

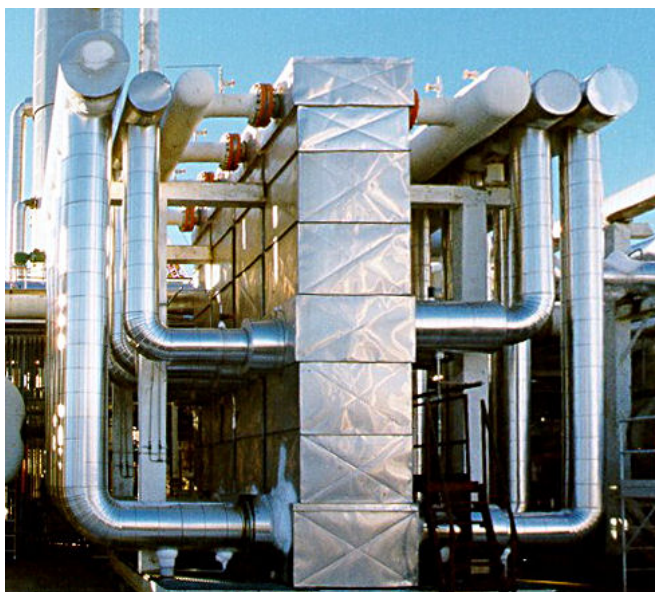
SUPPLEMENTAL RECTIFICATION PROCESS

Ortloff's Supplemental Rectification Process (SRP) is an enhancement of Ortloff's original Gas Subcooled Process (GSP) technology. The SRP process can be operated to provide any level of ethane recovery from natural gas streams up to normal GSP levels of recovery while maintaining ultra-high propane and heavier recovery at all times. It is an extremely flexible process for ethane recovery and is an excellent choice where ethane production needs to be adjusted daily to match ethane product demand.

The SRP design incorporates a vapor draw from the demethanizer column that is used to generate two reflux streams for the column. A rectification section is added above the typical top feed point of the GSP process. A portion of the condensed side draw vapor is fed to the top of this new section. The remainder provides reflux below the expander feed when needed, depending on the ethane recovery level. These additional SRP reflux points allow the process to maintain ultra-high recovery of the propane and heavier components at all ethane recovery levels.

APPLICATIONS

The SRP technology is extremely flexible, and can operate at any ethane recovery level up to normal GSP recovery levels. This flexibility allows an operator to maximize plant profits by keeping the propane recovery above 99% while the ethane recovery is



adjusted to match demand. The operator can “seamlessly” adjust the ethane recovery as necessary anywhere between high recovery and full rejection as required without sacrificing propane recovery. A reduction in ethane recovery may be desired when ethane pricing is low, or product demand is reduced during downstream chemical plant maintenance. This feature may also be beneficial for operational flexibility among several parallel NGL recovery plants. For example, increased ethane recovery may be desirable if one of the parallel trains is out of service for maintenance.

Typical applications for the SRP process include:

- Locations where over 99% propane recovery is always justified while operating at 2% to 90% ethane recovery level.
- Multiple parallel NGL recovery trains with maximum ethane recovery capability in the 90% range where ethane product demand varies over a relatively wide range.

SRP technology can be installed in a new facility or may be retrofit into an existing facility where varying ethane recovery combined with ultra-high LPG recovery is desired.

FEEDSTOCK AND PRODUCTS

The SRP process can accommodate most natural gas compositions. Richer gas compositions may require the addition of a refrigeration system. Inlet pressures above 600 PSI are generally preferred.

