

REFINERY DEFINITIONS

- 1. Crude Unit/Pipestill** is the first unit that process petroleum in any refinery. The objective is to separate the crude oil into lighter and heavier fractions such as propane, gasoline, diesel.
- 2. Coker Unit** is an oil refinery processing unit that converts the residual oil from the vacuum distillation column into low molecular weight hydrocarbon gases, naphtha, light and heavy gas oils, and petroleum coke.
- 3. Flue Gas Desulfurization (FGD)** chemical process technologies used to remove sulfur dioxide (SO₂) from exhaust/flue gases of fossil-fuel power plants, and from the emissions of other Sulphur oxide emitting processes. The FGD at the Benicia Refinery is a sulfur emission control device that absorbs sulfur dioxide(SO₂) using a water soluble amine solution, which is regenerated to produce a concentrated SO₂ vapor which is then converted to elemental Sulphur.
- 4. Fluid Catalytic Cracking (FCCU)** unit is one of the most important conversion processes used in petroleum refineries. Once the crude oil is broken into various fractions by the crude unit, the high boiling point petroleum liquids are sent to FCCU where this crude oil fraction is converted to more valuable gasoline and other related products.
- 5. High Temperature Creep** may be defined as a time-dependent deformation at elevated temperature and constant stress such as high pressure.
- 6. Waste Heat Boiler** is used for the generation of high pressure hot water or high pressure steam. Waste heat boilers utilize the heat in flue/exhaust gases from combustion processes or hot waste air flows from industrial processes to generate hot water or steam.
- 7. Selective Catalytic Reduction (SCR)** is a means of converting nitrogen oxides, also referred to as NO_x, with the aid of a catalyst into diatomic nitrogen (N₂), and water (H₂O). A gaseous reductant, typically anhydrous ammonia, aqueous ammonia or urea, is added to a stream of flue or exhaust gas and is adsorbed onto a catalyst. Carbon dioxide, CO₂, is a reaction product when urea is used as the reducing agent.
- 8. Safety Relief Valve** is a type of valve used to automatically limit the pressure in a system. Without safety relief valves pressure might otherwise build up and create a process upset that could result in equipment failure.
- 9. Hydraulic Surge** is where the velocity of a fluid suddenly changes and resulting in a pressure wave that travels through the fluid. Fluctuations in the fluid's velocity are generated by restrictions like a pump starting/stopping, a valve opening/closing, or a reduction in line size. The Hydraulic Surge produces large swings in the piping system pressure that can cause relief valves to open as a safety mechanism to prevent equipment damage that could result from the Hydraulic Surge.
- 10. Pilot-operated Safety Relief Valve** uses process pressure to keep the valve closed instead of a spring. A pilot line or small diameter line is used to sense process pressure and to pressurize a chamber above the pilot piston or vent the chamber pressure above the piston sealing surface. This pilot line controls the safety valve opening or closing by increasing or decreasing the chamber pressure above the seating piston of the pilot operated safety relief valve. A pilot-operated safety relief valve consists of the main valve, a floating, unbalanced piston assembly, and an external pilot controlled regulator. The pilot regulator controls the pressure on the top side or upper chamber of the main valve. A resilient seat is normally attached to the lower end of the pilot operated sealing piston device.