Techni-Tips 93

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Lubrication of Gear Reducers at Wastewater Treatment Plants

Gear reduction is part of the basic power transmission flow in any industry, including wastewater treatment. In the basic unit group consisting of power sources, gear reduction and various types of couplings, gear reduction is a very important factor. How else could speed and torque be increased or decreased?

When selecting a reducer, several aspects must be considered to ensure that the most economical and durable equipment – in line with the work to be done – is chosen.

Types of Gear Reducers

1) Parallel shaft
2) Concentric shaft
3) Right angle type of either worm gear or spiral bevel design

In most instances, the choice of shaft arrangement is governed by installation convenience rather than by either cost or design considerations. However, a right angle worm reducer is primarily considered when space is at a premium or a high gear ratio is required. The worm speed reducer generally offers the lowest reduction problem. If efficiency is a factor, the higher cost spiral bevel units should be considered.

Where Are They Used?

Gear reducers can be found in the power transmission train of all equipment typical to wastewater treatment facilities, including:

- Aerators
- Air conditioning equipment
- Blowers
- Boiler equipment
- Centrifuges
- Chain drives
- Clarifiers
- Comminutors (grinders, cutters, shredders, etc.)
- Compressors
- Conveyors
- Digesters
- Engine-generator sets
- Flocculators
- Hoists
- Pumps
- Screens
- Sliding and shear surfaces
- Sludge thickeners
- Sluice gates
- Vacuum pump drives

Maintenance

Gear reducers tend to be rugged, durable pieces of equipment, and built-in safety factors protect them against the severity of most applications. However, their performance efficiency and operating life can be diminished greatly without a proper lubrication reliability program. Overlooking the necessity of such a program has led to the failure of many gear reducers.

Proper gearbox maintenance – including a high-quality oil meeting OEM specifications, desiccant breather, and oil sight glass and lever monitor or bottom sediment and water bowl – can significantly improve gear reducer performance as well as the overall health of the equipment and lubricant.

Lubricant Recommendations

LE's gear lubricants keep gear reducers running efficiently in hundreds of wastewater treatment facilities around the world, often lowering costs in the process. Suggested lubricants for gear reducer applications at wastewater treatment plants are listed below. However, we advise you to consult your *OEM Lubrication Guide* or LE's Technical Services Department for the most accurate product recommendations.

To ensure proper selection, these variables should be taken into account:

1) Speed
2) Load
3) Temperature
4) Operating environment

Gear Reducers

Open Gears

Heavily Loaded
- Pyroshield® Syn Open Gear Grease (5180-5182)
- Pyroshield® Syn Hvy Open Gear Lubricant (9000)
- Pyroshield® Syn XHvy Open Gear Lubricant (9011)
- Almasol® Syntemp® Lubricant (9901)

Lightly Loaded
- Pyroshield® Syn Open Gear Grease (5180-5182)
- Pyroshield® Syn Hvy Open Gear Lubricant (9000)
- Pyroshield® Syn XHvy Open Gear Lubricant (9011)
- Syntemp® Synthetic Lubricant (9102)
- Almasol® Dry Film Lubricant (9200)

Enclosed Gears

R&O Oils (non EP)
- Monolec® R & O Compressor / Turbine Oil (6401-6407)
- Multilec® Industrial Oil (6801-6807)

EP Gear Oils
- Monolec® Gear Lubricant (703-704)
- Duolec® Industrial Gear Oil (1602-1608)
- Duolec® PAG Gear Lubricant (9705-9707)
- Duolec® Syn Gear Lubricant (9808, 9815, 9822, 9832, 9846, 9868)
- Monolec® Syn Gear Oil (9919, 9923)

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