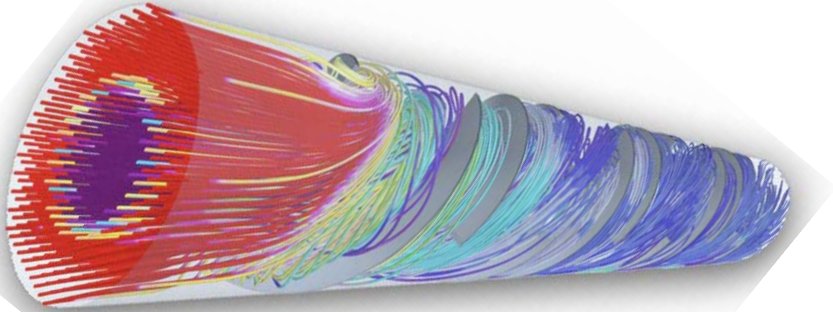




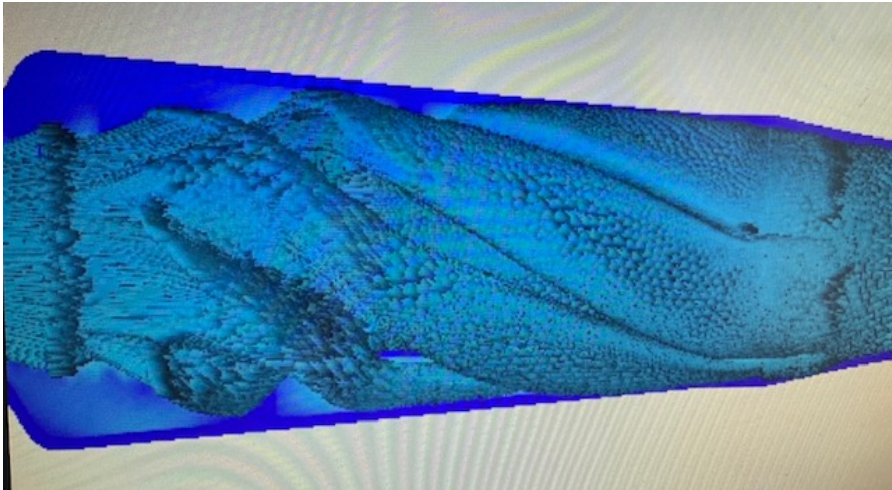
Vortex Flow Amplifier

Improved Pipeline Flows and Viscosity Handling
With Energy Savings

Vortex Produces Rotational Flow

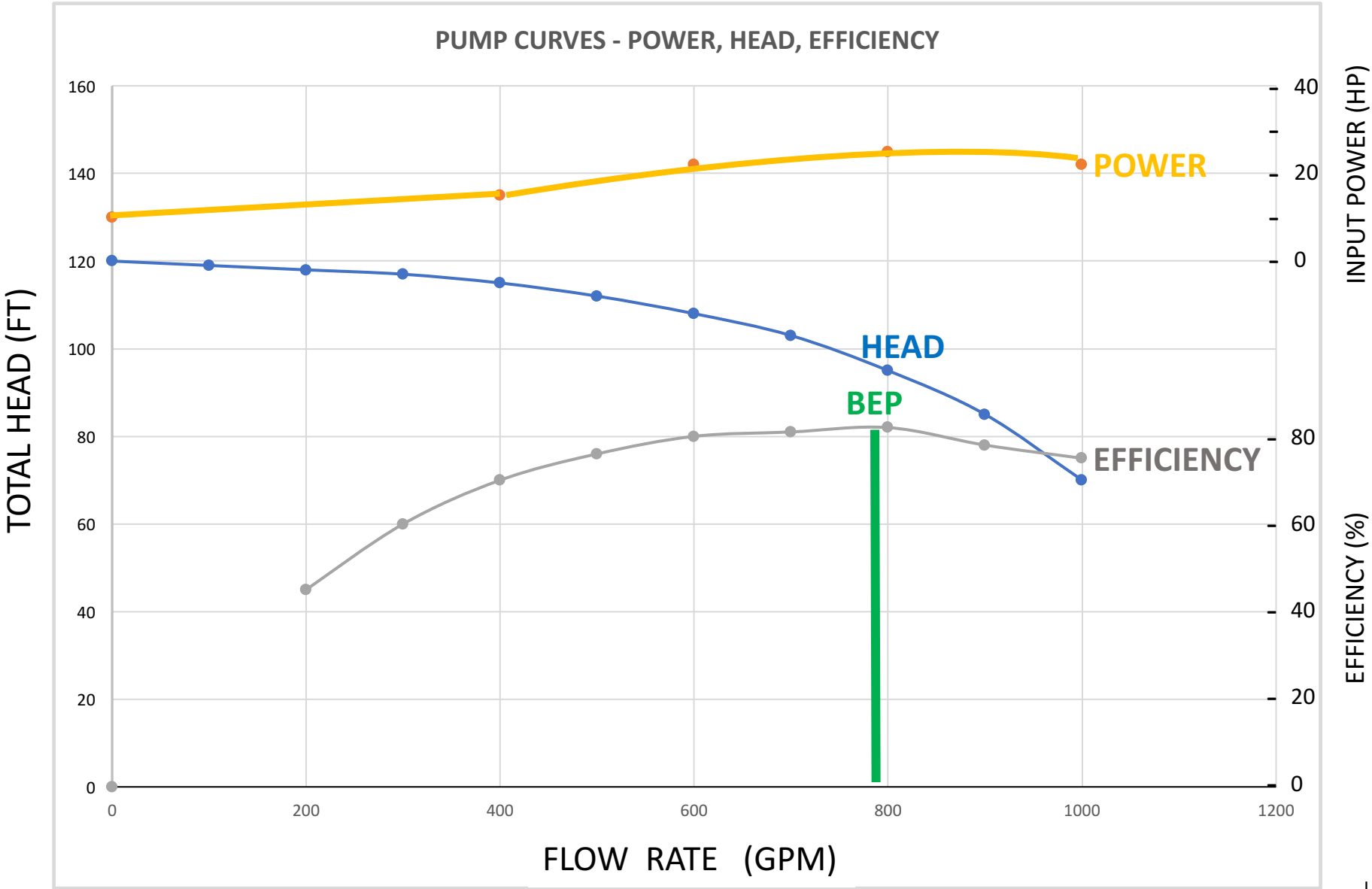


Rotating flow output

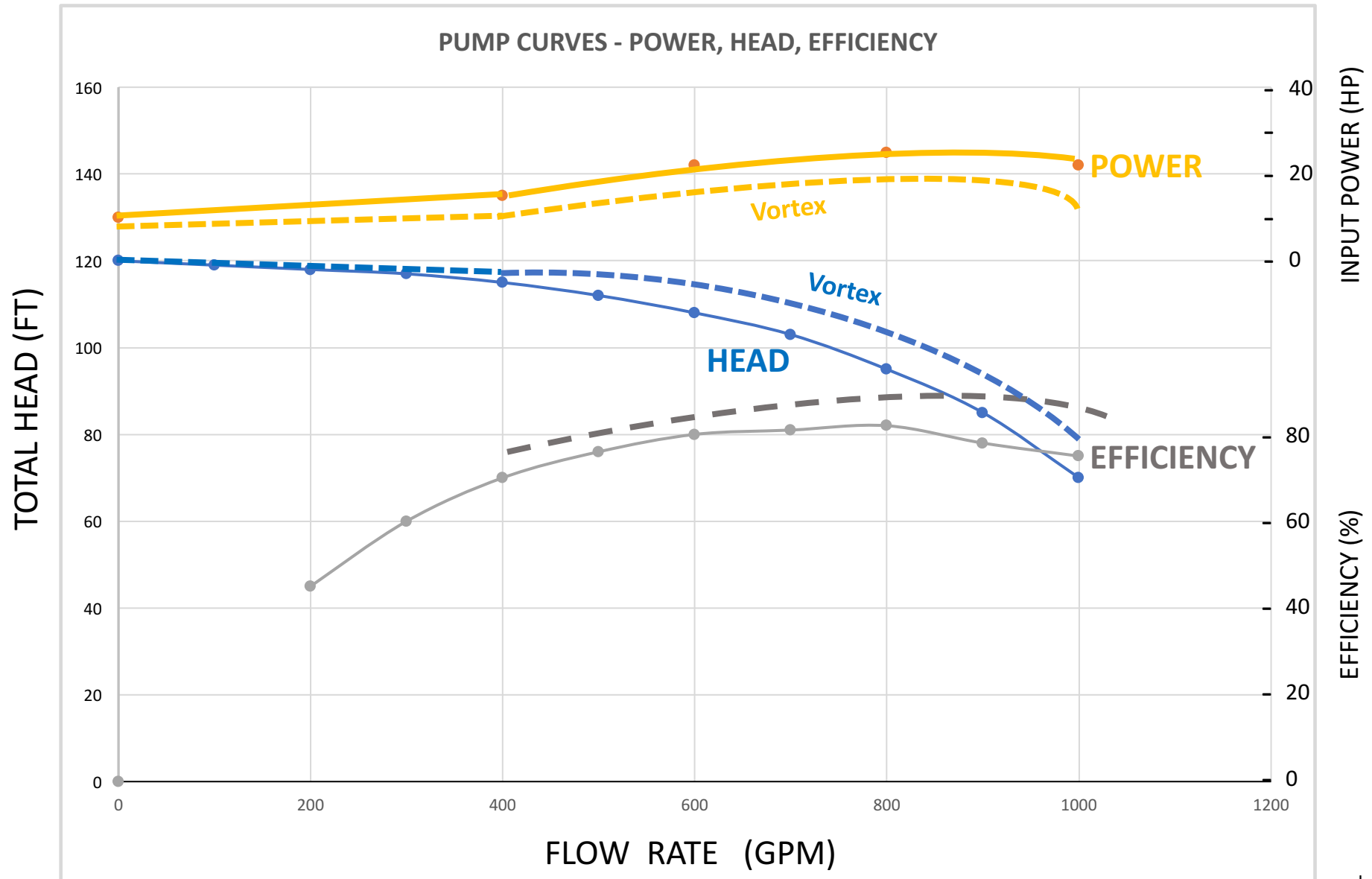


- Vortex design creates a longitudinal rotational flow
- Reduced pipewall drag increases flow velocities with no additional energy
- Improved viscosity handling saves energy and reduces load/discharge operating times
- Smooth line startup reduces system stress and quickly suspends particulates within the flow
- Opex and Capex savings, Lower Unit costs

