

# THE MIXED FLOW GAZETTE

Volume 2  
 Number 1

A periodic newsletter with ideas, information, and solutions to roof exhaust problems involving pollution abatement, exhaust re-entrainment, odor control, and energy savings

**Announcing  
 an industry first...**

**7-year warranty for  
 Tri-Stack™ systems**

**Strobic Air adds EXTRA VALUE  
 to high performance**

**T**ri-Stack fans and systems mean extra value—in price/performance features, convenience, practicality, and long, useful service lives. We add **extra value** to all of our Tri-Stack systems, and now we are pleased to introduce an unprecedented seven year limited warranty on select Tri-Stack systems. **That's extra value you can count on!**

As with all warranties, there are some reasonable limitations; we assure you, however, that this is an industry first—exactly what you would expect from an industry leader. To learn more, please contact your regional manager for full details and a copy of the new seven year warranty.



## Selecting the best roof exhaust system for your customers

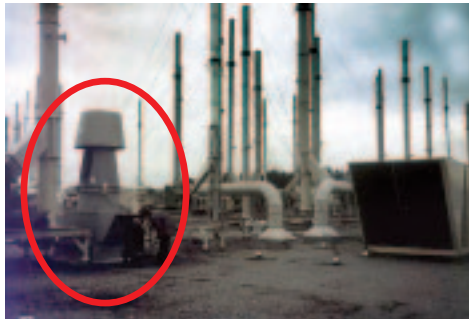
**Strobic Tri-Stack mixed flow technology vs centrifugal-based fans:**

### Make your own comparison:

In addition to offering your customers—and you—extra value from each Tri-Stack fan or system we build, another key advantage we provide is to help you make your selling job easier and more productive. No matter what you sell—and no matter to whom you sell it—your prospect will always have objections that must be overcome in order to complete a successful sale. Because Tri-Stack systems are unique (there is virtually nothing else like them available), it is obvious that competitors will disparage Tri-Stack fans with prospects to whom they want to sell their products. We know you've heard many—if not most—of these objections from your customers; you've probably even heard our competitors discuss our products negatively as well.

We'd like to use this column to set the record straight; sort of to

get “back to basics” as to exactly what Tri-Stack systems are and what they are not. We believe the information presented here will go a long way towards helping you overcome customer objections, ultimately enhancing your productivity, making your selling job easier, and **providing your customer with the best possible value for his or her dollar.**



We'll preface our comments here with the most popular comparison between Tri-Stack systems and traditional belt driven centrifugal fans with tall, dedicated exhaust stacks. Most customer/prospect objections are based on these two fundamental differences.

First, keep in mind that Tri-Stack systems are **the only systems of their kind**—

developed exclusively to provide maximum efficiency for exhausting laboratory work station fume hoods into the atmosphere. Specifically, Tri-Stack was created to eliminate the

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Continued from front cover  
 traditional “fan/stack approach” to laboratory exhaust management; instead, our goal was to meet a difficult application with a unique system solution. A common approach used by other fan companies (in order to jump on the Strobic bandwagon) has been to simply modify inherently inefficient centrifugal fans to accommodate these applications. Certainly, you can modify

## “When all else fails, go back to common sense and logic.”

centrifugal fans to meet a wide variety of applications, including exhausting laboratory workstation fume hoods. You can also try to turn lead into gold as well. In other words, for the **best possible value** in laboratory fume hood exhaust fans, nothing can compare to a Tri-Stack system in its approach to efficient exhaust without compromising other factors such as maintenance, sound generation, energy consumption, vibration, environmental compliance, aesthetics, and many other considerations.

To prove our points, we are using this forum below—in a format you are likely familiar with—to focus on the specific issues raised in the field with regard to Tri-Stack systems, so that you may reference them with your customers and prospects. As part of this program, we will also prepare individual *Technical Applications Bulletins* on most of these individual subjects for direct distribution to your customers and prospects. We’ve done our best to address each specific issue objectively—with logic, reason, and common sense—without any underhanded or disparaging remarks against any competitor; and with the candor we believe will be most helpful to your efforts in designing, recommending, specifying, and purchasing Tri-Stack systems.

