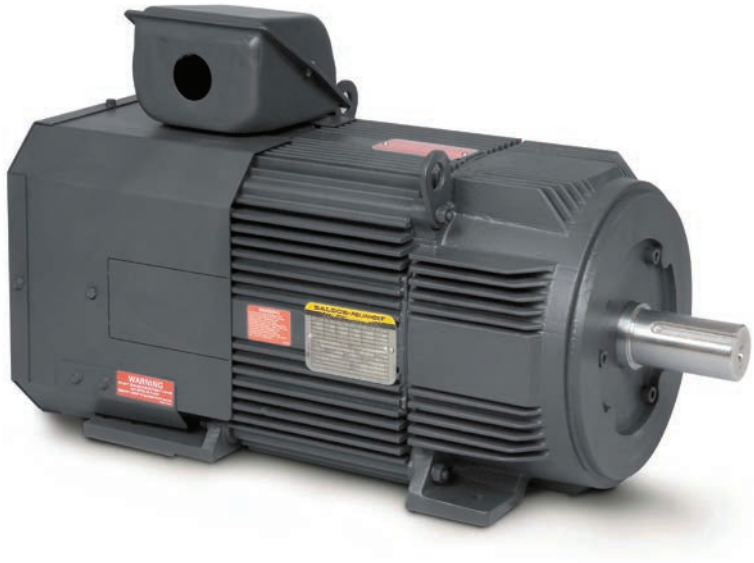
DC to AC conversion

RPM AC delivers ultimate torque performance in a compact package



An RPM AC motor upgrade gives an engineered wood manufacturer a high-performance, low-maintenance solution to its variable speed application.

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RPM AC offers a power-dense laminated steel frame with custom power and speed ratings to match demanding variable speed application requirements.

Challenge

A Texas-based engineered wood manufacturing facility was challenged with considerable maintenance issues on its resin blenders' 40 HP DC motors and drive systems. Maintenance issues were causing unplanned downtime as well as costly repairs and replacements on the DC motors. The DC drives were also expensive repair items and had become obsolete technology.

Solution

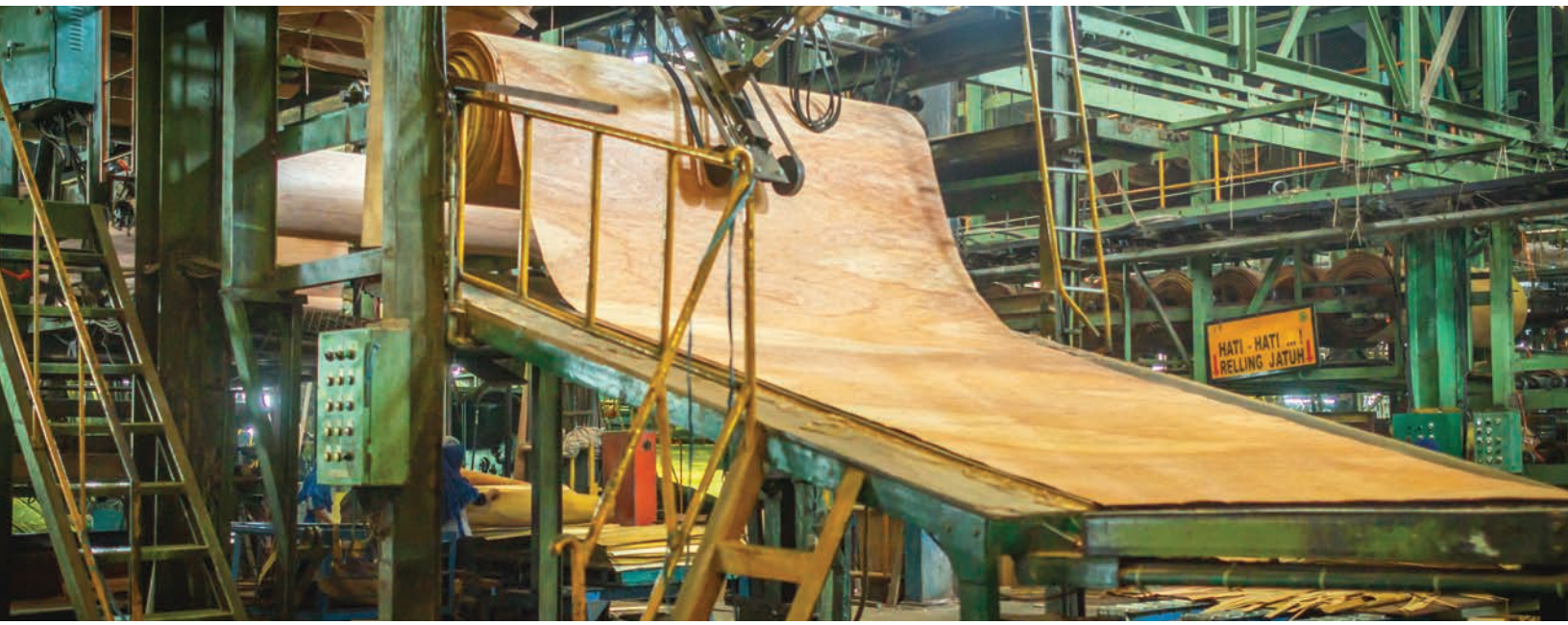
The facility converted the resin blenders to an AC drive system with RPM AC motors. The local distributor's account manager and ABB sales engineer worked together on the solution, a Baldor-Reliance® RPM AC variable speed AC motor. RPM AC offers 1000:1 constant torque speed capability and all the performance of a DC motor, without the brush and commutator maintenance. The plant also chose an ABB variable speed drive as part of the total solution.

