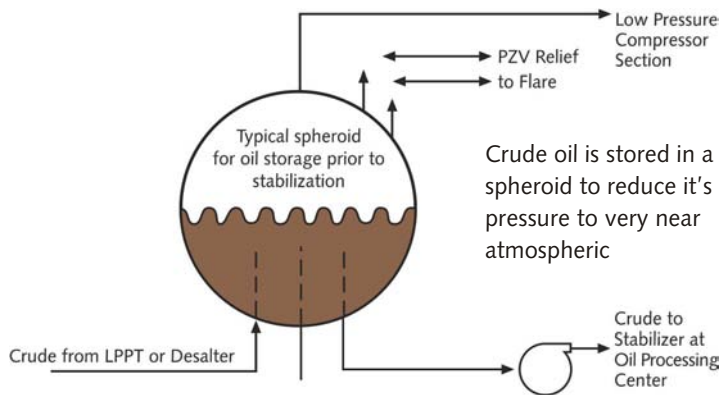


# Crude Stabilization Systems

**Liquid ring pumps are used to remove dissolved gases from crude oil tanks, thus stabilizing the true vapor pressure of the crude. The removed gas can be boosted downstream and used for fuel.**

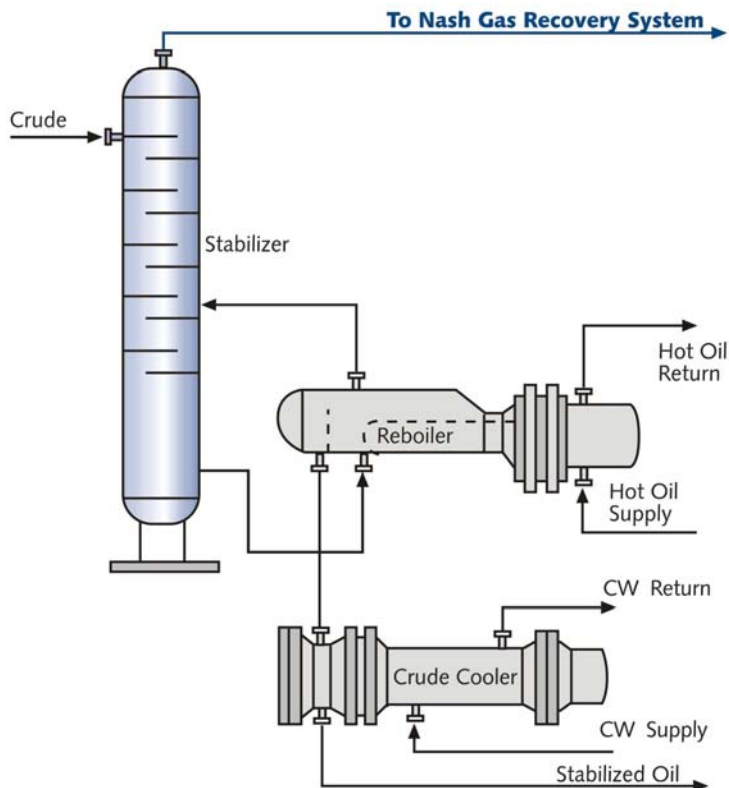


	Before Treatment	After Treatment
<b>Water Content</b>	up to 3% emulsion	0.3% by volume, maximum
<b>Gas Content</b>	dissolved gases in varying amounts depending on the Gas-Oil Ratio (GOR)	vapor pressure: 5-20 psia RVP (Reid Vapor Pressure)
<b>Hydrogen Sulfide (H2S)</b>	up to 1,000 ppm by weight	10-100 ppm by weight

## Crude Stabilization

Stabilization removes light gases, along with hydrogen sulfide, before the oil is stored. Hydrogen Sulfide is commonly found in crude oil, and when exposed to water (also common in crude) it forms H<sub>2</sub>SO<sub>4</sub> - sulfuric acid. This acid can eat its way through a steel pipeline or storage tank. If released into the air, it is poisonous to all who inhale it.