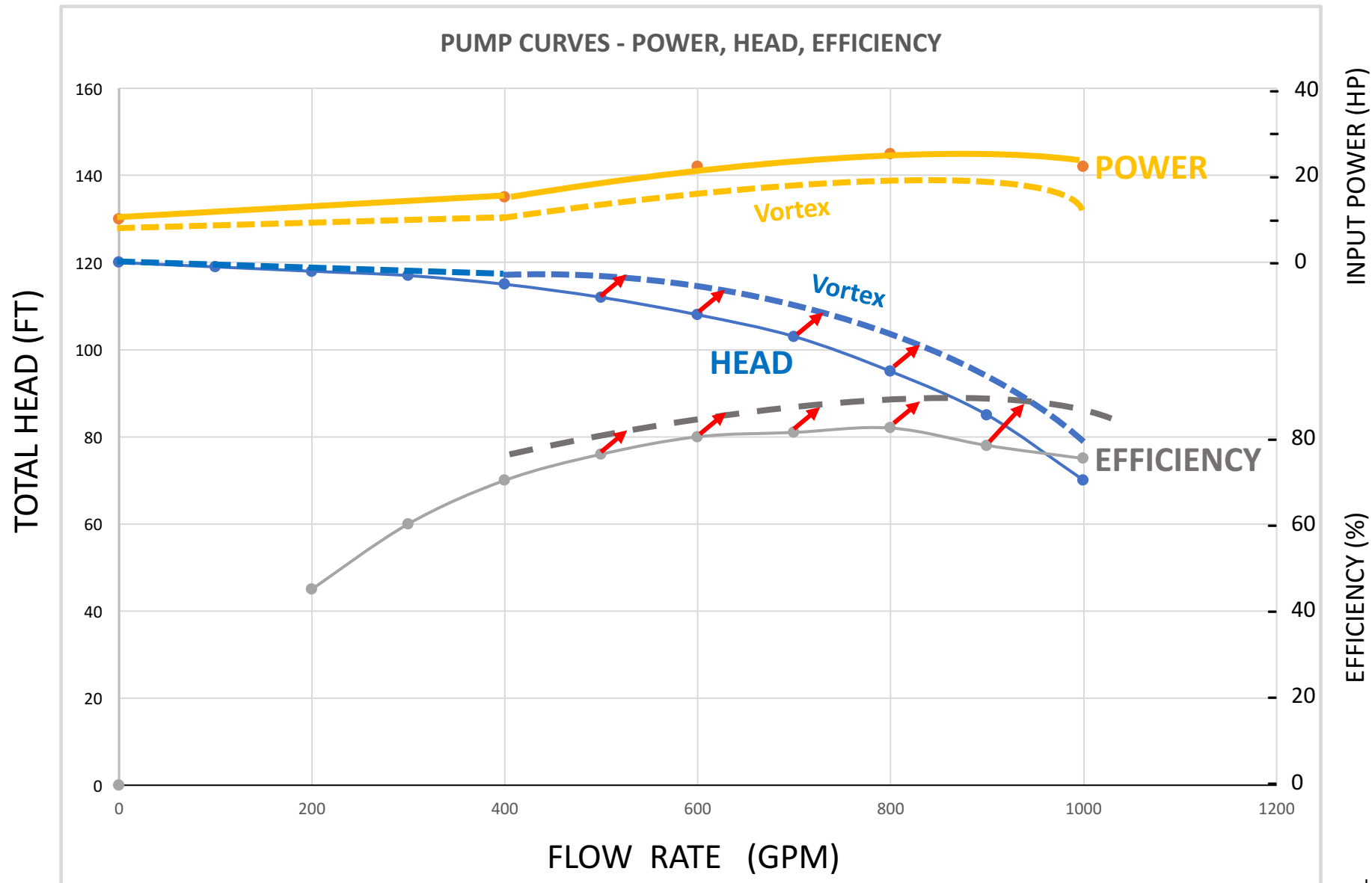
Standard Pump Curve - Water



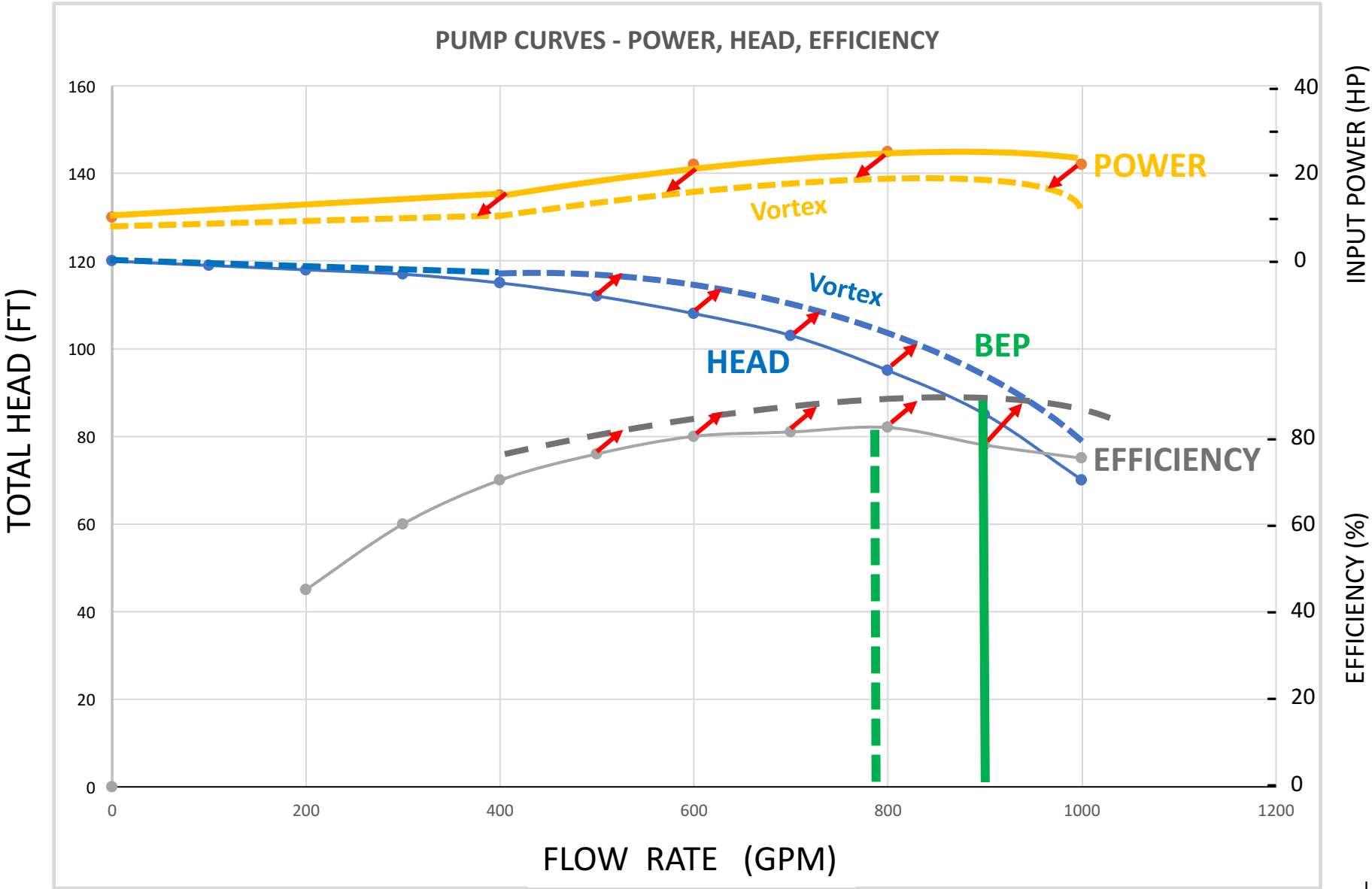
