Application Note to the Field	**Polymer Flocculants**
Application Note Number: 1601-2	**Date: January 21, 2016**

Liquiflo has over 30 years of experience handling polymer flocculants (also known as polyelectrolytes), in both their neat and made-down (pure and mixed with water) forms. These chemicals make use of their polar nature to attract small solid particles and are used in water and wastewater treatment to clarify the water.

The fluids themselves are generally safe to handle; thus the most common materials of construction, which will also provide the best pump life for this application are: stainless steel, PEEK and carbon, with a single mechanical seal.

Given the high viscosities of these fluids, it is often advantageous to add viscosity trims when the fluid is above 150 cP. Double metal gears can be used if the viscosity is at least 100 cP. Although both gears can be made of 316 SS, an Alloy-C drive gear is suggested to prevent possible galling of the gears.

The following are typical gear pump constructions (using Model H5F for the examples):

	Pump Model Code	Viscosity Range	Description
1.	H5FS**6P**EEU000000	< 100 cP	Standard internal clearances (no viscosity trim); 316 SS housing, shafts and drive gear; PEEK idler gear; Carbon wear plates and bearings; Carbon vs. SiC single internal mechanical seal
2.	H5FS**16**EEU000000	100-150 cP	Same construction as #1 except Alloy-C drive gear and 316 SS idler gear
3.	H5FS**16**EEU000000-**9D**	150-300 cP	Same construction as #2 except **double**-clearance viscosity trim
4.	H5FS**16**EEU000000-**9T**	> 300 cP	Same construction as #2 except **triple**-clearance viscosity trim

Note: A double-clearance viscosity trim (-9D suffix) has the outer diameter of both gears trimmed to produce a gear-housing clearance of <u>two</u> times the standard clearance. A triple-clearance viscosity trim (-9T suffix) has the outer diameter of both gears trimmed to produce a gear-housing clearance of <u>three</u> times the standard clearance. Viscosity trims reduce viscous drag while maintaining volumetric efficiency (i.e., there is no reduction in flow rate since slip that may result from increased clearances is negated by the viscous fluid). Therefore, overall pump efficiency is increased. This results in less power consumption and may reduce the size of the required motor.