



RECOGEN Gasoline Vapor Recovery System

Application

The RECOGEN Gasoline Vapor Recovery System is designed to meet all current and expected gasoline emission specifications. It uses a combination of RECOvery-GENeration for cooling the vapor stream to achieve recovery rates in excess of 99%. Eighty five percent of the vapor is recovered to the bulk tank. The remaining 15% is used to power a gasoline driven generator which in turn provides power equal or greater than the refrigeration system demands. This excess of power is then fed back into the grid, offsetting operating costs.

Description

The RECOGEN System is a standard Edwards Solvent Vapor Recovery System, based on the Rankine cycle of refrigeration, with a gasoline driven generator incorporated into it. The RECOGEN System consists of :

1. low temperature refrigeration system
2. defrost fluid reservoir
3. condensing coils
4. gasoline driven generator
5. vapor holder

In operation, the inlet vapor stream passed through refrigerated fin coil heat exchangers, which are manufactured from 304 stainless steel tubing with aluminum fins and enclosed in a 304 stainless steel inner-wall enclosure. Here the gasoline vapor condensate drops into a decanter which gravity separates the water from the gasoline. A positive displacement pump is included to pump the recovered gasoline back to storage. The amount of vapor pumped back to storage is 85% of the total amount recovered based on a 40% inlet concentration. This represents a recovery of 1.7 gallons per 1,000 gallons loaded.

The remaining 15% of vapors recovered are collected in a vapor holder, to maintain a constant flow, and then used to power a gasoline driven generator which generates more power than the refrigeration system consumes. The power generated is 1.6 kw for every 1,000 gallons of gasoline loaded. The power usage of the refrigeration system is 1.0 kw for every 1,000 gallons of gasoline loaded. This provides a net generation of .6 kw for every 1,000 gallons loaded.



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- Vapor Recovery Systems

Economics

A typical unit handling vapors emitted during the loading of 100,000 gal/hr of gasoline into tank trucks costs approximately \$250,000, with a break-even point varying with local utility costs.

Installations

Over 400 direct condensation units since 1973, 13 RECOGEN.

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