Vortex Effect on Pump Curve - Water



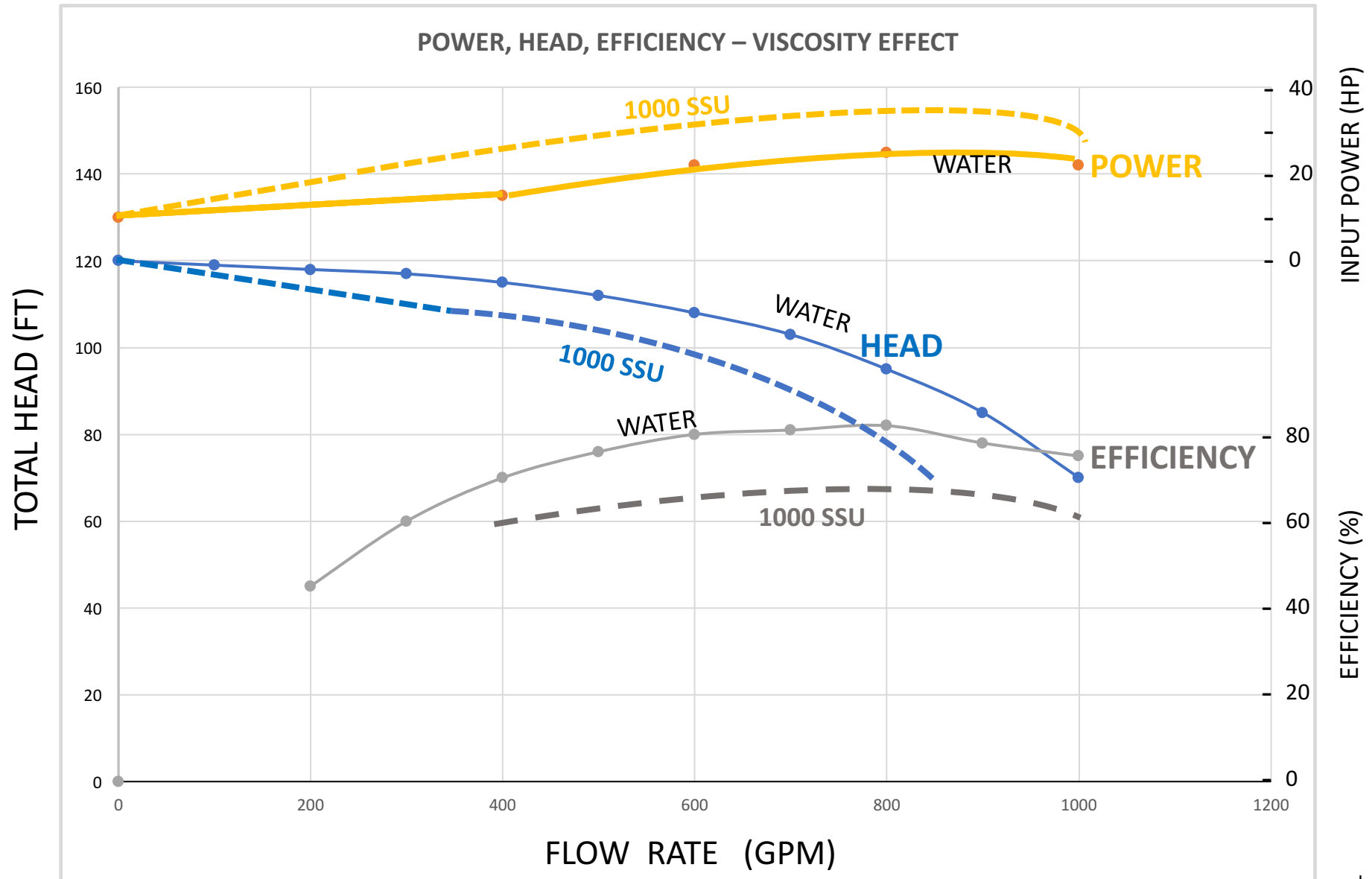
