DODGE®

Industry: Food
Application: Gear Reducer & Energy-Efficient Motor for Conveyor System
Solution: DODGE® QUANTIS® RHB & Baldor•Reliance™ XE Motor

DOCUMENTED SAVINGS
CASE STUDY NO. 5

The Challenge

A large food manufacturing company had been using various brands of worm and helical gear boxes to drive the rotary feeders on its screw conveyor systems. However, because there were so many different brands, the motors and gear boxes were inefficient and the company was losing money from high energy costs.

The Baldor Solution

We analyzed the existing equipment's total operating costs over a period of one year. Then we compared those findings with an alternative system solution from Baldor.* The efficiency and energy savings made the total savings obvious. Immediately, one of the existing conveyor units was replaced with a DODGE QUANTIS gear reducer and a Baldor•Reliance XE motor.

* See back page for details of analysis.

The Savings

Replacing that one unit saved the customer $16,000 in total operating costs. As a result, the company decided to replace their remaining 99 conveyor units with this same system and made it the standard for all of their rotary feeders.

The Conclusion

The customer was able to take advantage of the energy and efficiency savings at their facility by using Baldor's DODGE QUANTIS gear reducer and a Baldor•Reliance XE motor. Although the initial product cost was approximately $280 more, the $16,000 saved in energy usage makes this conveyor system not only more efficient, but the total cost of ownership has been reduced for the customer.

BALDOR®

The Step-by-Step Calculation

ANNUAL OPERATING COST

Step 1 —

For each product that was analyzed, Baldor asked the following questions:

- What is the unit's HP?
- What is the efficiency rating (in %) of the unit?
- How many hours per year will the unit be in operation?
- How many years will the unit be in operation?
- What is the electrical cost per hour ($kW/hour)?
- What is the total number of units used in the application?
- What is the purchase price of each unit?
- What is the labor rate per hour?
- What is the unit replacement frequency per year?
- What is the number of hours required for replacement?
- What is the downtime cost per hour?

Step 2 —

We calculated motor operating costs for the existing and proposed solutions using the following formulas:

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	$ 44,722
Baldor Total Operating Cost	$ 28,735
SAVINGS	**$ 15,987**

Step 3 —

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

RESULT:

Existing or Alternative Purchase Price	$ 410
Baldor Purchase Price	$ 690
SAVINGS	**$ (280)**

Step 4 —

Based on these calculations, we were able to discover and document a **TOTAL DOCUMENTED SAVINGS OF:**

+

$ 15,707

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