, incl. UPS
- Traction converters
- Wind turbine drives
- Solar inverters
- Charging infrastructure for electric vehicles
- Service

Solutions for the industry...

Paper Mill Repulpers

This production mill is a consumer of recycled paper products and dried pulp bales. Given that this is an older mill, the gearboxes that drove the repulpers were obsolete, legacy type products. The gearboxes were unreliable, expensive to repair, and difficult to keep sealed. These characteristics resulted in downtime, maintenance concerns, and safety issues due to the oil leakage. Additionally they were all driven by V-belt drives with the associated loss of efficiency and added maintenance requirements (replacement and tensioning).



Original configuration...

Final Solution

The local Baldor•Dodge sales engineer introduced the mill to the advantages of modernization with the Baldor•Dodge MagnaGear reducer. The MagnaGear features a stiff monoblock housing, cool operation, high reliability including AGMA bearing life, and tandem HNBR seals. Additionally, the ratio was selected so that the electric motors could be directly coupled to the gearboxes. This eliminated the efficiency loss from V-belt drives. At the same time the 125 horsepower motor was upgraded to a Baldor•Reliance premium efficient design. The motor was direct connected to the gearbox with a Baldor•Dodge Paraflex® coupling.



Baldor•Dodge MagnaGear® reducer with Baldor•Reliance Premium Efficient® Severe Duty Motor

The Savings...

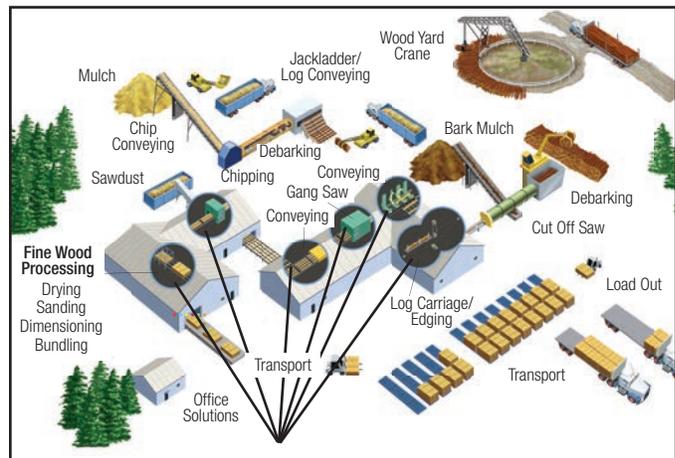
The mill will save \$34,845 annually for a seven month payback period. The savings resulted from elimination of downtime (\$12,000), materials (\$12,000), change out labor (\$4,800), and improved motor and gearbox efficiency (\$6,045). Subsequently, an additional matching obsolete gearbox was replaced with another MagnaGear. The facility plans to eventually replace their seven remaining obsolete gearboxes with the same model MagnaGear resulting in similar cost savings.

The replacement of the obsolete gearboxes with modern MagnaGear designs has provided the facility with an updated, reliable design with very attractive payback periods.

Solutions for the industry...

Log Deck Chain Conveyors

In the forest products industry, a relatively slow-moving chain conveyor called the transfer chain is used for the grading and sorting of lumber before drying or for general transfer and conveying purposes. Boards are usually placed on the transfer chain after they leave the trimmer. The conveyor consists of two or more individual chains running parallel to each other and driven by a common motor. The boards are laid across the chain and therefore they are moving laterally with respect to their length. The transfer chain runs continuously at constant speed in the same direction. Chain conveyors are used throughout sawmills and are an integral part of the process.



Typical application(s)

The Opportunity

The existing chain drive system used a five horsepower constant speed motor, a 5:1 v-belt drive, a 15:1 worm gearbox and 1.5:1 chain drive to accomplish a 112.5:1 overall gear reduction. These multiple components were old, unreliable, and inefficient along with requiring extensive guarding and maintenance.



Original configuration...

Final Solution and the Savings...

A Baldor•Dodge Motorized Torque Arm and Baldor•Reliance premium efficient, variable speed motor were selected to provide the required horsepower and output speed. This solution offered a highly reliable, beltless solution with soft start and variable speed capability. The overall documented savings were \$5,500 annually with nearly \$1,000 of that from energy savings.

