Opti-Flex™

Ortloff Engineers, Ltd. has been developing NGL / LPG recovery technology for over 50 years. Ortloff's portfolio of proprietary process designs are state-of-the-art, offering a range of benefits in both ethane recovery and full ethane rejection operating modes. Ortloff's Opti-Flex™ is no exception, providing Optimum Flexibility for new NGL / LPG recovery plants in a more compact gas processing arrangement than standard NGL / LPG recovery plants. *Optimum* because owner / operators can maximize their plant's ability to recover valuable natural gas liquids, and *Flexible* because the technology is capable of operating from high ethane recovery to full ethane rejection without losing propane, providing an economic advantage in today's market.

Applications

The Opti-Flex™ Process Technology was developed for the owner / operator who has experience with the design and operation of the Gas Subcooled Process (GSP). It is optimized for those seeking a cryogenic gas processing technology that can recover a higher amount of propane and heavier components (C_3+) from the inlet gas stream than GSP in both ethane recovery and ethane rejection modes of operation while using the same amount of power as GSP.

Invented by Ortloff in 1976, GSP is limited in recovery mainly by economics in both modes of operation. In ethane rejection operation, stick-built GSP plant designs typically require excessive residue compression power to achieve propane recoveries above 93%. The Opti-Flex™ process was developed to overcome this limitation, and improves the recovery of the C_3+ components in both modes of operation. Its most significant improvement is the recovery of C_3+ components while in ethane rejection mode. With a simpler design, less equipment, shorter construction schedule, and lower installation costs, Opti-Flex™ is estimated to yield 10% cost savings compared to a new GSP facility.

As part of Ortloff's proven *Gas Plant in a Bottle*® (GPB™) product line, Opti-Flex™ integrates two heat and mass transfer devices within the "bottle" assembly yielding a more compact design. One of these devices is called the Heat and Mass Transfer (HMT) Module, which is located in the lower section of the Demethanizer / Deethanizer column to generate stripping vapors for reboiling. The other heat and mass transfer device is the Cold Refluxing Module (CRM). The CRM is located in the upper section of the column where it is able to provide additional fractionation and cooling to capture the unrecovered C_3+ components which would otherwise exit the top of the column using GSP. Together, the HMT & CRM overcome GSP's propane recovery limitation and offer a compact, efficient solution for superior performance.

Typical applications for the Opti-Flex™ process include:

- New plant applications with inlet capacities up to 400 MMSCFD (depending on shipping limitations).
- Gas processing plants where the owner / operator has experience with GSP designs, and would benefit from ultra-high C_3+ recovery.
- Plant locations, either on-shore or off-shore, where a more compact plant design is desired because plot space is limited and/or costly.

Benefits

Opti-Flex™ offers the following benefits when compared to traditional GSP designs:

- Significantly higher C_3+ recovery in full ethane rejection ($\leq$ 2% ethane recovery) using no additional compression. Opti-Flex™ can achieve greater than 99% propane recovery when rejecting all the ethane, while GSP is typically limited to 85% - 93% C_3 recovery.
- Improved C_3+ recovery in ethane recovery mode while achieving similar ethane recoveries using no additional compression. Opti-Flex™ typically achieves nearly 100% propane recovery in ethane recovery mode, while GSP is limited to less than 99% C_3 recovery.
- A more flexible gas processing plant than GSP that can operate in high ethane recovery and full ethane rejection modes.
- Same operation and controllability as GSP making it easier for owner/operators who are familiar with GSP to transition to a new process technology.

- Incorporates many of the same benefits gained when using a GPB™ application. Additional information is available on the GPB™ product datasheet.

