

Pump selection basics

A short primer on the information needed to select a centrifugal pump.

1. Define the duty point

A pump is selected for a flow rate Q (for example in m^3/h) at a total head H (in metres of the pumped liquid). Total head combines the static lift, the pressure difference between the suction and discharge vessels, and the friction losses in pipes, fittings and valves at the design flow.

2. Compare pump and system curves

The system curve shows the head the pipework requires at each flow. The pump curve shows the head the pump delivers. The operating point is where they cross. Choose a pump whose best efficiency point lies near the flow you expect to run for most of the time.

3. Check NPSH

Net positive suction head available (NPSHa) must exceed the pump's required value (NPSHr) with a safety margin. Insufficient margin leads to cavitation, noise, vibration and wear. High temperature, low suction level and long suction pipework all reduce NPSHa.

4. Describe the liquid

State the fluid, concentration, temperature, density, viscosity and solids content. These decide casing and impeller materials, seal arrangement and whether a centrifugal or positive-displacement pump is appropriate.

5. Confirm drive and control

Decide motor power margin, speed (fixed or variable), starting method and the control strategy, such as constant pressure with a frequency converter.

Educational summary prepared for the Pressora demonstration. Always verify duty data with the manufacturer's published curves and applicable standards.