IMPROVED MECHANICAL COMPONENTS FOR EVOQUA’S ORBAL SYSTEM

Direct-Drive Gearbox

- **Efficiency** – Increases energy efficiency by seven percent, compared to previous belt-driven gearbox.
- **Maintenance** – Reduces maintenance by eliminating belts (no belt tensioning, replacements or over tightening, which can result in premature wear of gearbox input shaft, gearbox bearings and motor bearings).
- **Accessibility** – Makes oil changes and seal inspections faster and easier by eliminating belts.
- **Compact Size** – Requires less space than previous belt-driven gearbox, which makes it ideal for retrofit applications.

**Belted vs. Direct-Drive Gearbox Cost Savings**

<table>
<thead>
<tr>
<th>Orbal System Drive Arrangement</th>
<th>Two 10 HP</th>
<th>Two 20 HP</th>
<th>Two 30 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt Reducer Efficiency</td>
<td>0.86</td>
<td>0.94</td>
<td>0.94</td>
</tr>
<tr>
<td>Gear Reducer Efficiency</td>
<td>0.86</td>
<td>0.86</td>
<td>0.86</td>
</tr>
<tr>
<td>Estimated Gear Upgrade Cost</td>
<td>$3,000</td>
<td>$10,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>Gear Reducer Power Savings ($/yr)*</td>
<td>$3,000</td>
<td>$5,000</td>
<td>$8,000</td>
</tr>
<tr>
<td>Payback Period (yrs)</td>
<td>2.0</td>
<td>2.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Based on 8,400 annual operating hours and an energy cost of $0.07/kWHr.

As shown above, the payback period on an investment in new direct-drive gearboxes for a current Orbal® system that has the original belt-driven gearboxes ranges from only one to two years.

Upgrades Made Easy

Regardless of the age of your Orbal® system, Evoqua offers a wide range of equipment to enhance its performance. You can select any or all of the following products for upgrades:

- OX™ Disc Aerators
- Weatherhoods
- Direct-Drive Gearboxes
- Bearings
- Automatic Greasing System
- Couplings

Evoqua field service support teams are available to handle many upgrade installations.

To learn more about upgrade options, visit [www.evoqua.com/orbal](http://www.evoqua.com/orbal).

The new direct-drive gearbox increases efficiency by seven percent, compared to the Orbal system’s previous belt-driven gearbox.
Bearsings

- **Automatic Greasing System** – Each replaceable grease cartridge lasts up to three months and is applied directly into the bearing with remote grease lines for ease of maintenance.
- **Easy Fit** – Ensures proper shaft and housing fit with wide shaft tolerance range (+0.000 / -0.004).
- **Easy Removal** – Eliminates the gap between the shaft and the bearing set collar, which prevents moisture corrosion that bonds the shaft and bearing together.
- **Minimal Downtime** – Allows replacement in less than one hour.
- **Direct Replacement** – Replaces most Orbal system bearings (Dodge, Morse, Sealmaster and Link-Belt).

Couplings

- **Longer Life** – Extends bearing life and prevents premature wear of the coupling when using a variable frequency drive (VFD) due to its ability to handle greater degrees of misalignment while dampening the loads on the overall system.
- **Minimal Downtime** – Allows element replacement in less than 15 minutes, since hubs, bearings, drives and shafts do not need to be removed.