TECHNI/TIPS

A Publication of the Lubrication Engineers Technical Department

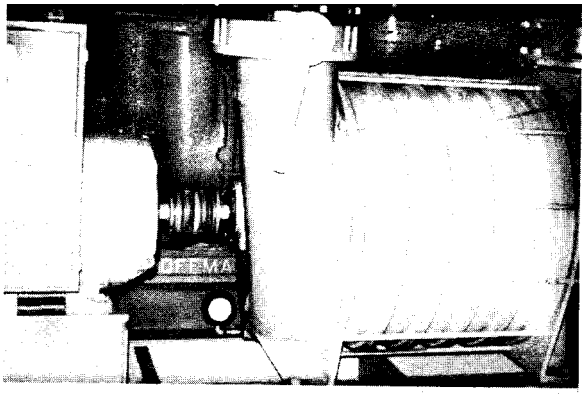
LEADERS IN LUBRICANTS NUMBER 91

# LUBRICATION OF BLOWERS USED IN THE WASTEWATER TREATMENT PROCESS

Air blowers (compressors) are numerous in any large wastewater treatment plant. There may be individual blowers scattered throughout for various needs, or banks of them to compress a large volume of air to supply the aeration and sludge treatment areas. There are many types in use; rotary units using light oils and reciprocating piston units which use heavier oils. All oils should be of the same high quality turbine grade, incorporating anti-foam and rust and oxidation inhibitors plus having anti-wear characteristics. The careful selection of these oils cannot be emphasized too much. They should be long lasting very stable oils with low deposit tendencies. Rotary type blowers may use grease, oil, or both. The grease should be a tough, multipurpose (or multifunctional) lubricant, while the oil again should be of R and O turbine grade quality.

Large volumes of pressured (compressed) air are extremely important to the entire wastewater treatment procedure, as is proper lubrication. Large volumes of air are required for the oxygenation and aeration process. Air is forced through mains (piping) from the blower building and through diffusers at the bottom of the oxygenation ponds. This aerates the fluid by air bubbling up through the liquid to cause flocculent to foam together on the surface. The floc is then carried off through troughs at the sides of the ponds.

Clarification by using compressed air is also used in the flotation process. Air to `float' suspended matter is an advantage in some plants. Applied in a preparation tank, air, in the form of the rising bubbles, carries partially emulsified particles of oil and grease to the surface to collect with the scum. One design employs diffuser plates in a modification of the ridge and furrow system. Another uses downdraft tube aerators. Most flotation units designed for treatment of difficult wastes or sludges employ dissolved air flotation. The influent is supersaturated with air under pressure. Minute air bubbles are formed and carry floatables to the tank surface.



Compressed air is also supplied to aerated grit chambers. These aerated grit chambers are frequently used to obtain a clean separation of grit containing a minimum of settled organic solids. Aeration at this point also keeps the wastewater fresh by increasing its dissolved oxygen content.

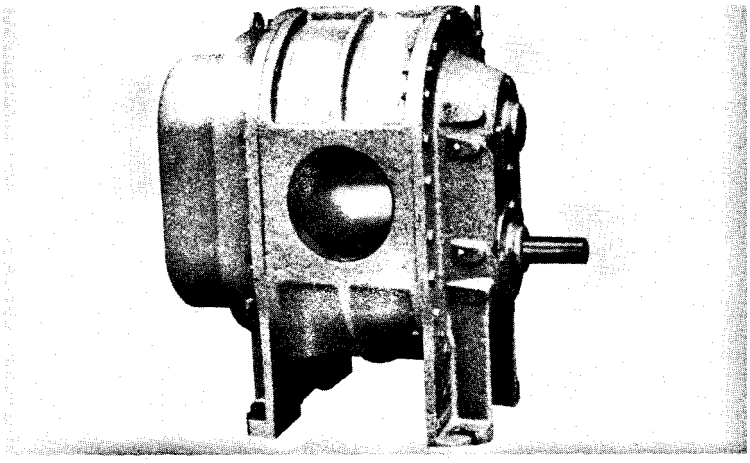
Compressed air for activated sludge tanks is furnished by rotary positive displacement and centrifugal blowers. Current use is about equally divided between reciprocating and centrifugal types. Centrifugal blowers are preferred for units larger than 10,000 to 15,000 cfm.

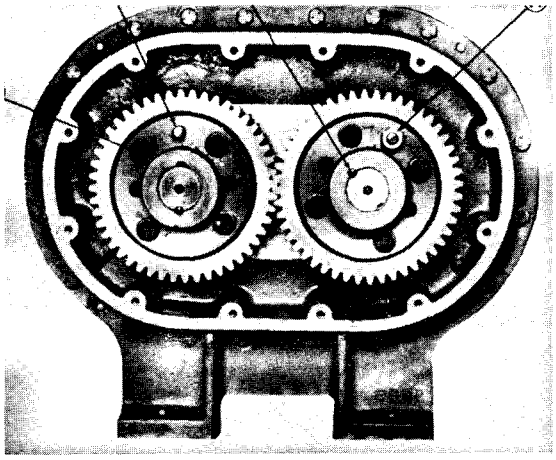
Blowers are usually driven by electric motors or by internal combustion engines. Use of the internal combustion engine, operating on methane gas from the sludge digestion process, is common in larger plants. These engines may be powering large generators which will sometimes supply the entire electric power needs of the plant; sometimes just the power needs for blowers and a few other electric powered equipment. In some instances, you may find blowers powered direct by internal combustion engines for use should the plant's own generated power fail or the municipal power supply be interrupted. The engine, used as prime movers in wastewater plants, is discussed in a separate article. Suggested lubrication of the blowers discussed here is as follows:

## Blowers

Oiled Bearings:

| | |
|---|---|
| R and O Oil | 6403/6404/6405 MONOLEC® R&O Compressor/Turbine Oil<br>6803/6804/6805 MULTILEC® Industrial Oil |
| EP Oil | 300 MONOLEC® Industrial Lubricant or<br>606/607 ALMASOL® Vari-Purpose Gear Lubricant |
| Greased Bearings | 1274/1275 ALMAPLEX® Industrial Lubricant<br>3751/3752 ALMAGARD® Vari-Purpose Lubricant<br>4622 MONOLEC MULTIPLEX® Lubricant<br>4701 MONOLEC® Industrial Lubricant |





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