

Grove Gear IronMan E Series Gear Reducer

At Grove Gear, the wash and deburr machine “Big Blue” is known to all employees. Sitting in an enclosed room between the cast iron machining area and the assembly area, it runs 16 hours per day washing and deburring cast iron parts prior to assembly. Big Blue has two inclined conveyors, both driven by traditional, 3” center distance worm gear reducers with 40:1 gear ratios and standard 3-phase induction motors.

The gear reducer and motor driving the deburring media conveyor needed repair so the Grove Gear maintenance team, under the guidance of Larry Minnich, director of manufacturing, replaced the products with a new Grove Gear IronMan E Series gear reducer and LEESON premium efficiency motor.

An analysis of the system loads performed by Gary Kozlowski, maintenance technician, showed the current gearbox to be operating at less than 70% efficiency, requiring an oversized 3HP motor to make up for the energy losses. Research determined that the E Series, with its 90% operating efficiency, would permit the use of a 2HP motor, downsizing from a 180 to a 140 frame. The E Series HE45 gear reducer is built on a 2.38” worm gear center distance platform, two sizes smaller and over 20% lighter than the old worm gearbox. Analysis of the system estimates an annual energy savings of 2209 kW-hr and \$243 per installation, nearly \$500 savings per year to run Big Blue.

According to Maintenance Manager Ady Sanders, the retrofit was a snap. “We simply added a spacer base made in our tool room to convert the mounting height of the E Series unit to the larger worm unit and slipped it into place,” said Sanders. “The entire unit was lighter and easier to work with, as the installation is 10’ high.” The first E Series gear reducer went to work on December 21, 2009.

The Grove Gear E Series High Efficiency gear reducer is available in four models with ratios from 60:1 to 450:1. The units are packed with premium features, including synthetic lubricant and Viton® double-lip seals. The E Series has the torque density of a 3.25” center distance worm gear drive in the design envelope of a 2.38” center distance worm gear reducer. With mounting base kits, the E Series can drop-in and replace up to four sizes of most popular brands of worm speed reducers.



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