## Frequently Asked Questions

### Direct drive vs belt drive:

One popular objection is that Tri-Stack’s direct drive configuration wastes energy—**this is not true**. Whenever there is an intermediary (transmission) between working machinery there is always a loss attributed to the exchange. A belt drive is

no exception. Even at their most efficient design and configuration (make that properly installed, maintained, and adjusted) a typical belt-driven centrifugal fan loses up to ten percent of its energy. And that’s a minimum; in most cases, these fans lose even more energy because of improper alignment of shafts, pulleys, pillow blocks, and motors.

### What does this loss of energy mean? Take a look:

1. **Increased horsepower** requirements that must be added to the published fan BHP curve data.
2. **Increased maintenance time** to install belts initially and check belt tension a week later, after system startup. Remember, **time is money**.
3. **Degraded system performance** over time due to belt wear. Eventually this belt wear, if not monitored properly, could lead to total system failure if the belt(s) break.

Most belt drive fans operate with vibration levels up to 2.0 mils. When dealing with rooftop equipment, this often requires spring isolation to prevent unwanted noise and vibration from traveling into the roof structure and ductwork. Another complication of this unnecessarily high vibration level is the need for flexible connections to the system ductwork. This prevents transmission of annoying vibration from affecting the rest of the duct system but can be a constant source of system performance problems due to leakage. Flexible connections can fail for many reasons; some of them include fatigue failure from exposure to constant vibration and exposure to the elements. When a flexible connection fails, there is a leak in the system adjacent to the fan. Air takes the path of least resistance. Leaks near the fan inlet means the system is no longer working properly.

To prove our point, we’ve included a chart (at right) showing a direct comparison of energy consumption between a direct drive Tri-Stack fan and a belt-driven centrifugal fan performing approximately the same work. Again, make your own comparisons.

In addition to the substantial energy savings with Tri-Stack

Systems, think about some of the other disadvantages of belt drive fans with regard to maintenance issues which are also addressed in this chart. In almost all cases, the fans are mounted on rooftops, fully exposed to the elements. For maintenance purposes many organizations build penthouses to enclose their belt-driven centrifugal fans. Penthouses cost big money (\$50,000 is not an unreasonable estimate); again, **added value from Tri-Stack systems** which don’t need penthouse protection. Then, there’s the issue of maintenance personnel being exposed to noxious and/or toxic fumes while adjusting or changing a belt. Does that make sense to you? Think about it: would you want your employees to work in a poorly ventilated area on top of a roof servicing a fan that vibrates and shakes enough to require spring bases and flexes that leak when they fail? What does this say about the quality of this equipment?

**With Tri-Stack direct drive fans, the design point and the operating point may not match—resulting in wasted energy. Instead, belt-driven centrifugal fans may be adjusted in speed to compensate for actual system resistance.**

**Both of these statements are incorrect.** Remember that Tri-Stack systems are designed to maximize dilution prior to the contaminated exhaust stream entering the fan impeller. By adding unconditioned “clean” air to this contaminated exhaust stream, Tri-Stack dilutes and adds mass to

**Efficiency Calculations** □  
**(System 29,000 cfm @ 3.25" SP) □**

Total Efficiency (TE) =  $\frac{\text{Fan Flow} \times \text{Total Pressure}}{\text{BHP}}$   
 □  $\frac{6356 \square}{\square}$

Total Pressure = Static Pressure (SP) + Velocity Pressure (VP) □  
 □ Velocity Pressure =  $\frac{\text{Outlet Velocity} \square^2}{4005}$

**Strobic Air Tri-Stack TS4 □**

□ Velocity Pressure (VP) =  $\left(\frac{61.47 \square}{4005}\right)^2 = 2.356 \square$

□ Total Efficiency (TE) =  $\frac{32,764 \times (2.356 + 3.25) \square}{6356 \square} = \frac{28,900 \square}{34.13 \square}$

□ TE % =  $\left(\frac{28.10 \square}{34.13 \square}\right) \times 100 \square$

□ TE = 84.67% □

**Centrifugal FSW 4450 □**

1.25" Static Pressure has been added for losses through the fan and appurtenances in the air stream (no allowance has been made for additional losses for the plenum or poor fan inlet conditions). BHP was calculated using Fan Law due to the increased static pressure requirement. □