Vortex Effect on Pump Curve - Water



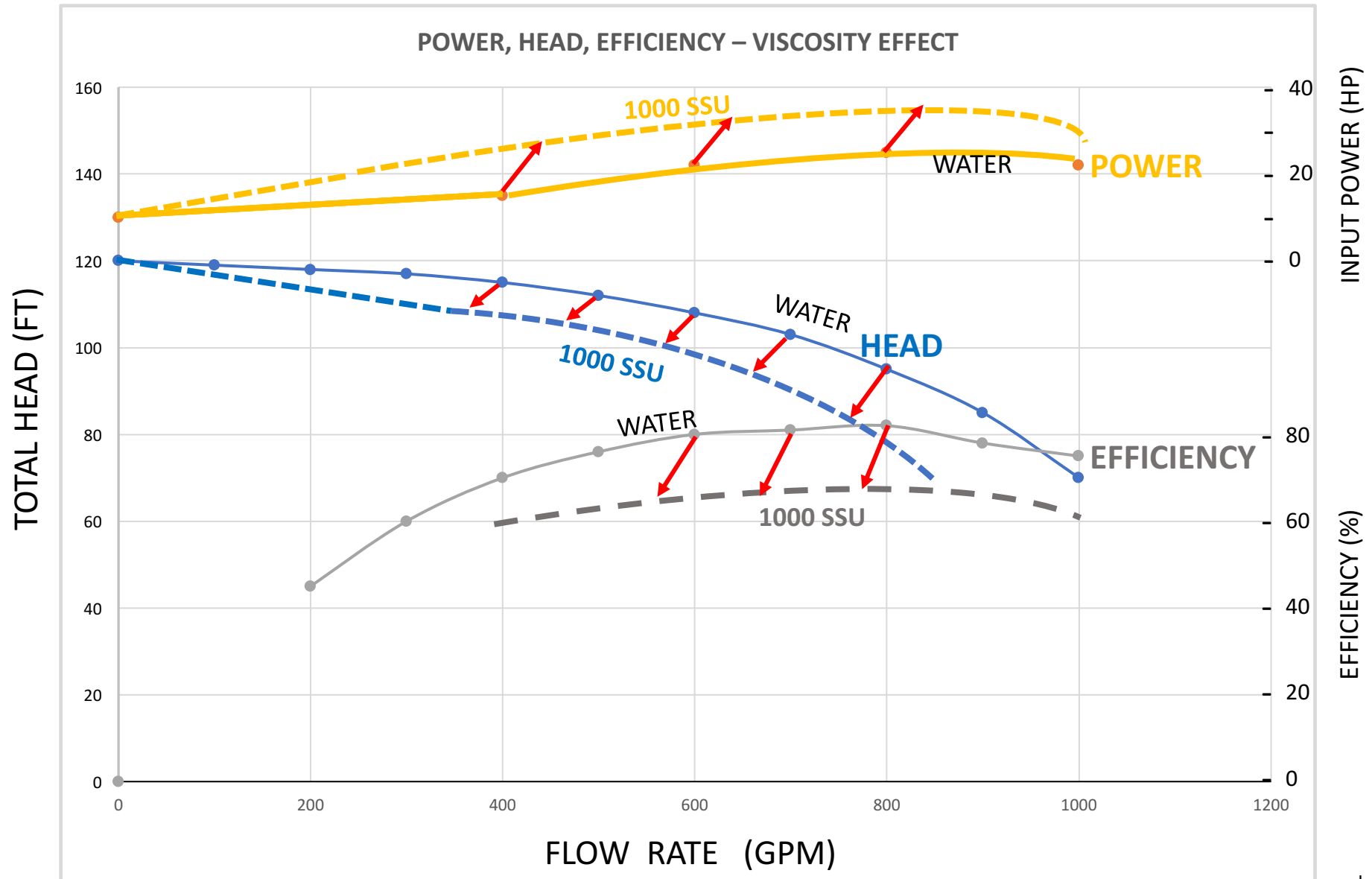
Vortex Effect on Pump Curve - Water