Read more about the capabilities and benefits of RPM AC motors

Benefit

More than $150,000 in savings was achieved in a multitude of areas. With the rising costs of new and repaired DC motors, RPM AC provided a lower-cost solution from a procurement standpoint. Much of the savings usually seen in manufacturing operations is realized in the reduction of unplanned downtime. On average, the plant was experiencing three yearly unplanned downtime events, with substantial time needed to install the replacements and resolve the issues. The DC motors also contributed to the cost of spares that the facility was required to carry in its storeroom. In this application, additional spare inventory savings were achieved because the customer was able to use an ABB variable speed drive that was common to another application in its mill.

The Baldor-Reliance RPM AC motor continues to give customers a high-performance, low-maintenance solution to their variable speed applications. It also confirms that AC technology yields immediate savings on applications of all ratings. RPM AC and other ABB products allow customers to realize a reduction in the total cost of ownership.



The step-by-step calculation

Step 1
For each product that was analyzed, ABB sales representatives made the following inquiries:

- The amount of time required to perform the bearing replacements
- Labor rate and number of employees required for each activity
- Cost of materials for each activity
- The replacement frequency of each component
- Reduction in production capacity due to equipment downtime
- Production capability of the facility
- Market price (revenue) of the facility's product

Step 2
We calculated annual material cost savings due to replacement of the motors, in addition to the cost of inventory:

- Replacement cost savings = (replacement frequency x material cost of existing units) - (replacement frequency x material cost of solution units)
- Inventory cost savings = (inventory value + carrying costs of existing units) - (inventory value + carrying costs of solution units)

Result:

- Material replacement cost savings = $1,659.00
- Material inventory cost savings = $13,499.36
- Total material cost savings = $15,158.36

Step 3
We calculated annual downtime cost savings for existing and proposed motor solutions.

- Downtime cost = downtime cost ($ per hour) x time spent on activity x replacement frequency

Result:
Downtime cost savings = $135,000.00

Step 4
We calculated the total annual savings for the motor solution.

- Total annual savings = material cost savings + downtime cost savings

Result:
Total annual savings = $150,158.36

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