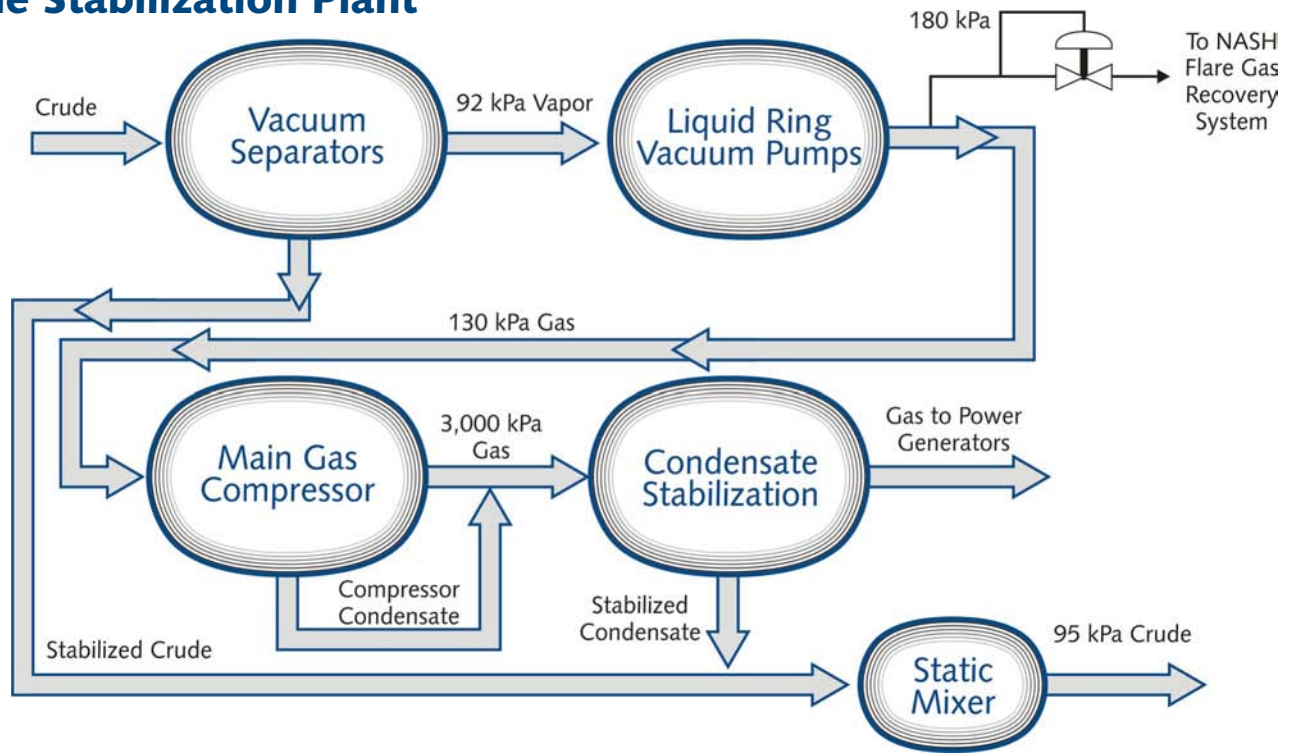
The stabilization process does two jobs: it sweetens the “sour” crude (removes the hydrogen sulfide) and it reduces vapor pressure, making the crude safe for shipment in tankers. The vapor pressure is caused by light hydrocarbons - such as methane, ethane, propane, and butane - changing from liquid to gas as the crude’s pressure is lowered.



