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Replacement Activated Carbon Cuts Odor Control Costs for Asphalt Terminal

---vendor's application expertise adds further benefits---



Instead of venting storage tanks to atmosphere, all vapor is collected via pipe from the top of each tank. Original vapors are also collected where trucks are loaded, and where polymer modified asphalt (PMA) is made.



Vapor from the top of each tank is run through a common line to a scrubber. The dewatered vapor then moves to a smoke-removing filtration tank, and then finally to a pelletized AC unit, where all odor is adsorbed.

Fernley, NV --- Management at a 100,000 ton annual throughput asphalt terminal here reports significant reduction in operating costs for its activated carbon (AC) odor control system, through substitution of part of its AC capacity with a special type that has been developed by its vendor for asphalt odor control applications. In addition, management credits valuable technical assistance from the new vendor in developing odor control system modifications that will reduce maintenance costs and enhance safety.

"The new vendor told us we could expect five times the service life by switching to their AC, and we've already seen a threefold increase in service life," said Rick Bird, general manager of Paramount Nevada Asphalt Co., LLC. "At the current level of service life increase, we can already expect \$20-25,000 annual savings on AC costs, easily justifying the 20% increase in cost for the new AC. In addition, they made some valuable suggestions for odor control system modifications that will reduce corrosion of our piping, which will lower maintenance costs, and help keep water from collecting in our storage tanks, which will add to our safety margin."

The new AC, called DARCO H₂S, was manufactured by NORIT Americas Inc. of Marshall, TX, who also provided technical applications assistance.

The odor control system here, installed as part of the plant's original construction in 2001, was based on a successful design used at parent company Paramount Petroleum Corp.'s Los Angeles refinery, where asphalt is produced among other products.

"We wanted to put the new terminal here in northern Nevada to take advantage of its location at a major road and rail hub, and we were very mindful of the fact that the only odors this rural community was familiar with were related to farming," Bird recalled.

"The successful system at our Los Angeles facility, which is a fully-integrated refinery surrounded by homes, businesses, and schools, was established as the basic guideline for our operation, where we wanted to control smoke as well as odor."

Consulting engineers were hired to help assess options for the new Nevada facility, a terminal-only operation. They outlined alternative solutions based on thermal oxidation (incineration); masking agents; and activated carbon.

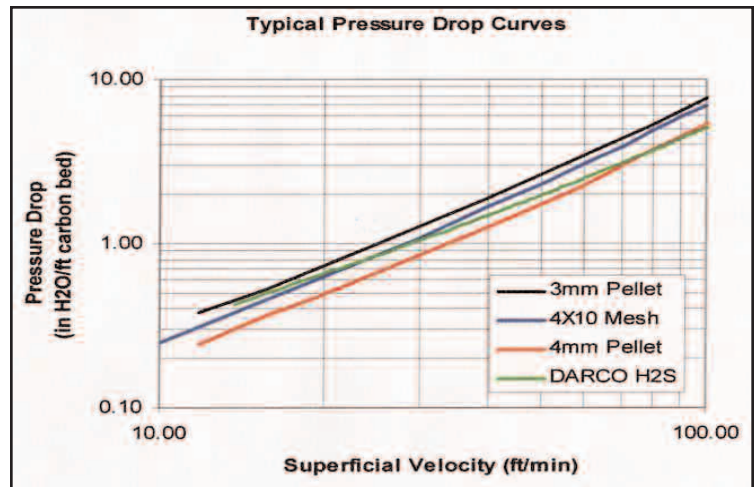
"We felt the capital and operating costs for a thermal oxidation system were excessive for a middle-size terminal like ours, and while the masking agent option was far less costly, I didn't like the idea of creating substitute odors that would arouse curiosity and uncertainty from our neighbors about what we were doing here," Bird said. "So we chose the AC option as an appropriate middle ground, and have been successful controlling both odor and smoke."

"But I wanted to know if we could operate the system more efficiently, and asked one of my equipment vendors to help. He found out about this product NORIT had that was developed specifically to handle odor from asphalt cement like ours. We installed it in June, 2005 at our most challenging location, and we have yet to need to replace it, which means we're getting at least three times the service life we had before. We're keeping a log on the service life, and hope to do even better."

At the 50,000 ton capacity terminal, 15 storage tanks range in size from 300 tons (2000 bbl) to 11,000 tons (64,000 bbl). Asphalt cement is received by rail car from refineries, stored for as long as 6 months at 325-350 degrees F, and then trucked out as paving binder and roofing flux.

Instead of venting storage tanks to atmosphere, all vapor is collected via pipe from the top of each tank, and run through a common line to a scrubber ("knock-out") vessel, where porcelain balls adsorb water and then drop it to the vessel bottom. The dewatered vapor then moves to a smoke-removing filtration tank that features fabric-over-strainer sock filters, and then finally to an AC unit, where all odor is adsorbed.

"You can put your nose right up to the AC unit's discharge, and not smell anything," Bird noted. "Our neighbors actually like us."



NORIT's DARCO H₂S, a meso/macro pore activated carbon, is a non-impregnated type, significantly minimizing risk of an exothermic reaction, and allowing for safe disposal of spent material to landfill. Large particle size of 4x10 mesh provides for low pressure drop, and low density results in less material needed to fill the same volume. Higher capacity minimizes laboratory testing costs.

Vapors are also collected where trucks are loaded, and where polymer modified asphalt (PMA) is made. The latter location, processing 12,000 cfm, and considered the most challenging spot, is the test site for the new AC. An additional 8,000 cfm is processed from the tank farm, and another 1,000 cfm from truck racks, with each of those areas having their own filtration and AC units.

"The truck drivers and other personnel at all the vapor collection locations appreciate not having to endure noxious vapors just as much as our neighbors do," Bird added.

The AC containers are continuously monitored via pressure measurements. When vapor breakthroughs indicate complete saturation of AC, replacement quantities are promptly installed.

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Applications for asphalt plants, as well as terminals, include elimination of odor from thiols, volatile organic compounds (VOC's), and various aromatic hydrocarbons.

The material is produced at NORIT's manufacturing facility in Marshall, TX, which has been providing odor and other purification solutions since the 1920's. For further information, contact NORIT Americas Inc., 3200 West University Ave., Marshall, TX 75670, Tel. 800-641-9245, Fax 903-923-1003, www.norit-americas.com, info@norit-americas.com.