



2-in. High Viscosity Oil/Gas Two Phase Flow Loop

Key Specifications

This facility has been design to study the co-flow of gas and high vicious liquid. The facility is equipped with advanced instrumentation allowing the characterization of multiphase parameters such as: liquid holdup, slug flow characterization, pressure drop and flow pattern. The flow loop operational conditions can be expanded as well as new instrumentation can be used to characterize additional multiphase parameters.

Fluids

Gas: Air
Oil: Mineral Oil

Operating Conditions

Maximum Pressure: 30 psig
Temperature: 70-110 °F
Gas Flow Rate: 0 to 1.5 MMSCFD (Superficial Gas Velocity – 0 to 66 ft/s)
Oil Flow Rate: 0 to 860 BPD (Superficial Oil Velocity – 0 to 2.6 ft/s)

Test Section

Pipe Material: PVC/Acrylic
Diameter of Pipe: 2 inch
Test Section: 62.0 ft (372D)
Developing Region: 45.6 ft (274 D)
Inclination Angles: +2 to - 2 degree

Instrumentation and Flow Characteristics

Parameter	Instrument
Flow Patterns	Visual Observation, High Speed Camera
Liquid Holdups	Quick Closing Valves and Capacitance Sensor
Pressure Gradient	DP Sensor
Slug Length	Capacitance sensor, Laser Sensors
Slug Frequency	Capacitance sensor, Laser Sensors
Translational Velocity	Capacitance sensor, Laser Sensors
Flow Field	Particle Image Velocimetry

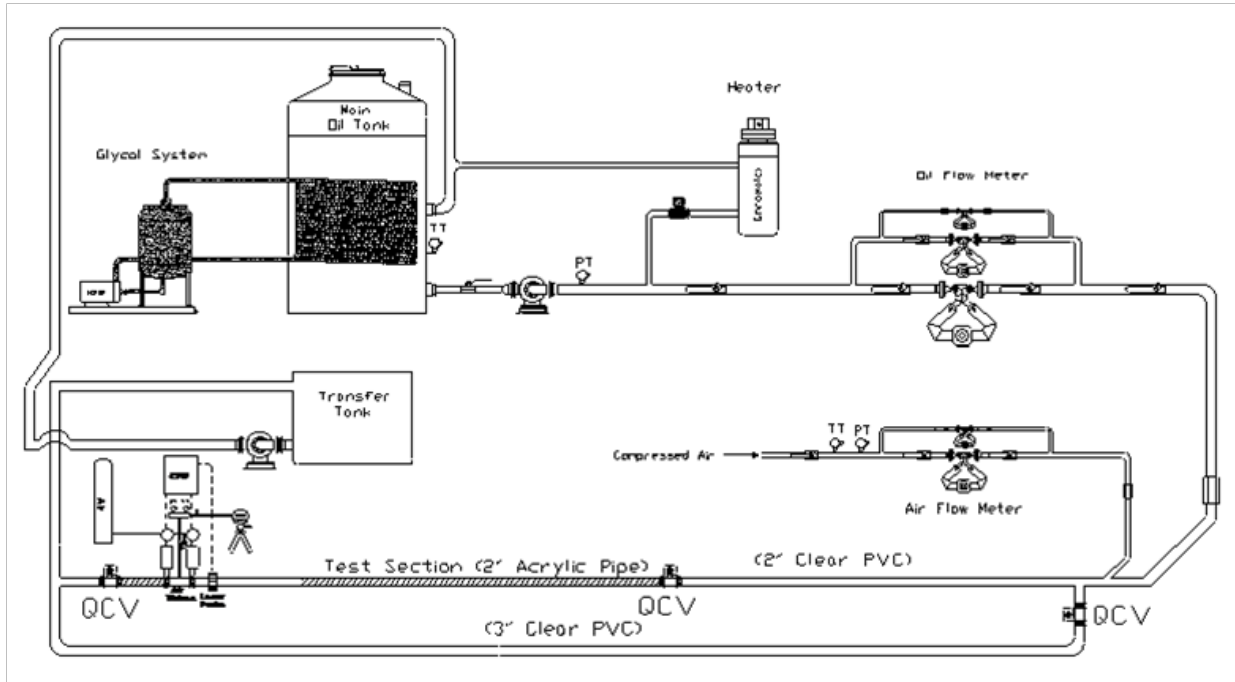


Figure 1. Schematic of Flow Loop



Figure 2. View of 2-in. High Viscosity Oil/Gas Two Phase Flow Loop