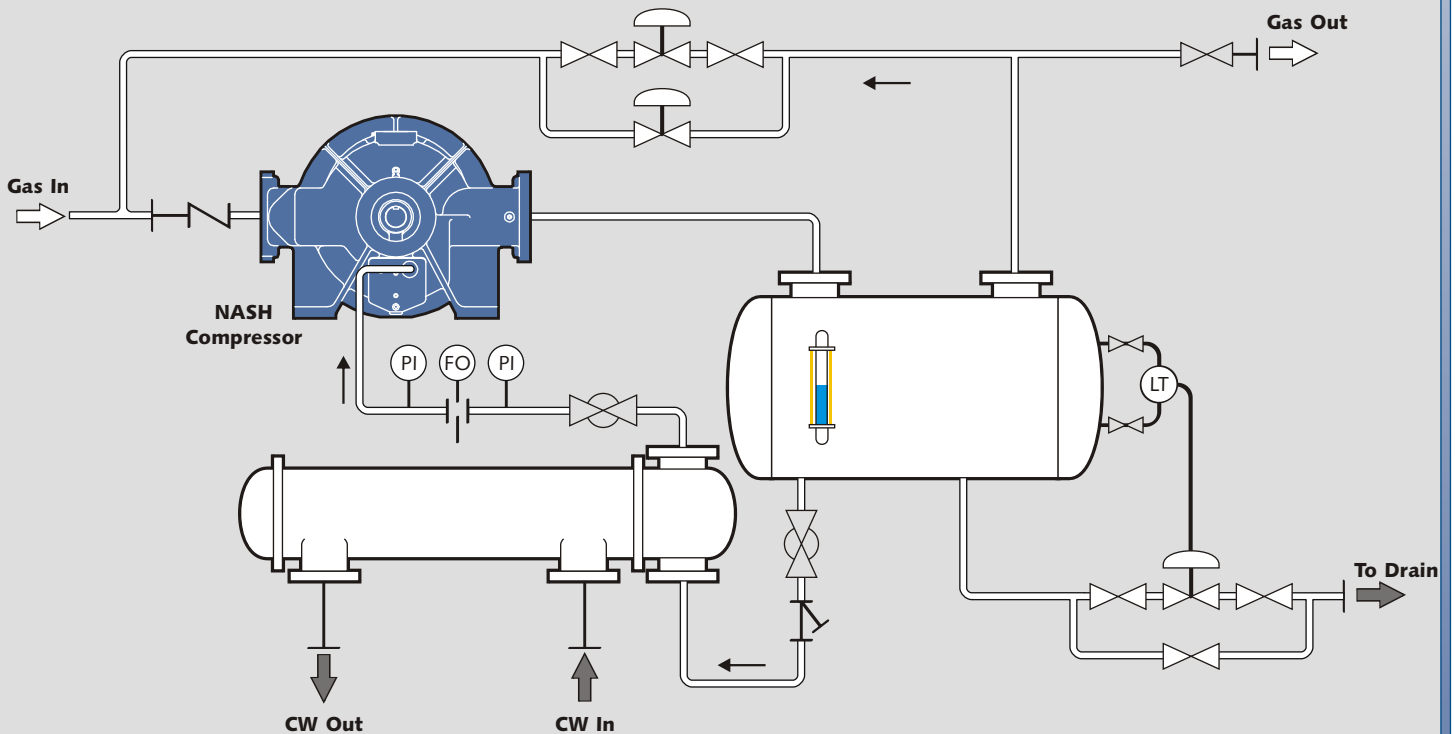
The gas cannot be released all at once, because a significant amount of liquid would then be lost at the same time. The gas is thus released in a series of separators, ending in a spheroid where the pressure is reduced to about 2 psi. It is then pumped to the crude storage tanks at the stabilizer. From there it is pumped to the top of the stabilizer column.

As the crude works its way down the column, it flows through a series of “bubble trays.” Near the bottom, the oil is channeled to a reboiler that heats it. By the time it reaches the bottom of the column, the crude is hot and the gases begin to boil off. They rise to the top, and are collected by a Nash gas recovery system, at the same time heating the incoming sour crude and stripping out some of the gases it contains. The stable crude remains at the bottom.

## Crude Stabilization Plant



## Flare Gas Recovery System



**Gardner Denver**  
**Engineered Products Division**  
 9 Trefoil Drive, Trumbull, CT 06611  
 phone: +1 800 553 NASH  
 fax: +1 203 459 3988  
 nash@gardnerdenver.com  
 GDNash.com