In high ethane recovery mode, the SRP process produces a mixed NGL product stream, typically meeting a maximum methane in ethane liquid product specification. In full ethane rejection mode, a mixed

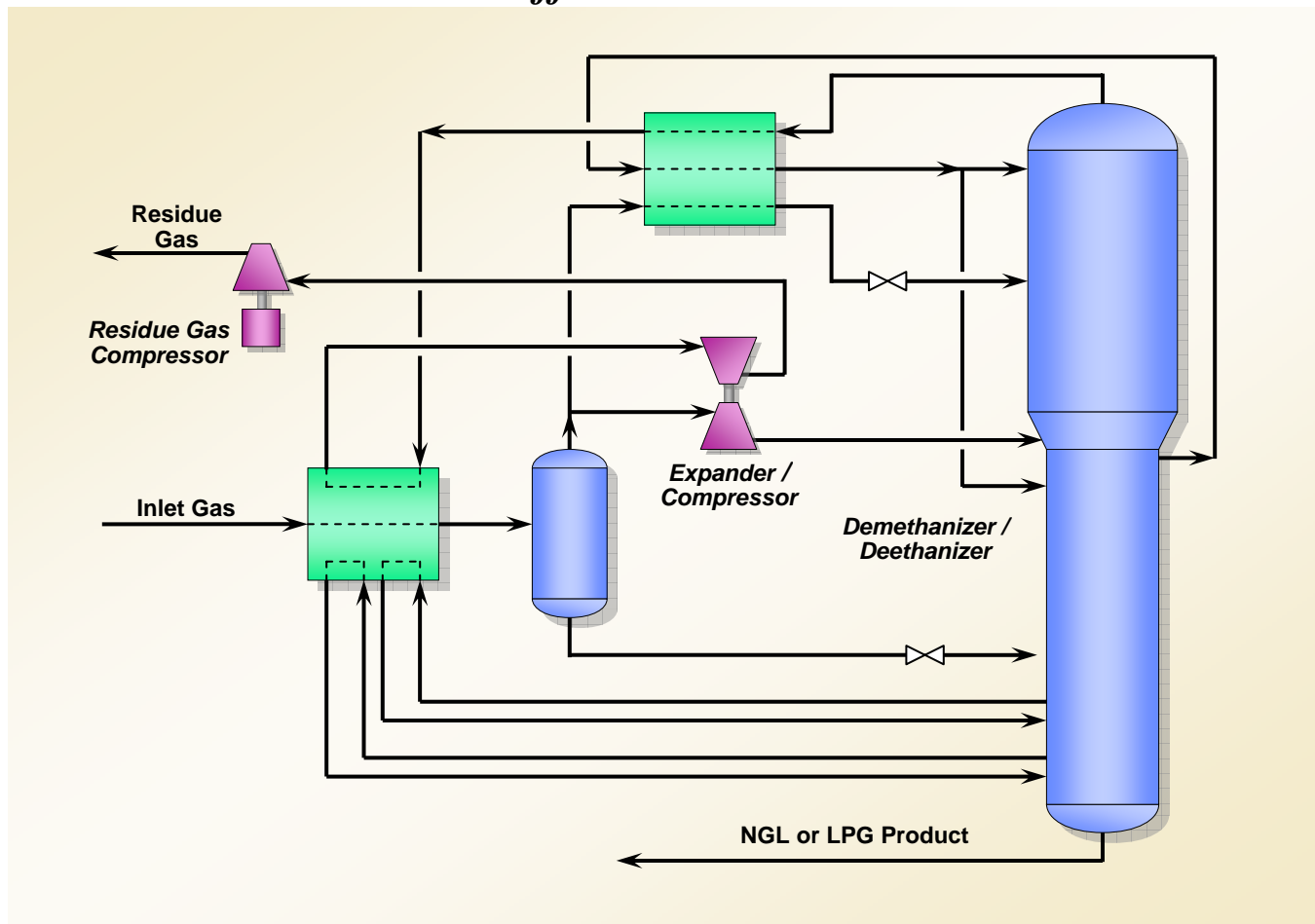
LPG product stream is produced, typically meeting a maximum ethane in propane liquid product specification.

The residue gas product stream will contain methane or methane and ethane, depending on the ethane recovery level.

EXPERIENCE

Ortloff's SRP technology is currently in service in four trains, with two more under construction as of mid-2010.

Ortloff's SRP Process



FOR MORE INFORMATION


For more information about this or any other Ortloff process, contact Ortloff Engineers, Ltd. at:

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