Energy Efficient Solutions

LEESON®

Lincoln™ MOTORS

GROVE GEAR
ELECTRA-GEAR

LEESON gives you more than one way to drive down energy costs using energy-saving motors, gearmotors and drives.

You can achieve the greatest savings by combining motors plus drives, high efficiency gearing, and drives in multiple installations to reduce energy costs, lower maintenance costs, and improve plant producitivity.

Here are some examples:

Example #1: Cost Savings Using Energy Efficient Drives

Size of motor = 75 HP

Cost of electrical power = $0.11 / kW-hr

Present flow control method = throttling valve

Total annualized hours of operation = 8395 hours

Estimated cost of operation using throttling valve = $44,793

Estimated cost of operation with LEESON VFD = $17,747

Energy Savings Using LEESON VFD
$27,047 (60%)

Payback Time for $6000 Drive
2.7 months

Example #2: Increasing System Efficiency Using High Efficiency Gearmotors

Application: = conveyor drive

Conveyor speed = 5 HP and 30 RPM

Cost of electrical power = $0.11 / kW-hr

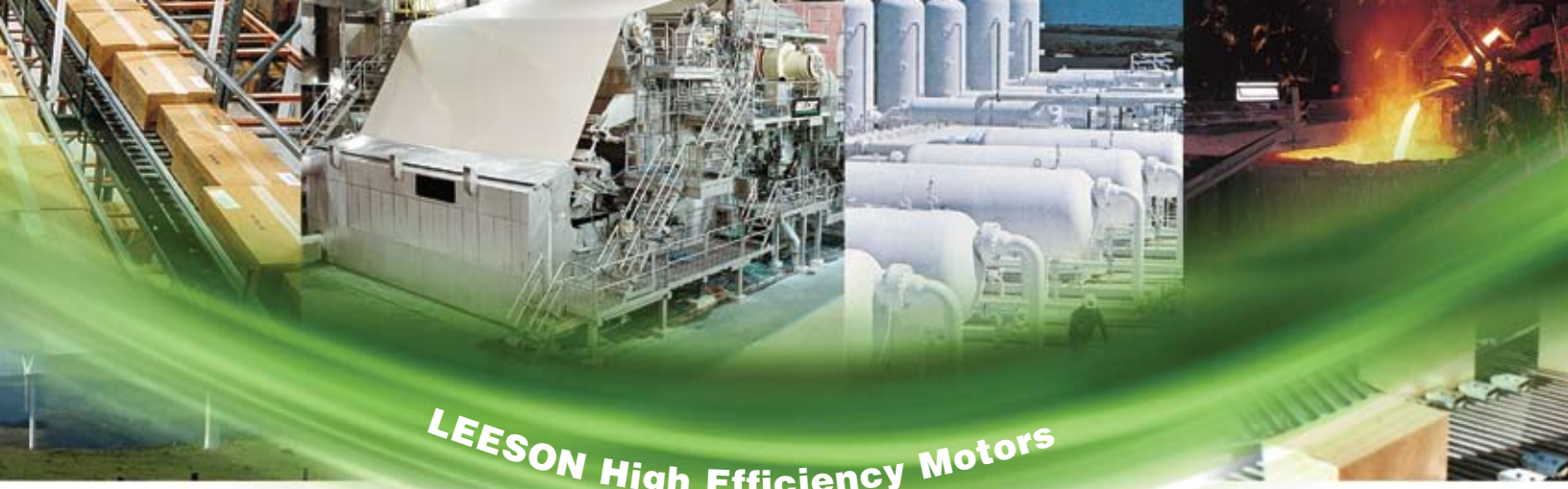
Total annualized hours of operation = 8395 hours

Estimated cost of operation using standard gearmotor = $3,290

Estimated cost of operation using Grove Gear high efficiency gear drive and LEESON motor = $2,012

Energy Savings
$1,278 (39%)

LEESON® Lincoln™ MOTORS GROVE GEAR ELECTRA-GEAR



LEESON High Efficiency Motors

Open Drip: General Purpose, Wattsaver® Motors

- Rigid base and C-face mounting provisions available
- IRIS – Inverter insulation system
- N/C Thermostats
- Epoxy paint finish
- UL and CSA recognized
- 1/3 HP – 200 HP
- Energy Independence & Security Act 2007 Compliant

NEMA Premium

APPLICATIONS

COMPRESSORS | PUMPS | CONVEYORS | FANS & BLOWERS | CLEAN & DRY | ENVIRONMENTS | ELEVATORS

Totally Enclosed: General Purpose, Wattsaver® Motors

- Rigid base and C-face mounting provisions available
- IRIS – Inverter insulation system
- N/C Thermostats
- Epoxy paint finish
- UL and CSA recognized
- 1/3 HP – 200 HP
- Energy Independence & Security Act 2007 Compliant

NEMA Premium

APPLICATIONS

COMPRESSORS | PUMPS | CONVEYORS | FANS & BLOWERS | MACHINE TOOLS | WOODWORKING EQUIPMENT | PACKING EQUIPMENT PLASTICS INDUSTRY | RUBBER INDUSTRY | TEXTILE INDUSTRY | PAPER MILLS | BREWING & DISTILLING INDUSTRY