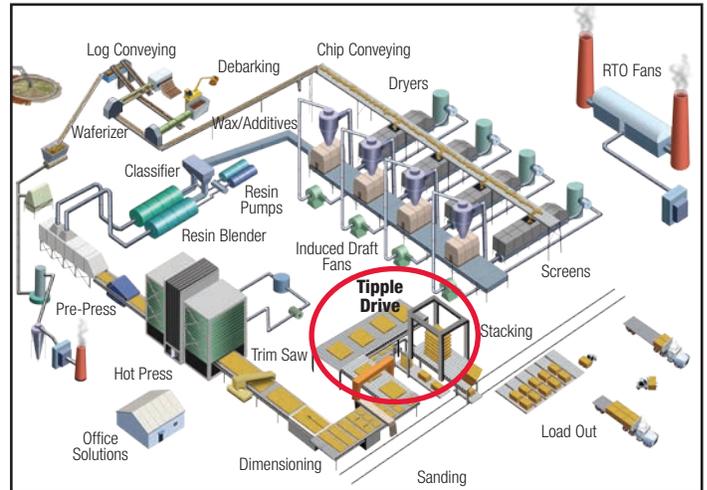


Baldor•Dodge Motorized Torque Arm® and Baldor•Reliance V*S Master Motor

Solutions for the industry...

OSB Tipple Drive Retrofit

The tipple drive is a chain and sprocket driven roller table in the finishing portion of the process which transports the stacked OSB (Oriented Strand Board) bundles from the stacker to the final banding and covering area. The facility involved was looking at ways to increase throughput for their two parallel finishing lines.



The Opportunity

Each finishing line had its own stacker system utilizing two hydraulic motors powered by its own hydraulic system. The stacker was a bottleneck in the process being slow in lifting and stacking the OSB boards. The goal was to make both stackers run faster by taking the two hydraulic motors off each tipple drive to allow more hydraulic power to be applied to the stacker, and then convert the tipple drive to an AC powered VFD/Motor/Gearbox configuration.

The Solution

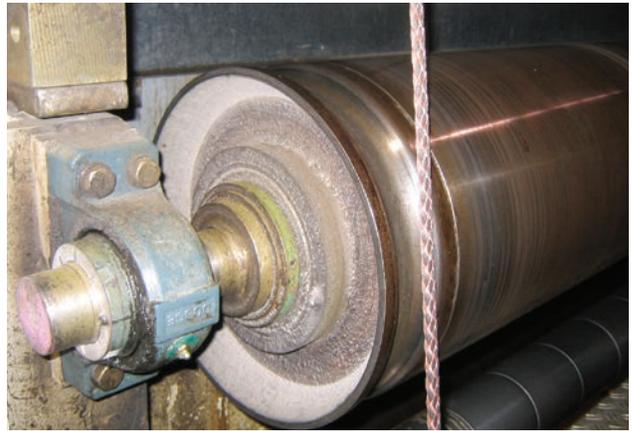
The equipment supplied in the solution consisted of a 7.5HP Quantis ILH (58:1 ratio), a 7.5HP, 1800 rpm V*S Master motor along with a VFD that was supplied by the facility. This system had more power at 50% speed than the original hydraulic system at full speed. With this solution, the stacker system is operating 20% faster than before and is no longer a bottleneck in the OSB manufacturing process. The tipple drive is also operating faster and can be sped up further if necessary.



Solutions for the industry...

Paper Machine Guide Rolls

Paper coating lines utilize several guide rolls, in this case an air turn out roll. These rolls are approximately 12 to 18 inches in diameter. Paper web speeds vary considerably from 2300 to 3000 FPM, approximately 732 to 955 RPM. An expansion and non-expansion bearing are normally used. The original bearings were setscrew locking spherical 2-7/16" four bolt pillow block bearings with contact seals (not shown here).



The Opportunity

When the setscrew bearings would fail, they were causing shaft damage by gouging, marring and fretting the shaft. In order to repair the shaft, maintenance personnel would remove shaft burrs and other shaft related issues by grinding the bearing seats, many times exceeding tolerance limits. After multiple shaft repairs, the shaft tolerances would be compromised causing vibration issues created from the increased shaft outer diameter to bearing inner diameter clearance and increased the occurrence of fretting corrosion.



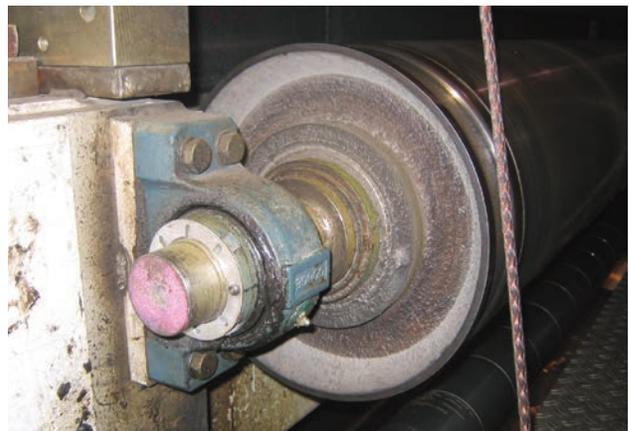
Example of older, damaged shaft; notice longitudinal grinding marks.