□ Velocity Pressure (VP) =  $\frac{4000 \square^2}{4005} = 0.998 \square$

□ Total Efficiency (TE) =  $\frac{30,640 \times (0.998 + 4.5) \square}{6356 \square} = \frac{26.50 \square}{\text{BHP}}$

□ BHP 38.28 + 7% drive belt loss = 40.96 □    BHP 38.28 + 10% drive belt loss = 42.11 □

□ TE % =  $\left(\frac{26.50 \square}{40.96 \square}\right) \times 100 \square$     TE % =  $\left(\frac{26.50 \square}{42.11 \square}\right) \times 100 \square$

□ TE = 64.71% □    TE = 62.93% □

the exhaust stream. Because Tri-Stack fans vary the amount of outside air that mixes with the exhaust stream you have total flexibility to adjust actual system performance. And these adjustments don't require removing belts and sheaves, adding larger belts and sheaves, and then retesting the system to verify new performance parameters. Do you have that much time to tweak the system? Does it make sense to go through those procedures when Tri-Stack can do it so much easier?

Remember also that extra balancing time costs money. These tedious procedures also increase the possibility of belt tension problems and misalignments; and these problems could lead to premature bearing failure. Again, think about the real value offered by Tri-Stack systems—*none of this extra maintenance is necessary*—your customer gets his or her system quicker, and better!

### Added dilution in Tri-Stack systems wastes energy.

**This is a common viewpoint from people who don't understand the basic objective of the Tri-Stack system.** *Mass x Velocity = Momentum.* Exhaust plumes with more momentum are more likely to get dangerous exhaust fumes up and away from fresh air intakes. Let's look at this more closely. If you want to increase the mass of the exhaust plume you need to move more air, which means you must use more energy. This is true but are you wasting that energy? Not if you are using it to safely evacuate the harmful fumes from your fresh air intakes. Now the challenge is to move more air efficiently—not a problem for Tri-Stack. The Tri-Stack fan has an extremely flat horsepower curve. Over performance ranges above 3,000 ft./min. discharge velocity, the brake horsepower change is typically 15-18%.

Another point to keep in mind: Most laboratory exhaust systems today are Variable Air Volume (VAV) systems. VAV systems obviously are not designed around one operating point. Instead, they are designed around an operating envelope. This design approach makes the Tri-Stack system ideally suited for VAV labs because it requires less energy to move more air compared to centrifugal fan systems, while maintaining a constant, variable, effective stack height.

### Tri-Stack systems vibrate more than belt-driven centrifugal fan systems.

**Here is an issue that is often encountered and must be addressed**

**objectively.** We have tons of data to document Tri-Stack systems' vibration levels under a variety of conditions, and we will be happy to provide as much of it as you—or your customer/prospect—want whenever desired. However, keep in mind that most centrifugal fans generally conform to an industry standard of 2.0 mils vibration peak-to-peak. *This is four times higher than the maximum vibration level of Tri-Stack fans at 0.5 mils peak-to-peak—it's not complicated.*

Vibration can be broken down into two components: radial and axial (see illustration below). If you look at vibration caused by dynamic un-balance, radial vibration is *always* higher than axial vibration, about 70% higher on a balanced assembly. The Tri-Stack system's radial vibration parallels the building roofline (illustration, figure A). As a result there is a substantially lower axial component of vibration forced vertically onto the roof. Conversely, in a centrifugal system, the high radial component of vibration (typically 2.0 mils), is forced directly down into the roof (illustration, figure B).

