CECO Filters

A CECO Environmental Brand

CECO Mist Collectors Deliver Multi-Year Filter Life While Clearing Oil-Mist from Automotive Power Train Plant

Many automotive plants are forced to change filters in oil mist collection systems every three to six months, requiring lengthy and costly shutdowns of entire machine lines during the change-out. However, short filter life is no issue at the North American power train plant of a major automotive manufacturer in southern Tennessee, where the CECO Mist Collector (CMC) filters have not required a change in ten years and counting, with no end in sight.

The plant is the manufacturer's first U.S. engine facility, manufacturing and assembling V-6 engines and transmissions for compact, mid-size and standard size automobiles as well as SUV's produced at the company's nearby assembly plant, as well as V-8 engines for large truck models, assembled at their new plant several states away.

The customer approached CECO Environmental, a leader in large-scale mist and dust collection systems, seeking an oil mist abatement system that would meet tough new OSHA regulations and could be installed entirely within the plant on a small footprint. Performance requirements included providing long filter life, easy access and replacement of the filters, plus filters with minimal pressure drop and energy consumption.

The 750,000 CFM CECO systems proved the most economical solution to remove oil mist from the air stream with maximum economy, efficiency and up to 10-year filter life. The CMC System, developed by CECO Filters and Kirk & Blum, subsidiaries of CECO Environmental, was designed with patented CECO Fiber Bed Filters, providing greater than 99.5% efficiency collecting sub-micron droplets.

Collecting oil mist from every machining line throughout the 1 million sq. ft. plant, each collector is designed with 77 cylindrical fiber bed filters, each measuring 58" long by 11" in diameter for each collector. The 17 collectors in the plant are each rated 17,500 ACFM. "Normally in collectors rated at this volume, only five or six filters, measuring 20' long by 24" in diameter, would have been installed," said Mike Meyer, president of CECO Filters. "But the collectors themselves then would have been 25' or 30' tall and installed outside the plant. The collectors we designed for Nissan fit the tight space requirement of just 10' X 26' X 7'6" high.

"The CMC System meets all of the customer's needs. The OSHA standard allows oil mist concentrations of only 0.5 milligrams per cubic meter of air and these systems are well below that," he continued. In addition, since the Nissan plant is air conditioned, the CMC System recirculates air back into the plant, instead of exhausting it outside and replacing it with make-up air, saving energy costs.

CECO Filters and Kirk & Blum designed, fabricated and installed both the capture system and the mist collectors for the entire system on a turnkey basis, which was built in two phases as the plant was being completed and brought on-line. The first collectors, mounted on mezzanines that rise 18' above the plant floor, became operational in mid-2001 and the complete installation was finished at the end of 2003.

“More than 30,000 linear feet of galvanized steel ductwork carries mist from every machining line to each CMC vessel. The CMC system employs a metal mesh pre-filter to capture foreign objects, such as metal chips and paper, that could shorten main filter life,” Meyer said.

When filter replacement finally does take place, the system will be shut down for only about two hours while all the filters are changed out, facilitated by side access to the collector and the small size of the filters, which can be replaced by hand.

CECO Fiber Bed Filters can provide continuous service of 10 or 15 years, and are widely used for capturing oily mists and smokes from industrial processes. Typically constructed in cylindrical form, the filter itself consists of different media selected for optimal performance, which is placed between two rolled screens to form the fiber bed. In the collection process, mist laden air is drawn through the inside of the cylindrical fiber bed and cleaned air exits the opposite side. The droplets are trapped by the fibers coalesce on the filter fibers and drain by gravity. Fiber Bed Filters remove 100% of droplets greater than 3 microns and 99.5 percent of droplets smaller than 3 microns, while providing low operating and maintenance costs.

The CMC System design and fabrication was a true team undertaking for the entire CECO Environmental family of companies. Designed by CECO Filters in Pennsylvania, the mist collectors were fabricated at Kirk & Blum facilities in Indianapolis, Lexington, KY and Columbia, TN. The ductwork was fabricated in Greensboro, NC and Columbia, while the mezzanines were fabricated entirely at the Lexington, KY plant. Kirk & Blum's Columbia branch made the initial sales contact, managed the project and performed the installation work.

To learn more please contact CECO Filters at 1-800-220-8021 or visit our website at www.cecofilters.com