THINK GREEN

BDI®

Innovative Thinking for a Healthy Planet

Solutions for a Healthier Bottom Line

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- SMC
- SORBENT
- SPRAYON
- STOBER
- U.S. MOTORS
- WEG

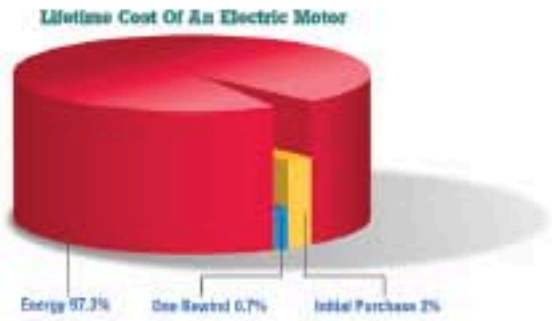
Rising energy costs make energy efficiency increasingly important. The potential for energy-savings through technological advancements grows every day. BDI brings multiple manufacturers' solutions, whether assessing core drive efficiency or plant lighting.

Motors

Industrial electric motor-drive systems consume 63% of electricity used in U.S. industry. Review standard operating motors for more cost-effective alternatives.

Energy-Savings Potential

- 25% Pumps & Compressors
- 35% Fans, Blowers & Centrifugal refrigerations
- 50% Boiler fans & Feed Water pumps



While initial cost is a consideration, it generally accounts for 2% of an Electric Motor's lifetime cost.

Gearboxes & VFD's

Motor efficiency is being mandated by law, but energy savings associated with a gear box have been largely neglected. Upgrading from worm gearing to a **helical** gearing provides:

- 95% efficiency
- Reduced heat
- Multiple teeth always in contact means:
  - less noise
  - reduced maintenance
  - longer life

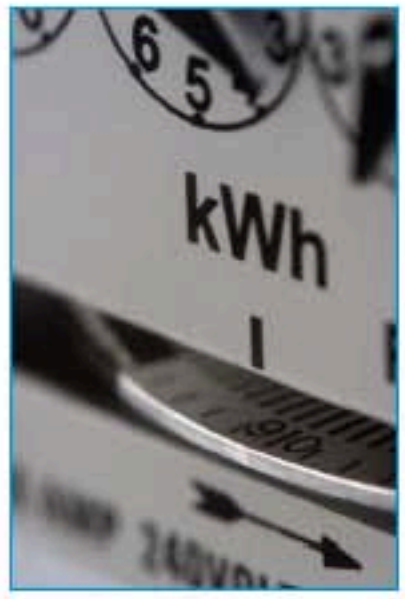
VFD (Variable Frequency Drives), or Adjustable Speed Drives, were developed for process control. However, their energy conservation qualities have become an important reason to consider installing a VFD. They provide:

- **Smoother operation**
- **Acceleration control**
- **Adjustable operating speed**

Lighting

Have you updated your lighting configuration? Energy savings from correct product usage can be more than 50% (before rebates).

- CFL, T8, LED options available
- Warehouse, parking lot, loading dock lights
- Recessed can conversion kits
- Low watt flood lights
- Freezer lights
- Sensors
- ARRA - *Buy American Compliant Product*



Earth-Friendly Chemical Alternatives

Switching to "green" chemicals can reduce or eliminate disposal costs.

- Non-solvent degreasers
- Natural cutting fluids
- HMIS-friendly with low odor
- Non Prop-65 ingredients
- VOC compliant in all 50 states
- Biodegradable absorbents

Belt Drives

There are several advantages to replacing V-belts with Synchronous belts. Synchronous belts offer uniform efficiency over a broad range of torque value and are useful in a variety of applications.

Synchronous Belt Advantages:

- Increased belt life
- Heat resistant
- No stretch or slip
- Reduced maintenance

With energy savings, maintenance savings, and reduced downtime, you can attain a three-month payback. The savings continue to accrue year over year.

Not ready for a system redesign?

Order a service kit to ensure pulleys are aligned and tension is correct on all belt drives.