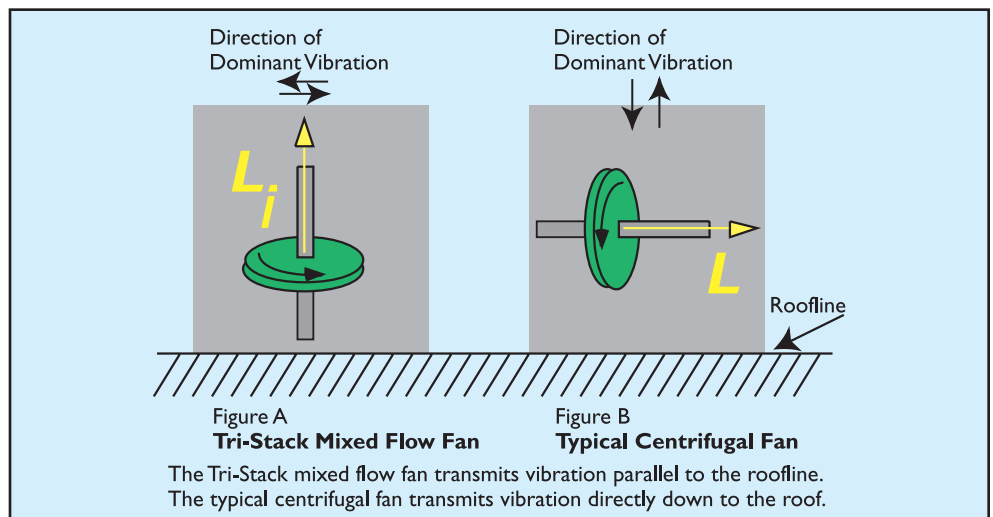
Let's quantify these statements briefly: The maximum allowable vibration level on a Tri-Stack fan is 0.5 mils. This is tested and guaranteed when the fan leaves our plant. Many times the actual peak vibration is lower. The radial component of vibration is 0.5 mils. The axial component of vibration is 0.15 mils. This vibration is transmitted into the building or ductwork. Now you can see why the Tri-Stack can be hard mounted to the roof system and ductwork without fear of vibration problems. Centrifugal fan manufacturers balance to the old industry standard of 2.0 mils. Remember, due to the configuration of typical belt drive fans the radial component of vibration is forced directly down into the roof. This is 2.0 mils of vibration moving vertically up and down on the roof. No wonder they need to supply spring bases and flex connectors. This adds to the

upfront cost of **their** system. Worse yet, the actual wear and tear can lead to chronically poor system performance and potentially unsafe working conditions in the lab.

### What about motor replacement and maintenance issues for Tri-Stack systems vs centrifugal belt driven fans?

Some Tri-Stack system competitors have said that the entire fan unit must be removed to replace a motor. **This is not correct;** as outlined in our *Operations Manual*, a stator and rear bearing replacement does not require removal of the fan wheel. It can be done in-place in as little as one hour with as few as two people. Talk about minimum downtime; it's certainly less than the time it would take to replace a typical centrifugal fan motor.

Also, to reinforce our policy of providing *added value* to our customers, all motors used in Tri-Stack fans are off-the-shelf, NEMA standard; they are available at any local motor shop. The C-face flange is also a standard component that is readily available. Stator changes do not even require a motor with a C-face flange since only the outer motor casing and windings need replacement. In other words, when a Tri-Stack fan motor needs replacement, it is faster, easier, and cheaper than replacing a comparable centrifugal fan's motor. And speaking of replacement, keep in mind that the motor bearing life for Tri-Stack's direct drive configuration is L-10 of 100,000 hours; a V-belt drive application typically specifies less than half that life (L-10 of 40,000 hours)—and that's based on proper belt alignment and regular maintenance to achieve the terms specified. Pillow block bearings are a different story. Change out of pillow block bearings on centrifugal fans exposes maintenance workers to potentially harmful contaminants.



# Tri-Stack fans awarded AMCA seal

**Our fans are tested and certified to rigid AMCA standards**

Tri-Stack fans are the **only high plume exhaust fans AMCA certified for sound and air with all effects of appurtenances in the airstream—and they are UL 705 approved.**



