AmericanAirFilter®

case study

Manufacturing

SAAFRecycle™ Case Study

Recycling Light Industrial Process Exhaust Air

Customer Profile

- *Premier Automotive Manufacturer in Canada*
- *Light Industrial Paint Booth*
- *Annual Manufacturing Capacity of 390K*

Innovative Energy Conservation—The Challenge

A heated automotive facility has a process where body parts need to be "touched up" with an aerosolized base primer after the parts have been handled during the manufacturing operation. The light industrial touch-up process is conducted within a dedicated paint booth to contain the coating emissions. Since the coating occurs sporadically and requires a curing period, the booth must be in operation whenever the coating is being applied and during the curing time.

The paint booth was designed for an exhaust rate of 30,000 cubic feet per minute (cfm). The facility engineers wanted to evaluate whether the volatile organic compounds (VOCs) emitted from the primer could be removed from the air in order to recycle the booth exhaust air back into the manufacturing facility to reduce the costs of having to heat the 30,000 cfm make-up air for the exhaust system.

The AAF Solution

AAF® International sells products and equipment for the removal of gaseous contaminants via the SAAF™ Technology product line. The SAAF Technology products support the implementation of a SAAFRecycle™ strategy where gas-phase filtration is used to remove gaseous contaminants from the air to allow for the recycling of the exhaust air back into a building. AAF was contacted to evaluate whether the SAAFRecycle gas-phase filtration system components could be used to sufficiently remove the airborne VOCs to ensure the resulting concentrations did not present a violation of occupational exposures to the VOCs.

SAAF™ TechTools

Our state of the art online SAAF Tech Tools software was used to determine the type of gas-phase media needed based on the types of chemical compounds measured in the air and their respective concentrations. AAF was able to model the gas-phase system using SAAF Tech Tools which provided vital information pertaining to the size of the gas-phase system (i.e. how much media was needed to provide the removal efficiency needed to meet occupational guidelines of the air being recycled back into the building).

The evaluation resulted in the selection of a system consisting of SAAF Side Access Housing with two passes of SAAF Cassettes MD (medium duty) filled with SAAFCarb™ loose fill media. SAAF Cassettes were an important factor in this system as the objective was to remove the VOCs in the most energy efficient manner possible.

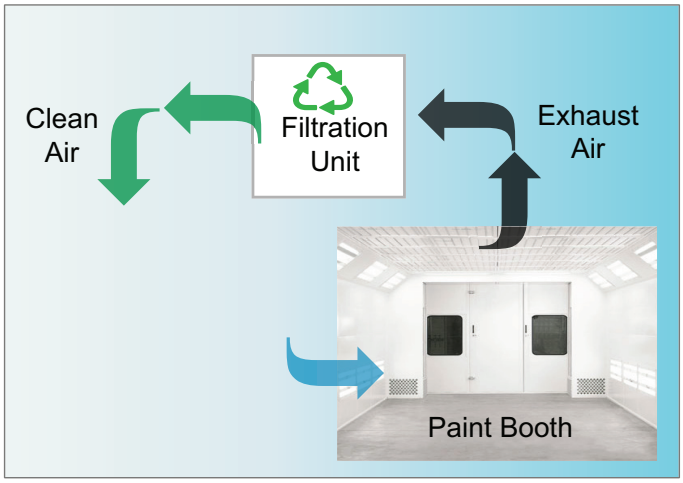
SAAFRecycle™ Case Study

The SAAF Cassette is the most energy efficient gas-phase cassette available on the market due to its patented low pressure drop and tight sealing design. With SAAFCarb media and a 40% lower pressure drop through the cassette, the cassette met the project objectives of high VOC removal efficiency with the lowest energy impact.

SAAF™ Cassettes and Media

System Layout

The system was designed to filter the paint booth air to allow for the recycling of the air back into the building. SAAF Side Access Housings along with SAAF Cassettes filled with SAAFCarb were installed to save the energy costs associated with conditioning the make-up air due to the booth's exhaust system.

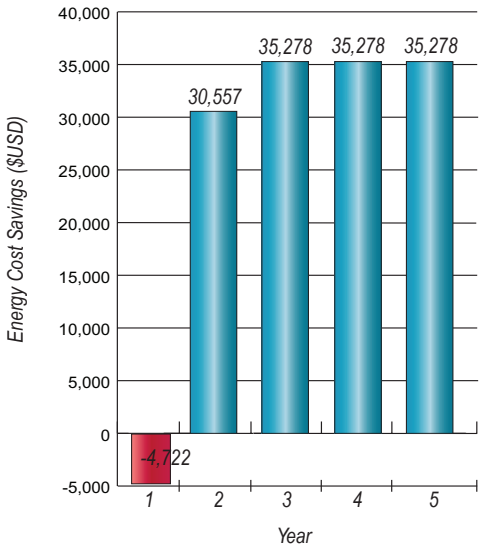


The AAF® SAAFRecycle™ strategy at work saving energy inside an automotive manufacturing facility.

Savings and ROI

Based on the manufacturing facility's current operation schedule of approximately 50%, the estimated annual energy savings is approximately $35,000 annually. The return on investment (ROI) for the project was estimated to be an attractive 1.1 years.

SAAFRecycle™ Return on Investment and Realized Savings



The plant anticipates an increased operation schedule, when economic conditions improve, resulting in even greater energy savings. If the plant were to increase to a 80% operation schedule, the annual savings would increase to approximately $62,000 annually with an ROI less than one year. In addition, the carbon footprint of the facility will be reduced by approximately 266 tons of carbon dioxide annually.

The SAAFRecycle stratey is a *"green"* solution saving energy and reducing carbon footprint in buildings across the nation. For more information about how AAF can help your facility save energy and lessen the environmental impact, contact your local AAF sales representative.

AAF GREEN

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