POLLUTION (START FILE)

How to cut costs, improve products

The Idea Exchange

Catalytic oxidation cleans up vinyl calendering air pollution problem

When it comes to the massive problems posed by galloping environmental pollution, the tendency is to feel helpless, shrug, and turn away. But maybe you could help and actually realize savings thereby, as the following suggests.

Masland Duraleather Co., Philadelphia, Pa., installed a catalytic oxidation system to take care of fumes from its vinyl processing oven. The company is a major producer of calendered upholstery products. Involved in the system is a catalytic fume abator that oxidizes smoke-like exhaust into near-invisible vapor and eliminates objectionable odors. This, however, only partially solved the problem.

While the system successfully coped with fumes from the oven, other fumes accumulated in the area where the sheet cooled before being wound into rolls. Solution: a second catalytic unit installed on the roof of the single-story plant adjacent to the first. Both operate independently, but they utilize the same basic principles: the fumes are oxidized via catalytic beds.

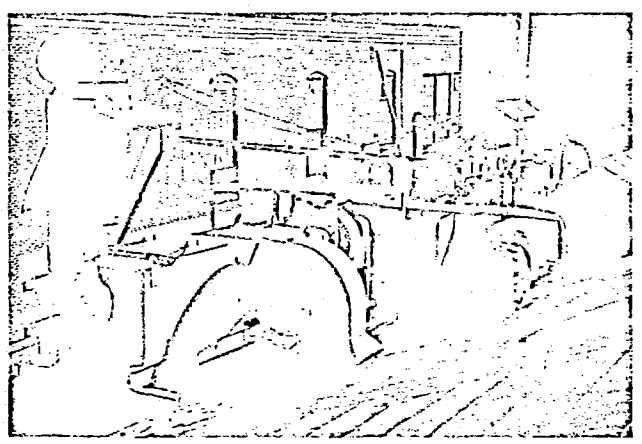
Temperature of the exhaust stream from the cooling area is about 150° F. It's now preheated to about 650° F. for effective catalytic combustion. The burner uses the same natural gas as the oven. As oxidation occurs in the bed, the stream temperature rises to around 750° F.

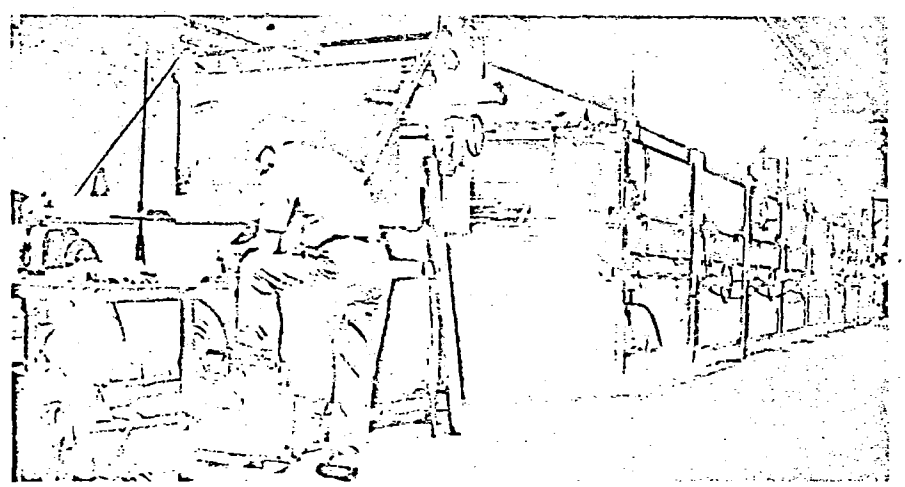
Direct flame incineration of pollutants in the exhaust stream—identified as nitrogen substances and carbon monoxide from decomposition of plasticizers—would require a temperature of 1000 to 1200° F. It's estimated that use of catalytic oxidation saves the company between $7500 and $10,000/yr. in fuel otherwise needed to burn out these contaminants.

Maintenance costs of the two catalytic units reportedly have been minimal. The catalytic bricks in the bed of the first unit are removed every three months to wash off the minute amount of contaminant that forms on them. It takes two men about 5 hr. to do the job. The ceramic honeycomb bed coated with catalysts in the second unit reportedly hasn't required cleaning so far.

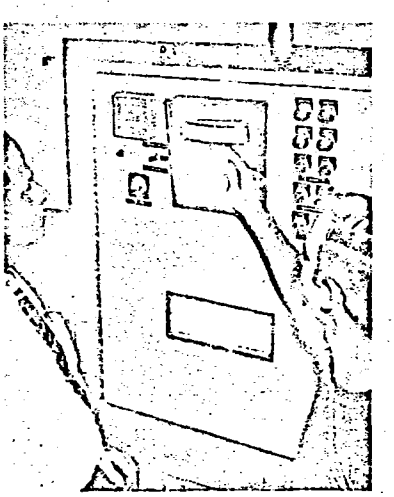
The oven is currently in operation about 12 hr./day, 6 days/wk. Twin control panels located on a nearby wall enable workmen to start up or switch off the units individually, and check conditions at a glance. The panels also contain signal alarm systems.

Catalytic oxidation systems designed and engineered by Oxy-Catalyst Inc., West Chester, Pa.





Fumes from vinyl calendering are oxidized by twin catalytic air pollution control units installed on plant roof (top photo). The two units take care of noxious smoke and odors from two-stage oven and cooling area (above).



Plant manager checks operating temperature of fume abator on control gage located close to processing oven.

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