V*S Master Motor
saves thousands in avoidable costs

Customer saved money by upgrading a crusher application with an induction NEMA V*S Master motor.

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Baldor-Reliance® V*S Master inverter and vector duty AC motors are designed to provide full load torque continuously from zero to base speed making them ideal for variable speed applications.

Challenge
The feeder equipment for the crusher at a mining company was running too fast. To keep the feeder from over-filling the crusher with ore, it would have to shut down to allow the crusher to catch up, and then restart. The customer had been using a motor on a variable speed drive at the slowest speed possible - 6 Hz. However, even this was too fast. Therefore, the company was considering replacing the entire drive system with a hydraulic system at a cost of $90,000.

Solution
After determining that no extra torque was required for the system, it was suggested that the company replace the existing 25 Hp motor with a Baldor-Reliance 25 Hp V*S Master motor. The total cost of the V*S Master motor was compared to the existing hydraulic system by determining the total installation costs and downtime costs associated with each solution.

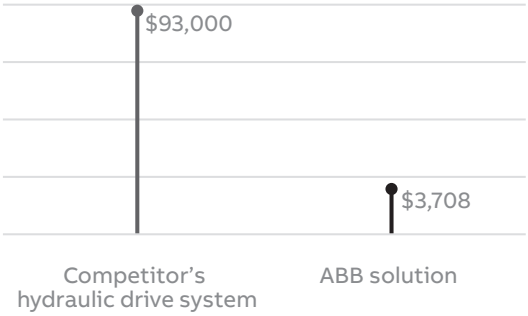
Benefit
The V*S Master motor was a quick change-out for the company and cost just over $3,000, versus replacing the entire drive system with a hydraulic system at $90,000.

By listening to the customer and understanding their needs, ABB was able to provide a variable speed motor that would allow the application to run at a speed of 1 Hz while maintaining all other functions. Not only was the replacement motor less expensive than replacing the entire drive system, but the customer also saved money on shipping and downtime costs.

Read more about the capabilities and benefits of V*S Master motors

The step-by-step calculation

Annual operating cost and purchase price



Step 1
For each product that was analyzed, ABB asked the following questions:

- What was the amount of time required to perform each of the following activities?
  - Lock out conveyor drive and belt
  - Remove the existing drive
  - Select and purchase new components
  - Install a new drive
- How many employees were required for each activity?
- What was the labor rate for each activity?
- What was the cost of parts for each activity?
- What was the replacement frequency of each component?
- What were the downtime costs ($ per hour)?

Step 2
We calculated the total operating costs for the existing and proposed solutions

- Installation cost = (Time spent on activity/60 minutes) x (# of employees for each activity) x (Labor rate) x (Replacement frequency)
- Downtime cost = Downtime cost ($ per hour) x (Time spent on activity) x (Replacement frequency)
- Efficiency cost per unit = (kW spent*) x (# of operating hours) x ($kW per hour) x (# of years in operation) x (# of units)
  * kW spent = Unit Hp x 1/unit efficiency

Result:

- Existing or alternative total operating cost = $3,000
- Baldor-Reliance V*S Master motor total operating cost = $500
- Savings = $2,500

Step 3
We compared the purchase price of the existing unit and proposed solutions to illustrate an accurate assessment of overall costs.

Result:

- Existing or alternative purchase price = $90,000
- Baldor-Reliance V*S Master motor purchase price = $3,208
- Savings = $86,792

Step 4
Based on these calculations, we were able to discover and document a total savings of $89,292

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