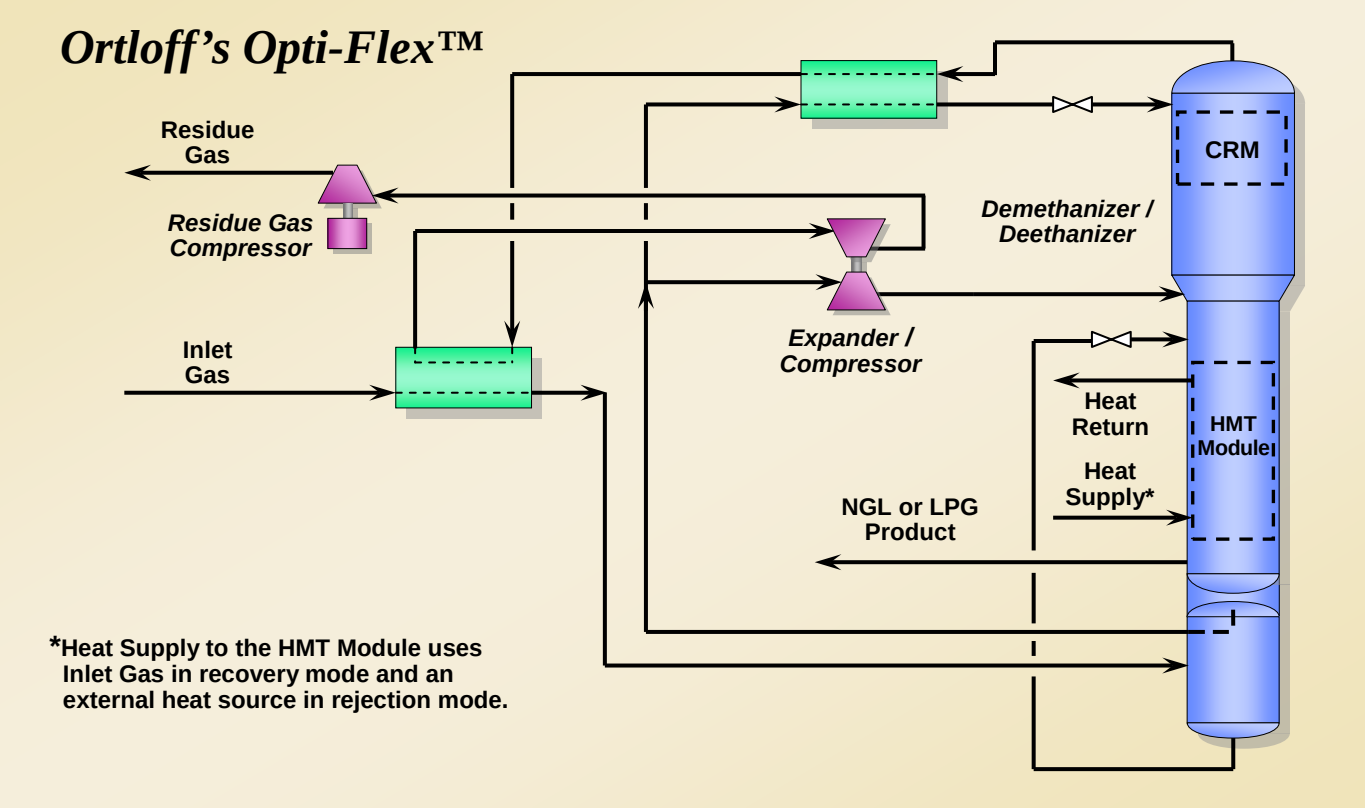
Feedstock and Products

Opti-Flex™ can accommodate most natural gas compositions. Richer gas compositions may require the addition of a refrigeration system. Inlet pressures above 600 PSI generally yield better performance results. In ethane recovery mode, Opti-Flex™ produces an NGL product stream which meets the methane in ethane liquid product specification.

In ethane rejection mode, the C_3+ product stream is capable of meeting the ethane in propane liquid product specification. The residue gas product stream will contain methane or methane and ethane, depending on the mode of operation.

Experience

For over 40 years customers worldwide have benefitted from Ortloff's gas processing technology inventions. As one of Ortloff's latest inventions, Opti-Flex™ offers improved and flexible recovery capabilities. A key benefit is that it operates like a GSP plant, minimizing the amount of training required to transition to a new process technology. Its newer features, the HMT Module and CRM, are both proven in gas processing applications and other markets. Several plant designs using Opti-Flex™ are currently being considered by customers who have significant experience with GSP.



For More Information

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

Phone: (432) 685-0277
Fax: (432) 685-0258
E-mail: oel@ortloff.com
Web: http://www.ortloff.com

ORTLOFF ENGINEERS, LTD.
415 W. Wall St., Suite 2000
Midland, Texas 79701-4438
USA