Severe Duty: Wattsaver® Motors

- IEEE-841 – IP 56 enclosure protection
- Inverter insulation system
- N/C Thermostats – Severe duty only
- Epoxy paint finish
- UL and CSA recognized
- 1 HP – 100 HP
- Energy Independence & Security Act 2007 Compliant
- Inpro Shaft Seals
- USCG Marine Duty – IEEE-841 designs

NEMA Premium

APPLICATIONS

CHEMICAL PLANTS | PULP AND PAPER MILLS | REFINERIES | ABOVE-GROUND MINES | FOUNDRIES | FOOD PROCESSING | SEVERE DUTY ENVIRONMENTS | SEWAGE DISPOSAL EQUIPMENT

LEESON® Lincoln™ MOTORS GROVE GEAR ELECTRA-GEAR

Helical Bevel Gearboxes

- 6 sizes available in gear reducer, GEAR+MOTOR™ and integral gearmotor designs
- Input horsepower ratings up to 130 HP
- Universal base, flange, and hollow bore mounting for interchangeability
- Double lip seals provide positive oil retention
- High efficiency design maximizes system performance

Helical Inline Gearboxes

- 9 sizes available in gear reducer, GEAR+MOTOR™ and integral gearmotor designs
- Input horsepower ratings up to 125 HP
- Modular design includes double reduction, triple reduction and quad reduction
- Oversize bearings for long life and high ratings
- High efficiency design maximizes system performance

APPLICATIONS

CONVEYORS | FOOD PROCESSING | BOTTLING | TEXTILES | ELEVATORS | LUMBER | RUBBER | PLASTICS | BREWING & DISTILLING

LEESON **High Efficiency** Drives

SM Series Micro Inverter Drives

- Full feature, ultra-friendly operation. Programs and readouts in plain English
- Output frequency: 0-120 Hz
- 4 preset speeds
- Constant torque-with adjustable current limit
- 150% overload capacity for one minute based on nominal output rating of the control
- Rugged, heavy-gauge steel enclosures with barrier type

SM2 Series Flux Vector Drives

- 1 to 25 HP (0.75 TO 18.5 kW)
- Single phase supply power: 120, 208, 220 or 240 VAC
- Three phase supply power: 208, 240, 400, 480 or 600 VAC 50/60 Hz
- Easy set-up and operation
- Three modes of operation
- Easy to use keypad and display 6-button interface; vivid illumination

LEESON® Lincoln™ MOTORS GROVE GEAR ELECTRA-GEAR

Will Premium Efficient Motors Pay Off For You?

Evaluation Questions

Begin by reviewing the entire process beyond the motor application. Use this checklist to identify which solution(s) you can use to reduce energy costs.

- ❏ Do your motors run for long periods of time – more than 8 hours per day?
- ❏ Can your application take advantage of a VFD Control to vary the speed of the motor during your process to save energy and reduce machine stresses? (For example, many pump and fan applications only require partial loading during their operation cycle and by taking advantage of an AC Control to vary the speed of the motor during these low load periods, you would save some additional energy costs.)
- ❏ Are you using an inefficient worm gearbox in your application that can be replaced with a high efficient gearbox?
- ❏ Are you aware of efficiency rebates that are offered by utility companies for consumers that purchase premium efficient motors and other product like VFD inverters that reduce energy consumption?

If you answered yes to any of these items, you could save money by replacing a less inefficient system with a cost-saving, energy efficient one.

LEESON'S Commitment to Energy Savings

Since 1991, LEESON Electric has been committed to offering NEMA® Premium efficient motors as part of our stock, off-the-shelf, product offerings. We understood that our customers would require the highest efficiency level motors available to fully utilize the energy savings benefits. As part of our on-going commitment, we have expanded our premium efficient stock product offering throughout the years, including single-phase premium efficient motors and high efficient gear reducers.

1991 LEESON introduced Wattsaver® NEMA® Premium Efficiency Motors.

No one else makes it easier to track the real impact of your conservation efforts. Each Wattsaver® NEMA® premium efficient motor comes with a uniquely serialized nameplate, listing both three-quarter and full load efficiencies, as determined by the NEMA sanctioned IEEE 112 B segregation of losses method, the authoritative standard around the world. LEESON's Wattsaver® motors meet or exceed the efficiency requirements of most utility rebate programs.

2001 LEESON added LeCentric™ energy efficient gearing to product offering.

LEESON's line of high efficient gear reducers were an obvious extension to our line of premium efficient motors, because without a high efficient gearbox, the efficiencies gained by the motor are substantially reduced or lost. For example, a standard "worm type" gear reducer is approximately 65% efficient, so if a "worm type" gearbox is mounted to a 92% efficient motor, potential motor gains are not achieved. LEESON's high efficiency gearboxes are 93-97% efficient. It is important to see how a gear reducer plays a role in the efficiency of an entire system, since 20% of all motors are used with gear reducers.

LEESON's NEMA® premium efficient Wattsaver® motors are also inverter rated. LEESON's exclusive IRIS voltage-spike-resistant insulation system is standard at no cost. Using one of LEESON's AC inverters on a Wattsaver® motor will also save you additional energy costs. Please view our website (www.leeson.com) for calculating your savings when using an inverter in a pump and fan application.

LEESON Lincoln MOTORS GROVE GEAR ELECTRA-GEAR

More *Than Just a Motor Company*

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