## Summary comparison of sound power at similar operating points

Fan Model #	CFM	SP	RPM	Net dBA @ 10 feet
30" Centrifugal TS2L075A I2	12422	1	1189	73
30" Centrifugal TS2L075A I2	12422	1	1170	74
30" Centrifugal TS2L075A I2	10500	2	1127	71
30" Centrifugal TS2L075A I2	10500	2	1170	73
30" Centrifugal TS2L100B I2	14500	1	1356	76
30" Centrifugal TS2L100B I2	14457	1	1170	75
30" Centrifugal TS2L100B I2	12700	2	1356	76
30" Centrifugal TS2L100B I2	12700	2	1170	74
30" Centrifugal TS2L100B I2	10400	3	1209	73
30" Centrifugal TS2L100B I2	10200	3	1170	75
36.5" Centrifugal TS3S200B I2	17292	3.5	1098	77
36.5" Centrifugal TS3S200B I2	17292	3.5	1170	77
36.5" Centrifugal TS3L200B I2	18313	3.5	1133	78
36.5" Centrifugal TS3L200B I2	18313	3.5	1170	78
36.5" Centrifugal TS3S250C I2	21096	3.5	1242	80
36.5" Centrifugal TS3S250C I2	21096	3.5	1170	79
40" Centrifugal TS3L250C I2	23660	3.5	1066	79
40" Centrifugal TS3L250C I2	23660	3.5	1170	78
40" Centrifugal TS3S300D I2	22317	3.5	1290	81
40" Centrifugal TS3S300D I2	22660	3.5	1170	80
40" Centrifugal TS3L300D I2	24687	3.5	1098	80
40" Centrifugal TS3L300D I2	24687	3.5	1170	81

A change in sound pressure level of  $\pm 3$  dBA is just perceptibly louder or quieter to the human ear. (Reference 1997 ASHRAE Fundamentals Handbook, Chapter 7.4, Table 6)

## Technical symposia for Tri-Stack systems announced

Over the years we've had great success marketing Tri-Stack systems to a broad cross section of industry specialists. These people represent a variety of critical job functions at pharmaceutical/chemical/petrochemical processing and manufacturing industries, educational institutions, healthcare facilities, research organizations, wastewater treatment plants, and other major industries. Tri-Stack users are experts in disciplines such as facilities management, pollution abatement, HVAC systems design and construction, contracting, and other areas related to exhaust emissions, pollution abatement, odor control, and indoor air quality.

Strobic Air participates in many trade shows and technical conferences throughout the year. These activities serve many purposes, not the least of which is meeting and educating new people at organizations that should be using Tri-Stack systems. We intend to continue with this program in a number of different locations.

**We'll advise you of details and dates throughout the year.**

## Tradeline Technical Conferences

Strobic Air also participates in the **Tradeline** series of technical conferences. Each year Tradeline presents a number of strategic conferences dealing with the planning, design, and construction of facilities, and the management of facilities portfolios and workplace support services. Now in its 23rd year, this acclaimed conference series addresses research buildings, corporate facilities, and college and university campuses. At each conference, participants learn the latest planning and management concepts and build on the successes and lessons learned by others. Conference participants represent some of the nation's largest and fastest growing corporations and institutions in the R&D, manufacturing, financial services, healthcare, higher education, military, and government sectors.

Our activities at Tradeline's Technical Conferences—with these kinds of people attending—serve many purposes, not the least of which is meeting and educating new people at organizations that should be using Tri-Stack systems. We intend to continue with this program throughout the year in a number of different locations. There's no doubt that these meetings are valuable—and efficient—resources to help introduce Tri-Stack systems to many new people. Remember, our mission at Strobic Air is to turn engineers and owners into advocates of Strobic Air and the Tri-Stack fan concept. To that end, we hope you'll encourage your clients to attend one of these useful conferences this year. Please check the dates and locations below, and get back to us with your intentions so that we can make arrangements. We look forward to seeing you there.

For more information on Tradeline Inc., visit them on the web at [www.tradelineinc.com](http://www.tradelineinc.com). This is where Tradeline will be this year:

April 7-8	<b>Tradeline's Research Buildings</b> <i>The Westin Resort at Port Royal Plantation</i> Hilton Head, SC
May 5-6	<b>Tradeline's Bio-containment Facilities</b> <i>Marriott Beach &amp; Golf Resort</i> Hilton Head, SC
August 4-5	<b>Tradeline's Animal Research Facilities</b> <i>The Hilton Resort/Mission Bay</i> San Diego, CA
November 6-7	<b>Tradeline's College &amp; University Facilities</b> <i>The Westin Resort at Port Royal Plantation</i> Hilton Head, SC

# Announcing a special “photo op” contest with a great digital camera prize

We’re looking for many interesting Tri-Stack applications photos—and one prize-winning photo!



