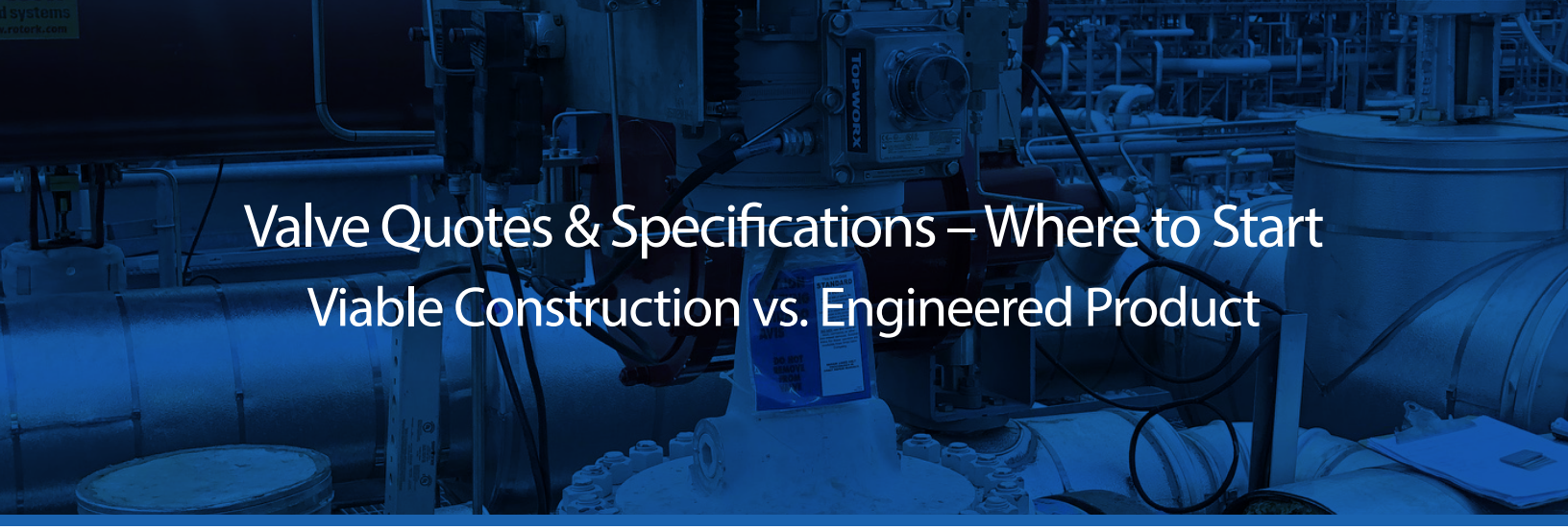

Valve Quotes & Specifications – Where to Start
Viable Construction vs. Engineered Product

Engineered Product [Extended version]

- When you need it: New construction, process conditions have changed, your valve is not performing as you expect, you want to consider modifications, or you just aren't sure what you need. Our engineering team is available to assist with sizing and selection to get you the valve you need.
- Automatic control valves must be sized to adequately control the process application for which it is intended. With nominal process data, calculations are performed to determine the flow capacity needed for the application, and that required capacity is matched to a type and size of valve and its "Cv", or flow coefficient. If not properly sized, a control valve may not pass the required flow or may not operate in a range needed to effectively control the process.
- Much like the control valve, the actuator must be sized to match the amount of force required to operate the valve. Without proper sizing, an actuator can be sluggish and not respond adequately to control signal changes, resulting in instability of the process being controlled. A missized actuator can also keep the valve from attaining its designed shutoff classification, and objectionable leakage may occur.
- Valve Sizing Parameters:
  - Proper valve sizing begins with understanding the properties of the process flowing through the valve.
    - Physical state: gas, vapor, liquid, or steam.
    - Fluid mass: specific gravity, density, molecular weight.
    - Advanced properties: vapor pressure, critical pressure, viscosity.
  - Process service conditions, i.e. the dynamic state of the process:
    - Valve inlet & outlet pressures: P1 and P2
    - Flowing temperature
    - Range of expected flow rates: min/norm/max flows
    - Flow coefficient or Cv
      - Cv of 1 = 1 gallon per minute of 60° water with 1psi of pressure drop across the valve

Valve Quotes & Specifications

- AS Control Valve Worksheet
  - Our Engineering Spec Sheet conforms to ISA Form 20 – other engineered data sheets, such as those from the OEM or a previous supplier, are also accepted.
  - Designed to collect & organize necessary data; it is not all inclusive.
  - Replaces lengthy emails describing the process, scattered and incomplete information that is difficult to read and follow up on.
  - Easy-to-follow instructions are included in the document. Fill out as much of the Process Data section of the data sheet as you can, along with any other information or expectations.
  - We may still need to make assumptions, but critical information will be requested and needs provided before determining final construction.
- Valve Selection & Specification
  - Valve type and size for the application is selected by an application engineer once the required flow capacities are calculated. Also essential is specifying the appropriate materials of construction of the process wetted parts: trim, valve body/bonnet, packing.
  - Actuator is properly sized and selected before engineering is complete.
    Essential features are:
    - Type
      - Spring & diaphragm
      - Piston
      - Piston with spring return
    - Fail safe action: upon loss of power or air pressure
      - Fail open
      - Closed
      - Last position
    - Powered by
      - Pneumatic – air operating pressure range
      - Electric – motor power voltage