Air Leak Detection

Optimizing Air Leak detection can result in 20-50% in energy savings. Both the supply and demand sides require analysis.

System Leaks Cause:

- 20-30% output waste
- Inconsistent pressure
- Excess compressor capacity
- Increased maintenance

SMC ALDS - Automatic Leak Detection System

A simple, low-cost solution to help detect air leakage in compressed air circuits.

Options Available:

- Retrofitting equipment
- Review maintenance
- System redesign

Services Overview

- AIR LEAK DETECTION
- ENERGY AUDITS
- CHEMICAL AUDITS
- WATER CONSUMPTION REDUCTION PROGRAMS
- GOVERNMENT & UTILITIES REBATES
- LUBRICATION SURVEY
- CONDITION MONITORING
- ELECTRONIC INVOICING
- ON-LINE ORDERING

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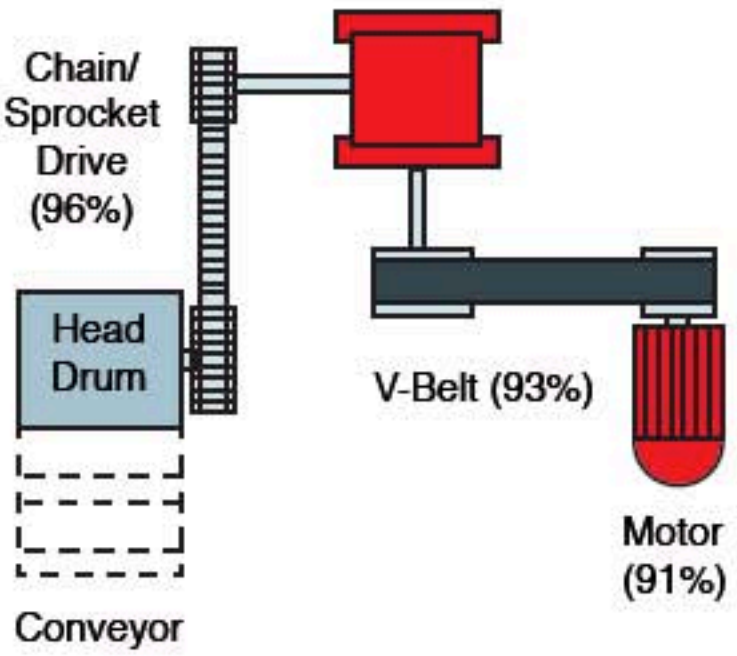
Standard vs. Optimized[1]

Standard:

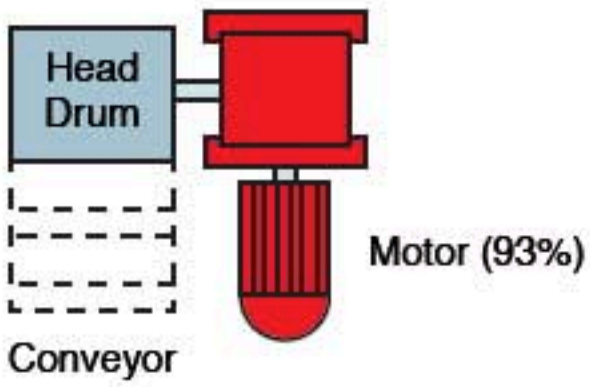
Worm Gear Unit (69%)



Overall drive train efficiency = 56.1%
Power required from utility = 16.2kW
Energy used = 64.8MWh per year
Cost of energy = $6,480 per year
Power loss to inefficiency = **7.1kW**

Optimized:

Helical-Bevel Gear Unit (95%)