## Win this new Olympus D-550 Zoom 3.0-Megapixel digital camera!

It was the late author Andy Warhol who said, “Each of us is entitled to fifteen minutes of fame.” Perhaps that’s a bit too serious for what we have in mind here, but we know there are many interesting—and photo-genic—Tri-Stack system installations in the field that have not been photographically documented and should be. Mainly, we’re looking for some attractive, interesting photos that illustrate the essence of Tri-Stack’s added value (such as the three shown here, for example) so that we can use them for marketing communications activities including advertising, sales and technical literature, and to illustrate many of the feature articles that we publish each year.

The new Olympus D-550 3.0-Megapixel CCD digital camera is the perfect “point and shoot” camera—without compromise. Its high resolution 2.8X optical zoom and 3.6X digital zoom provides 10X total “seamless” zoom capability for outstanding versatility. In fact, it will make a great artist out of any amateur (*maybe*). The Olympus D-550 incorporates world-class Olympus optics with two aspherical glass elements for outstanding image quality. Its many other features include advanced color management settings for portrait, landscape, landscape + portrait, night scene and self portrait modes, automatic noise reduction technology for true color and sharp detail, and Olympus’ exclusive TruePic® technology which optimizes image quality for picture sharpness, contrast, color fidelity and gradation in all resolutions. You can even make short videos with it. A variety of power options is available including nickel metal hydride (NiMH), nickel cadmium (Ni-Cad), lithium, and alkaline batteries—all packaged in an attractive, easy-to-use, compact body you’ll take everywhere. To sweeten the pie, we’re also including an extra 128 Meg SmartMedia card, two sets of NiMH batteries plus charger, and a custom-fitted case.



With today’s modern digital cameras, it’s quite easy to become a great photographer. In fact, while we expect you to take the first photos of a Tri-Stack installation, we’ll help make subsequent photos even easier by awarding the person who submits the best photograph a new Olympus D-550 Zoom 3-megapixel digital camera.

Since there are too many rules in this world already, we won’t complicate matters with a bunch of them here. We will, however, make the final decisions as to the best photo based on its uniqueness, interest, aesthetics, sales appeal, and usefulness with regard to marketing Tri-Stack systems. We will also announce the winner—and show you the prize winning photo—in our next newsletter.

## National sales meeting to cover many new subjects

We hope you’ll attend in Chicago on January 26th



This year we are really going to stress the concept of Tri-Stack’s “added value” for you and your customers. This will be quite evident early on, starting at our **Annual National Sales Meeting Brunch** in the Alpine Ballroom of the Swissôtel in Chicago at 10:00 on Sunday, January 26th, in conjunction with the ASHRAE show. Our plan is to discuss some of the subjects covered in this newsletter here, specifically all those Tri-Stack advantages that will help you educate your customers and

prospects to the real value of using them.

As usual, we’ll also present performance awards to our outstanding sales organizations in each of three regions across the country. We enjoy this part of the meeting very much, and we look forward to meeting and talking with you during the informal session.

Please make a note on your calendar to attend our brunch at ASHRAE.

# Strobic Air/Tri-Stack systems in the news...

**Let us help you achieve “15 minutes of fame”—and reward you for your efforts too!**

If—for whatever reason—you are not so fortunate to achieve your “15 minutes of fame” with a prize-winning Tri-Stack installation photo, we’re going to offer you one more opportunity! We’re looking for interesting Tri-Stack system applications to publicize in the trade journals throughout the year. By now you’ve seen many of our full-length feature articles in key journals of interest to your customers and prospects; this program has been quite successful for us (and, hopefully, for you too), and we will be continuing with it this year as well. In fact, we are expanding our editorial program to include a number of international publications for the first time. In order to accomplish our goals, however, we’ll need your help to learn where—and how—our systems are used, along with a key contact person at your customer’s installation so that we may interview him or her to gather more technical information about the installation.

