

## Required Items

The following data must be made available by the customer, before work commences on the project:

- General arrangement drawings including detailed piping layout drawings (Iso's)
- Line list
- Valve List
- P&ID's
- Operating methodology (If multiple units)
  - Pumps/Compressors in series or parallel and number
- Compressor/Pump Specs (Ariel Run file etc.)
  - Number of Throws/Cylinders
  - Throw Specs
    - Piston diameter
    - Connecting rod length
    - Stroke
    - Valve pressure loss (ratio of valve open area to closed valve area)
    - Double acting or Single Acting
    - HE and CE clearance volumes
    - Discharge and Suction Pressures (Could also be put under operating points)
  - Throw action sequence
  - Angle between throws
  - Throw Locations (relative to driver)
  - Operating points (speeds, flow rates, etc.)
- Fluid properties
  - Gas/liquid composition
  - Bulk modulus (For liquids only)
  - Density, viscosity, etc.
- Pulsation bottles/suppression devices
  - Details/Drawings of internals (baffles, choke tubes, etc)
  - Details/Drawings of nozzles including locations
  - Operating conditions if applicable (charge pressure/volume etc.)
- Cooler data sheet
  - Details of tube size and number of passes
  - Pressure drop
  - Header volumes

## Helpful Items

The following data is considered helpful and it is only required in some circumstances:

- 3D models can be used to supplement or replace detailed piping layout drawings