Three Basic Refinery Process Flows

**Separation**
- Crude
- Residual/Asphalt
- Fuel Oil
- Kerosene
- Naphtha
- Gas

Separation Crude Oil into Various Fractions Based on Boiling Point
- Crude Desalter
- Atmosphere Crude Unit
- Vacuum Crude Unit

**Conversion**
- Converts Lower Value Products into High-Demand, Premium Products
  - Residual Conversion
  - Middle Distillate Upgrading
  - Light Ends Processing

**Storage and Blending**
- Combines the Various Components from the Conversion Processes into End-Use Products
- Gasoline
Key Refinery Processes and Marketable End Products
Key Refinery Processes with Critical Pump and Control Valves Concept
Conversion Process — Typical Distillation Unit Process Descriptions

One of the other feedstocks to a refinery is hydrogen, which can be used in a hydrotreater, isomerization, FCC, reformer, and a complex, capital-intensive unit.
Vapor or Flare Examples Using SIHI Vacuum Products Throughout the Refinery
Detailed Crude Distillation Process with Second-Phase, High-Vacuum Tower
Vacuum Distillation Unit (VDU), Enhanced with SIHI Vacuum Systems Options
Basic Delayed Coking Unit
Basic Hydrotreater
Typical Fluid Catalytic Cracker
Typical Hydrocracker Thermal and Pressure Balance Processes
Hydrocracker (Simplified)
Continuous Catalytic Reformer (Simplified)
Continuous Bed Process Flow with Primary Control Valves
Typical Alkylation-Unit Flow
Vapor Recovery System Process
Typical Vacuum Systems

SPILL BACK CONTROL VALVE FOR FLUCTUATING GAS LOADS AND GAS COMPOSITION
CONSTANT SUCTION PRESSURE
PROTECTION LIQUID RING COMPRESSOR AGAINST CAVITATION
CONTROL FROM DCS

PRESSURE CONTROL VALVE (Valtek MaxFlo 4)
Typical SIHI Liquid Ring Used in Flare Gas

FLARING GAS: POLLUTION AND WASTE OF RESOURCES
Blending (Mixing) Flow with Key Pump and Control Valves
Typical Amine Treating Process in Refineries
Deasphalter (Simplified)