## You’ll love this attractive and practical Rotring Quattro Executive Data Pen—



You’ll also find many uses for it every day. This unique business tool offers multi-function performance, with four writing points inside its single barrel, including a black ball point pen, 0.5mm pencil, orange fine-highlighter, and red ball point pen. Also included is a data input point for use with your hand-held PC or other PDA. This is a handy business tool worth writing for, and we hope you’ll participate in this program with us.

### Here’s how the process works:

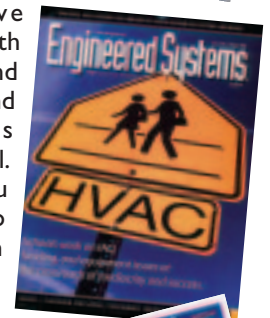
Typically, we spend 15 or 20 minutes interviewing the appropriate people at your customer’s facility to learn more about the installation/application and how Tri-Stack solved the customer’s problem. Once that process is completed, we submit the interview transcript to the person for review and comment, while simultaneously establishing contacts with editors at key publications (in the customers’ industry) to begin “marketing” the article. We next prepare a preliminary manuscript for review and approval by everyone involved with the project prior to submitting it to the publication.

At that point the article is generally evaluated by the magazine’s editorial review board which provides comments as well as approval for publication. The process is thorough and tedious—with

long lead times—but it is also worthwhile since everyone usually benefits from this favorable publicity including the customer, the representative associated with the project, and the engineers and contractors involved as well. Hopefully you will be able to work with us on this productive activity. We look forward to hearing from you soon.

As you see by some of the article reprints here, we’ve had excellent success with this program; in many cases these kinds of articles have resulted in direct orders for new Tri-Stack systems which means new business for everyone associated with Strobic Air.

As an added incentive—as if a new business opportunity isn’t good enough—we’ll also send you a new *Rotring Quattro Executive Data Pen* for your valuable information.



## Tri-Stack display fans available for your trade shows



**Do you need a Tri-Stack fan for a trade show booth static display?**

### Here’s how to submit your request:

If you exhibit or otherwise participate in trade shows and symposia during the year, it might be helpful if you to had a model Tri-Stack system on hand for demonstration and explanation. We’ll be happy to provide one for you. All you need do is submit a request directly to your regional manager along with the purpose of the exhibit and its name, dates, and location. We’ll do our best to accommodate your request.

## Feature articles related to your customers and prospects

**Many “application-matched” feature articles (technical/tutorial/case history) are available for specific industries—use them to help make your selling job easier and more productive**



As we mentioned elsewhere in this newsletter, we work closely with a broad cross section of industry journals during the year which publish major feature articles on Tri-Stack systems. In almost all cases we prepare reprints of these articles which can be used as informative and valuable sales tools when distributed to customers and prospects—particularly those who face similar problems described in an article. Most of these articles also contain useful technical data as well as case history solutions that might be beneficial to your customers’ and prospects’ applications.

We offer these article reprints to you to help make your selling job easier and more productive. For copies and quantity information, please get in touch with us today.

## Automated Tri-Stack system Performance Selection Program announced

**A new web-based computer program eliminates guesswork, and speeds and simplifies specifying Tri-Stack systems for precise performance requirements**

We’ve got some important news that will be of interest to you. Strobic Air’s Tri-Stack selection program is now on line. Type the following <http://www.choosetrystack.com> into your favorite browser, click on Enter Choosetrystack, enter your user name and

## And speaking of trade shows...

### Here’s where we’ll be in 2003:

No doubt you’ve seen listings of our trade show activities in previous *MIXED FLOW GAZETTES*. We attend these shows to help support our representatives and distributors throughout the country. Trade show participation has been an excellent way for all of us to meet existing customers and educate future customers—in addition to bringing you up to date with current advances to our technology, new or unique customer applications, and status of existing installations.

