

High Energy Efficiency

Gesto drum motors operate with 97% mechanical efficiency and with 83% total efficiency which means with respect to the 3 types of conventional system, Gesto drum motors consumes less energy (from 10% to 27%). This situation leads to a significant reduction in operation costs.

Energy and Cost Saving Analysis

Gesto Drum Motors

Conventional Drive System

In conventional multi equipment drive systems, conveyor is driven by 3 different methods.

- The calculated power required for bulk transportation by conveyor = $P(kW)$
[In the example calculation, it will be assumed to be 5.5 kW.]
- The calculated system efficiencies for the options above = η_{system}
- The input motor power at the start of the selected system for driving the conveyor = Input Power = $IP = P / \eta_{system}$ $IP = \eta_{system} P$
- For a shift of 10 hours, with 2 shifts per day, 7 days a week, and 52 weeks a year, the annual working hours can be calculated as follows:
- Annual working hours = $t = 2 \times 10 \times 7 \times 52 = 7280$ hours/year = 2/times 10 /times 7 /times 52 = 7280 / , /text(hours/year) $t = 2 \times 10 \times 7 \times 52 = 7280$ hours/year
- The total annual energy consumption can be calculated as follows:
Total Annual Energy Consumption = $E = IP \times t$ $E = IP \times t$ (kWh/year)

$$\begin{aligned} 1 \quad \eta_{system} &= 0.555, IP = 5.5 / 0.555 = 9.91 \text{ kW}, \\ E &= 9.91 \times 7280 = 72144 \text{ kW/Year}, \\ E_s &= 0.17 \times 72144 = 12264.48 \text{ \$ /Year} \end{aligned}$$

$$2 \quad \eta_{system} = 0.726, IP = 7.58 \text{ kW}, E = 55182 \text{ kW/year}, E_s = 9381 \text{ \$ /Year}$$

$$3 \quad \eta_{system} = 0.743, IP = 7.40 \text{ kW}, E = 53900 \text{ kW/year}, E_s = 9161 \text{ \$ /Year}$$

$$G \quad \eta_{system} = 0.835, IP = 6.59 \text{ Kw}, E = 47952 \text{ kW/year}, E_s = 8151 \text{ \$ /Year}$$

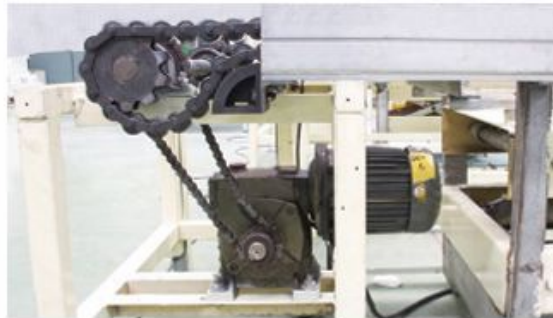
CONCLUSION: When compared to the existing three different traditional drive systems, Gesto Drum Motors provide advantages to users in terms of energy efficiency alone, with annual savings ranging from 12% to 33%.

Gearbox System with Directional Change



**OVERALL
EFFICIENCY**
 η : % 74.3

Chain System



**OVERALL
EFFICIENCY**
 η : % 55.5

Pulley Belt System



**OVERALL
EFFICIENCY**
 η : % 72.6

Drum Motor System



**OVERALL
EFFICIENCY**
 η : % 83.5