First we invented the technology. Then we perfected it.

STROBIC AIR
Fans, Silencers & Systems

A Met-Pro Product Recovery/Pollution Control Technology Company

Bulletin TS-2

TRI-STACK®
ROOF EXHAUST SYSTEMS

for pollution abatement and odor control

Low profile, quiet solutions to many laboratory and industrial exhaust problems

- **Prevent re-entrainment**
- **Eliminate odor**
- **Reduce noise at the property line**
- **Comply with architectural/aesthetic ordinances**
- **Lower energy costs**

MET PRO CORPORATION

Strobic Air

TRI-STACK®
ROOF EXHAUST
SYSTEMS

Tri-Stack systems
architectural speci

Eliminate air pollution and emission odors for a wide variety of applications...

Laboratory fume hood exhaust at universities, hospitals, industry, and government facilities

Pollution control at high technology production facilities, chemical, pharmaceutical, hydrocarbon processing plants

Odor control for water/sewer treatment facilities, chemical/petrochemical processing

Hospital/infirmary isolation rooms

Heat recovery/HVAC/boiler/diesel generator exhaust

Field proven in hundreds of applications for performance, economy and efficiency

For nearly two decades, Tri-Stack systems have solved thousands of pollution abatement, odor control and indoor air quality (IAQ) problems. Tri-Stack fans and systems are designed for direct replacement of conventional centrifugal exhaust fans. They are light in weight and modularly constructed for quick, easy, low cost installation. High efficiency operation reduces system static pressure (normally present with conventional exhaust stack designs) up to 2" w.g. This typically results in a two-year payback based on energy savings due to horsepower reductions. Tri-Stack systems are available with motors ranging from 1 to 100 horsepower.

Tri-Stack systems are also virtually maintenance free. They are designed to operate continuously, with minimum maintenance, for years under normal conditions. Direct drive motors provide up to 200,000 hour lifetimes that eliminate the need to replace belts, pulleys, or other limited life components.

offer unprecedented advantages for fiers and consulting engineers:

Prevent exhaust re-entrainment to safeguard researchers and other building occupants

Tri-Stack systems operate on a unique principle of internal and external exhaust stream dilution. They entrain outside air (up to 175% by volume) with the primary exhaust stream to produce a substantially diluted exhaust stream. A unique exhaust nozzle design enhances flow and pressure to increase stack outlet velocities while minimizing horsepower requirements. The resultant discharge plume (up to 350' high) produces an effective stack height sufficient to penetrate the building boundary layer and safely disperse exhaust into the free air stream. Once there, it cannot be re-entrained into building inlets or adjacent buildings. Recent litigation has shown that architects – among others including contractors and engineers – can be held liable for building occupants' health problems caused by exhaust fume re-entrainment. Tri-Stack systems have proved useful towards eliminating these problems.

Low profile design helps conform to applicable architectural/ aesthetic ordinances

The low profile design of Tri-Stack systems permits their use on many buildings where tall, unsightly stacks are either prohibited by code or are undesirable because of architectural aesthetics or negative perceptions associated with tall stacks on a building's roof. Because they are substantially smaller and lighter (with less wind loading) than conventional centrifugal fans with tall stack exhausts, there is no need for structural reinforcements on the roof. Complex, expensive mounting/stabilizing hardware such as elbows, flex connectors, or spring vibration isolators are also unnecessary.

Quiet operation minimizes noise at the property line

Tri-Stack systems are inherently quieter than conventional centrifugal fans. This advantage results from a combination of design features including exhaust nozzle shapes that help lower resistance for increased flow and pressure, higher stack outlet velocities, and high efficiency mixed-flow blade designs that help lower horsepower requirements (for energy saving advantages as well). Quiet operation often eliminates the need for expensive enclosures, inlet/outlet silencers or other remedial devices. However, for extremely noise sensitive areas, the new Strobic Air low profile silencer nozzle may be used without any height increase.

Patent Pending Silencer Nozzle

Exhaust stream dilution, high velocity plume helps reduce odors

Because Tri-Stack systems introduce up to an additional 160% of free outside air under their windbands and through their motor chamber areas, a substantially greater airflow is possible for a given amount of exhaust without additional horsepower. Outstanding dilution performance virtually eliminates harmful or annoying exhaust stream odors in the neighborhood.

Tri-Stack systems conform to all applicable exhaust/ventilation standards

Tri-Stack systems conform to all applicable ventilation standards – without exception – such as ANSI/AIHA Z9.5 (American National Standards Institutes/American Institute of Hygienic Association) for laboratory workstations and their exhaust systems), ASHRAE (American Society of Heating, Refrigerating, and Air-conditioning Engineers, Inc.) 110, NFPA (National Fire Prevention Association) 45 and UL 705. These organizations provide guidelines with regard to building air intake and exhaust design, indoor air quality, and re-entrainment issues of contaminated exhaust entering doors, windows and outside air intakes.

Strobic Air provides valuable support services for architects, engineers, and contractors

Strobic's technical/engineering staff has considerable experience working with consulting engineers and architects. We offer many support services for planning new and/or retrofit roof exhaust systems. In addition to comprehensive – and realistic – performance/engineering data, we can provide guidance, if desired, for appropriate wind and/or noise studies to pinpoint possible areas of re-entrainment or noise, and eliminate problems prior to system design and construction. Technical literature specifically related to architectural issues is also available.

Technical/field support for your clients

Strobic technical and sales engineers can also provide valuable support services – for you and your clients – such as performance and cost comparisons of Tri-Stack systems vs. alternative methods of pollution abatement, as well as informative presentations on system design, construction, operation, and advantages. These support services have proved useful for building owners and/or managers who are considering new or retrofit systems. We can also provide computer-generated sound calculations to the property line or into the facility, an extensive Computer Aided Design (CAD) drawing file, and a comprehensive resource library of technical/tutorial/applications articles as well as case studies on Tri-Stack installations.

Safety design response team

Our Safety Design Response Team is also available to help analyze your existing pollution abatement and/or odor control system, without obligation. Chances are we can offer a number of alternative design plans to enhance performance, add efficiency, lower costs, reduce stack heights, add redundancy, and provide for future growth.

Tri-Stack Engineering Guide

Strobic Air offers a unique Engineering Guide which helps reduce system engineering time substantially. The Engineering Guide shows how to eliminate the need for tall stacks in fan installations at the start of a project, offers alternative design plans, and provides useful technical data to save you time and effort.

How to get more information...

Tell us about your application. We'd be pleased to work with you – and others associated with your project – to recommend the best Tri-Stack system solution for your pollution abatement or odor control problem.

Tri-Stack Generation III roof exhaust systems...

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