

Marsulex utilizes innovative tower design to reduce pressure drop

Reduce. Reuse. Recycle. For Marsulex Inc., these three words are the cornerstone of every activity the company undertakes. As an environmental compliance services company, Marsulex has forged a secure position as a world leader in its field by adhering to these three ideals.

Headquartered in North York, Ontario, Marsulex operates a global network of environmental stewards. The company presently operates seven stateside chemical facilities; two produce sulfuric acid at Oregon and Cairo, Ohio.

Established in 1967 as Coulton Chemical Corp., Oregon Refinery Services was acquired by Marsulex in the fall of 1996. Cairo, which was established as part of Coulton in 1975, was also added to the Marsulex family in 1996. The Oregon Plant is near Toledo and the Cairo Plant is in a rural stretch of land some 80 miles south of Toledo, and both are operated as part of the Marsulex Ohio manufacturing operations.

The Oregon facility leases space from BP Oil, inhabiting six acres of the oil enterprise's land. The primary business of the Oregon site is the reprocessing of spent sulfuric acid into fresh acid, which is then reused by BP or other refineries.

In addition to the fresh acid, Marsulex-Oregon also produces oleum. There are two acid plants on the Oregon property, which generate nearly 1,000 tons per day of products. Oregon uses the double-absorption sulfuric acid process, while Cairo is single absorption. The two Oregon units were designed in house with the "A" plant being constructed in 1967 and the "B" plant coming on-line four years later in 1971. Cairo was purchased from Agrico.

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Cairo Sulfur Products produces about 200 tons per day of battery grade acid, liquid sulfur dioxide and ultra pure acid for the electronics industry. This plant is part of the company's smelter services operations and is focused on producing high-quality products used in semi-conductor and laboratory products, as well as by pulp and paper mills, food processors and battery manufacturers. The facility has one acid plant, which was built in 1960.

As a corporation committed to excellence — both in the environmental realm and beyond — Marsulex takes great efforts to utilize only the best processes and the best equipment in its chemical production. When the need for new equipment at both the Cairo and Oregon facilities became evident, Marsulex sought out the best in the business and called upon the Knight Division of Koch-Glitsch to perform the installation.

At Oregon, a drying tower was retrofit in 1995, followed by an absorber tower at the Cairo facility in 1996. These two jobs included both engineering, ceramic distributors and structured packing by Koch-Glitsch. In 1998, the 20 and 35-percent oleum towers were also retrofit, again with Knight engineering and high performance tower internals.

Oregon facility also saw several major pieces of equipment that needed rework. During a 1996 turnaround, two interpass absorbers, the final absorber and a drying tower were all retrofitted by the Knight Division. The project included both the engineering and the tower internals consisting of ceramic supports and distributors and FLEXERAMIC® Structured Tower Packing. In 2000, a complete final absorbing tower was installed by



In 2000, a complete final absorbing tower was installed by the Knight Division of Koch-Glitsch at Marsulex's Oregon facility.

Knight at Oregon.

Lanny Laritz serves as general manager of manufacturing for Marsulex and was an integral part of both the selection of the Knight Division and the installation process. A 40-year veteran of the chemical industry, Laritz has been with Marsulex ever since Coulton Chemical Corp. was purchased by the company.

"We went through an expansion, and part of that expansion was to optimize pressure drop reduction," Laritz said. "In order to do that, we went to FLEXERAMIC structured tower packing that Koch had experience with in sulfuric acid production towers."

Oregon was the first to receive the Koch installations, and Marsulex moved to the Cairo site beginning in 1996.

"Marsulex is a valued customer and, like many others, after they tried the FLEXERAMIC Structured Packing technology and saw the benefits to their operational economics, the results drove them to apply this technology to a number of other units," Mike Graeff, Knight president, noted.

"In this facility, we began to utilize Koch's new high performance acid distributor and it has done exceptionally well," Laritz said. "Some of the additional benefits include the lower pressure drop from high open area sulfuric acid distributor design and low acid mist entrainment. We don't need to have much in the way of mist elimination after the towers.

"The distributor is designed in a manner that completely covers the cross section of the tower, even the hard to cover circumferential area. The result is better absorption," Laritz added.

"Understanding our customers operation and their specific needs in a revamp project are critical in developing a design package that creates value for our customer,"

Graeff added. "It is creating value in our customer's operation that is the driver behind our successful installations in the industry, whether it is a unit utilizing our standard ceramic saddle technology or our installations with the high performance FLEXERAMIC structured tower packing."

The tower change-out has made a distinct impression on the Marsulex process according to Duane Abbott, manager of process engineering.

"The change reduced pressure drop and allowed us to increase our production rates," Abbott noted. "We anticipated as much as 50-percent reduction, and we did in fact see that. We were also able to operate at higher rates without what is called 'flooding', which was another primary criteria that we were looking for in the new structured packing."

The Koch-Glitsch installations have continued to prove their value over the long term, according to Abbott.

"During a recent turnaround, we went in and inspected the Koch packing. It does not appear that it is picking up sulfates as you would normally see," he said. "After four years of operation, the packing is quite clean." □



Lanny Laritz, general manager of manufacturing, Marsulex Inc.



Duane Abbott, manager of process engineering, Marsulex Inc.



In order to optimize pressure drop reduction during a recent expansion, Marsulex opted for Koch's FLEXERAMIC structured tower packing.



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