Example shaft gouged by set screw.

The Solution

Baldor•Dodge Imperial bearings were installed on this application and continue to run successfully. The Imperial bearings are mounted to the shaft by a push/pull adapter system that improves concentricity and reduces vibration while minimizing fretting corrosion. The bearing seals also have a sphered contact area that maintains contact and sealing effectiveness when misaligned. The time to remove and replace bearings is reduced, creating more uptime and productivity. Baldor•Dodge Imperial bearings are now the specification for bearings on this paper machine.



Value Added Services

Local Motor and Drive Inventory

Baldor district offices provide local sales and inventory support for motors, drives and Maska products in 36 locations in North America plus international offices. In addition to the local inventory, Baldor carries over \$100 million in inventory at the Fort Smith, Arkansas stocking facility.

Baldor•Dodge Field Sales Engineers

Over 90 local Field Sales Engineers around the U.S. and Canada provide technical and sales support for all Baldor•Dodge products.

Industry Solutions Team- Offering Customers Value Solutions

Baldor Electric Company is the only motor, drive and mechanical power transmission manufacturer that has dedicated Industry Solutions Teams that serve our key industries. The Paper & Forest Products Team is comprised of engineers that are experts in their field and know the critical processes. Our mission is to provide industry and technical expertise that improve processes and lower total operating costs.

Industry Solution Teams provide the following services:

- Industry Application Solutions (IAS) - the teams will evaluate the problem applications and offer solutions that provide longer life and reduce operating costs
- System/Asset Optimization - the team can provide system optimization studies for motor and drive applications.
- Reduced Operating Costs - from premium efficient motors to high efficiency gearing, the team offers solutions that lower the total operating costs
- Specification Support - the team can assist customers in writing their technical specifications that outline the minimum requirements for motors, drives, bearings and gearing
- Product and Industry Application Solution Training - the team provides on site training for new products and maintenance
- Teardown/Root Cause Failure Analysis - for repeated failures, the team offers a complete forensic teardown of failed products to determine the root cause of failure

Baldor, A Member of the ABB Group

Baldor and ABB can provide all your product needs including PLC's and robotics for a complete system.



Paper and Forest Products

from BALDOR

Installed Based Evaluation Team

Identifying opportunities to improve energy efficiency

Using state of the art data collection equipment and software, Baldor's IBE Team works with plant maintenance personnel to take an accurate account of motors and mechanical products both in operation, and from spare inventory locations. The raw data is then analyzed to produce a comprehensive report for the customer, which not only includes recommendations for immediate actions, but also long term strategies that will result in significant energy savings to favorably impact the customer's bottom line.

IBE Report Includes:

- Detailed list of motors, gearboxes and bearings in service and spares
- Potential Energy Savings
- Payback timing
- Repair/Replace comparisons
- Spares Analysis
- Local rebate and incentive program details

In addition, the information collected can help to facilitate a partnership between the end user, distribution, and district offices, so that the end user can rely on outside inventory support and reduce the number of spares on hand. An IBE is also a proactive way for companies to display that they are environmentally focused on reducing their carbon footprint through energy conservation.

Benefits of an IBE:

- Energy Savings
- Better understanding of equipment currently in service
- Framework for motor management program
- Improved uptime through better motor
- Simplifies purchasing and inventory management
- Consolidation of redundant vendors/part numbers

On Site Motor Services:

LEAP

- Life Expectancy Analysis Program
- Stator insulation system analysis
- Readings while motor is offline

MACHsense

- Motor condition monitoring
- Readings while motor is running
- Walkabout & remote monitoring options

Motor Performance Management

- Predictive and preventative maintenance
- Monitors repairs
- Reporting system
- Savings from reduced unplanned downtime



Advanced Research & Development

With Baldor's Advanced Development Laboratory, customers in Paper and Forest Products can benefit from a state-of-the-art facility that offers expanded research capabilities, as well as advanced development sciences. Here, R & D experts evaluate energy efficiency, materials, magnetics, insulation, vibration, and sound - all in an effort to ensure optimum performance and reliability in every application.

MISSION

**Our mission is to be the best (as determined by our customers)
marketers, designers and manufacturers of industrial electric motors,
drives and mechanical power transmission products**

Taking care of our customers safely

Contact us

For North American sales and support

**Mechanical Power
Transmission Products**

**+1 864 297 4800
+1 479 646 4711
www.baldor.com**

Drives and Controls

**+1 800 752 0696
+1 479 646 4711
www.abb.us/drives**

Motors

**+1 479 646 4711
www.baldor.com**