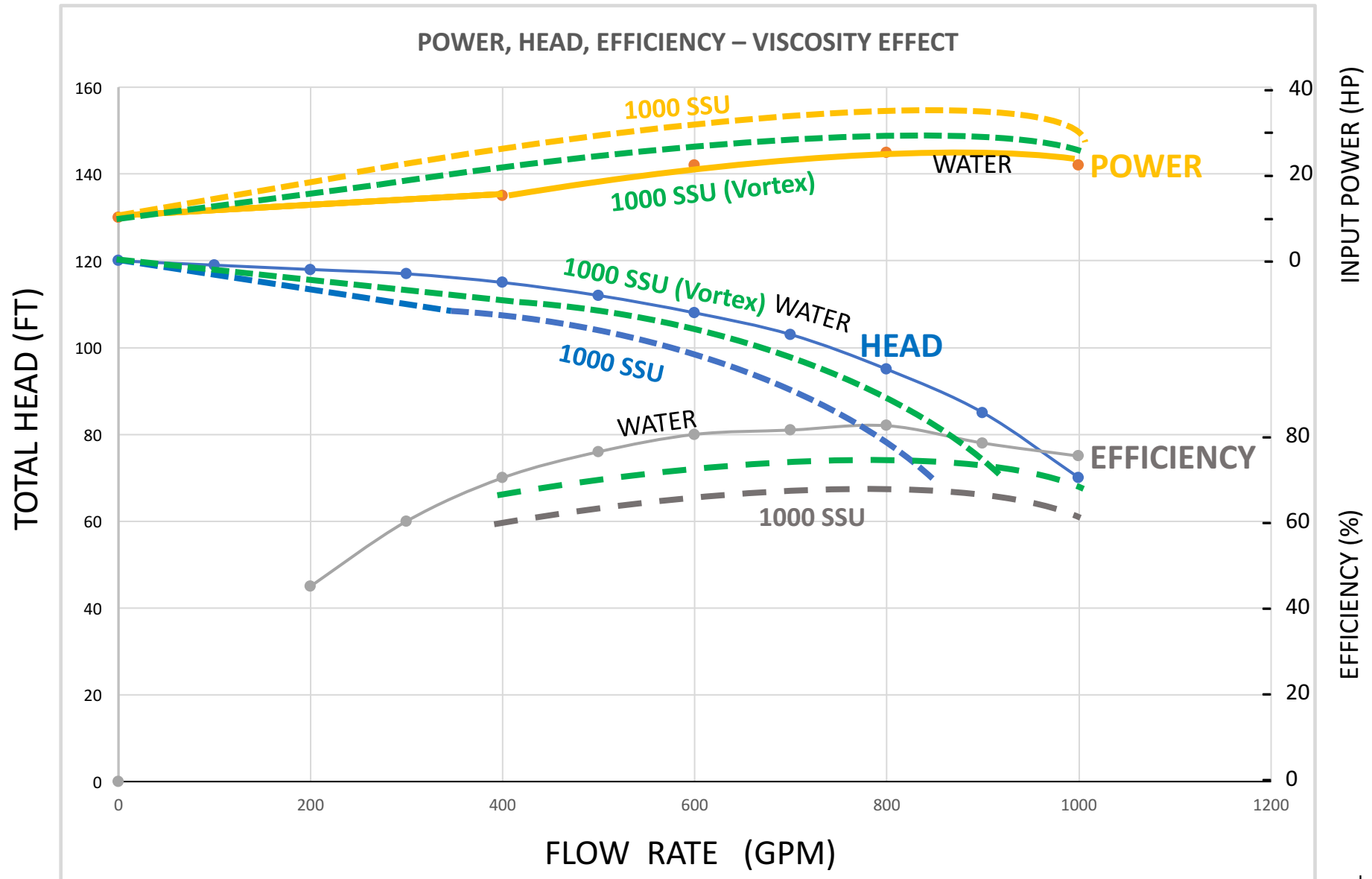
Viscosity Effect on Pump Curve



Viscosity Effect on Pump Curve



Vortex Effect on Viscosity - Pump Curve



Vortex Effect on Viscosity - Pump Curve