**Please review this list and mark your calendar to attend as many as you can.** We look forward to seeing you soon.

January 27-29	<b>AHR Expo</b> McCormick Place Chicago, IL
February 11-12	<b>Laboratory Safety &amp; Environmental Management 2003</b> Hilton Alexandria Alexandria, VA
March 10-13	<b>PITTCON 2003</b> Orange County Convention Center Orlando, FL
March 10-11	<b>PDC 2003</b> Phoenix Civic Plaza Phoenix, AZ
May 12-14	<b>AIHCE 2003</b> Dallas Convention Center Dallas, TX
July 14-16	<b>ASHE 2003</b> Henry B. Gonzalez Convention Center San Antonio, TX



press continue. No user name? No problem, click on “Click here to set up a new account.” A new window will open; fill in the blanks to set up your account. Once set up you may use your user name to log on and begin using the program. Dave Schaffer, the Met-Pro programmer responsible for implementing the program, will be at our annual meeting in Chicago to fill you in on the details and future plans for the site.

# The Strobic Air/Safety Design Response Team:

## At your service...

Our **Safety Design Response Team** is also available to help analyze your customers' 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.



## “A bargain at any price”

### Or, you get what you pay for...

**We've all heard these clichés before. If they weren't true they wouldn't be clichés.**

Okay, so Tri-Stack fans and systems cost more—initially—than ordinary centrifugal fans with belt drives and tall, dedicated stacks. It is true in most cases. However, the key word here is, “acquisition” cost, since in the long run Tri-Stacks are substantially less expensive than any other system with comparable performance. *We can prove it.*

Consider these “value added” advantages offered only by Tri-Stack fans and systems:

**Fast, convenient, straightforward installation**—Tri-Stack systems are composed of three individual modules, specially designed to speed and simplify installation while reducing installation costs. As a result, mounting Tri-Stack fans directly on the roof is fast, and there's no need for expensive construction equipment and helicopters that may require building evacuation. Typical installation can be accomplished in less than two hours, with minimal—or no—disruption of work schedules causing wasteful and expensive downtime. Tri-Stack systems are also easily retrofitted onto existing roofs with minimal effort.

**Substantially lower installation costs**—Because Tri-Stack fans are free-standing, they do not require complex and expensive mounting hardware such as roof curbs (with associated pitch pocket roof leaks), guy wires, flex connectors, or spring vibration isolators to install and maintain. Engineering costs are also reduced, as well as disruption of work schedules.

**Direct drive motors with seven year warranties**—No other company in the industry offers such a liberal motor warranty. That's seven years of worry-free performance for your system, with motors rated at L-10 at 100,000 hours.

**Virtually maintenance free operation**—Tri-Stack systems require no maintenance (other than occasionally greasing bearings on some systems). There's no need for time-consuming, maintenance-intensive, and sometimes dangerous belt adjustment and/or replacement. Unlike belt-driven centrifugal fans, advanced technology Tri-Stacks also eliminate the need for roof-mounted penthouses to protect workers from the elements (and possibly harmful fumes).

**Tri-Stack systems offer the lowest vibration performance characteristics of any other comparable system.** This means there's no additional expense down the road for replacing fan components damaged by vibration, and no replacement concern for other system components such as ducting, mounting hardware, roof supports, etc., that might be damaged by vibration from centrifugal belt-driven systems.

**Reduced horsepower motors help reduce energy costs**—Tri-Stack's exhaust nozzle design maximizes system performance to provide increased airflow and efficiency while lowering horse power requirements, thus further reducing energy consumption.

**Lower operating costs** also result from Tri-Stack's computer designed, advanced exhaust nozzle configurations that help

lower resistance, increase flow and pressure, and increase stack outlet velocities to minimize bypass requirements.

**Further energy savings** result from Tri-Stack's unique fan wheels which help lower horse power requirements with subsequent energy reduction. Non-stall characteristics permit use of variable frequency drives, further enhancing efficiency and reducing energy consumption—all without the need to exchange pulleys and/or adjust belts.

**Unique heat recovery systems** available with Tri-Stack fans can help save thousands and even hundreds of thousands of dollars. Tri-Stack fans with heat recovery systems cut building heating costs 3% for each 1°F of ambient heat recovered in closed-loop, 100% makeup air facilities.



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