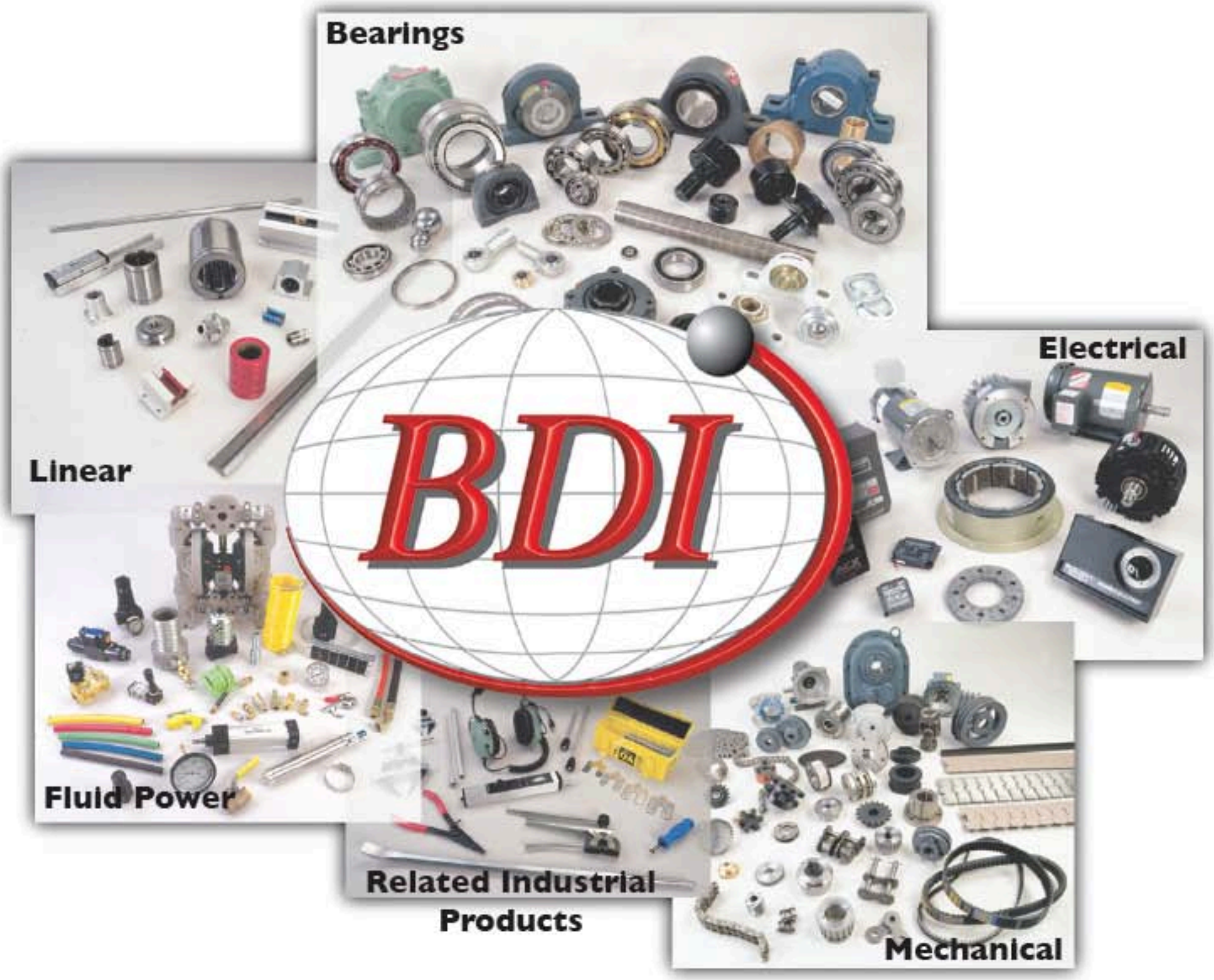


Overall drive train efficiency = 88.3%
Power required from utility = 10.3kW
Energy used = 41.2MWh per year
Cost of energy = $4,120 per year
Power loss to inefficiency = **1.2kW**

[1]**Conditions** 20hp motor operated 16hrs/day, 250 days/year
- Application requires that 9.1kW be delivered to conveyor head drum
- Cost of energy = $0.10/kWh
- Motor in standard example is high efficiency per EPA act 1997.
- Motor in optimized example is premium efficiency per EISA 2007.

Comparison Summary:

- **57% efficiency increase**
- **23.6MWh energy savings/yr.**
- **$2,360 savings/yr.**



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For more information on BDI's Green Initiative, please contact your local BDI account representative.

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