Metzeler Automotive Profile Systems

COMPANY BACKGROUND

Metzeler Automotive Profile Systems is a global company specializing in rubber sealing systems used in the production of automotive bodywork. With a tradition of more than 140 years of company history, Metzeler currently employs more than 10,000 workers in more than 30 facilities worldwide. Their sealing products are distributed to over 50 different automotive brands worldwide, making them the market leaders in Europe and China, as well as the leading supplier in the United States.

EDWARD BULLINER
ENVIRONMENTAL SCIENCE
IOWA STATE UNIVERSITY

PROJECT BACKGROUND

As an ISO 14001 certified facility, Metzeler's Iowa manufacturing plant is committed to using environmentally friendly production methods that lead to the prevention of pollution and waste. In an effort to better understand its environmental impact, Metzeler approached the Pollution Prevention Intern Program with the goal of developing a computer model of their facility's emissions based on new standards recently implemented by the U.S. EPA. In the process, some opportunities to reduce the facility's emissions could be identified.

INCENTIVES TO CHANGE

Metzeler endeavors not only to comply with all applicable local, state, and federal regulations, but also to go further by identifying goals and objectives for continual improvement towards world class environmental leadership. The facility had previously used an older computer model for permitting and planning purposes. Creating a new model would ensure compliance with regulations. It would also present the opportunity to identify major emissions sources and investigate ways to lessen their impacts.

RESULTS

Model of Facility Emissions

The main focus of this project was to develop a facility emissions model per the request of Metzeler. PM10 (particulate matter 10 microns in size) was the primary pollutant investigated. Most of the work involved in this project consisted of gathering the necessary information and properly formatting it to be used by the program software AERMOD, which is provided by the U.S. EPA and would be used to create the final model. Throughout the project, the intern worked closely with DNR staff to ensure a final product that would comply with all applicable modeling guidelines. The resulting model demonstrated compliance with ambient air quality standards. Furthermore, in the process of developing the model, the intern implemented a system by which model parameters could be easily adjusted and new sources added. This system will aid Metzeler in making future environmentally conscious decisions.

The environmental impact from this project, while not easily quantifiable, is very real. Metzeler's Iowa operations are in a constant state of change and growth, with emissions sources being modified rather frequently. By providing data with appropriate computer models, facility staff will be able to better understand the impact new equipment will have on the surrounding area. With the knowledge gained through the models, responsible decisions can more easily be made, resulting in a cleaner environment and maintaining the company's reputation of environmental leadership.

Air Pollutants Diverted in Tons

	Total for all sectors
SO2	2.54
CO	0.38
NOX	1.23
VOC	0.33
PM	0.83

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	486.55
CH4	82.38
N2O	0.21
CFCS	5.93

Emissions Reduction

While developing the model, several ways to reduce emissions from the facility were investigated. Most work focused on investigating ways to reduce fuel consumption in the facility's curing ovens, as these ovens were identified as the most significant sources of particulate. The most promising option involved a new oven system that has the ability to eliminate the particulate emissions resulting from curing rubber. Replacing the older ovens would result in approximate natural gas savings of 54,120 therms/year, resulting in a considerable reduction in greenhouse gas emissions. They would additionally eliminate 0.8506 standard tons of annual particulate emission from the rubber being processed. A proposal to use these new ovens in one of the facility's production lines has been given to Metzeler.

Project	Annual Cost Savings	Environmental Results	Status
COMPUTER MODEL OF FACILITY AIR EMISSIONS	N/A	BETTER ENVIRONMENTAL PLANNING	IMPLEMENTED
REDUCE PARTICULATE EMISSIONS WITH NEW OVENS	$47,300	54,120 THERMS NATURAL GAS SAVED, 0.8506 TONS PARTICULATE EMISSIONS AVOIDED	RECOMMENDED