



An Invitation to Participate.....

FLUID SEALING ASSOCIATION

***2005 AWARDS CONTEST
for
EXCELLENCE in ENVIRONMENTAL PROTECTION***

In November of 2005, at the *Chem Show* in New York City, the Fluid Sealing Association will present the 2005 Awards for Achieving Excellence in Environmental Protection through leakage reduction, mastering compliance with EPA Fugitive Emission Standards and/or achieving lower water usage and power consumption. This awards program is jointly sponsored by *Chemical Engineering Magazine*.

AWARDS OVERVIEW

The Fluid Sealing Association and its members have made significant contributions to the reduction of fugitive emissions, the minimizing of requirements for cooling water and the more efficient use of electric power. The net results of these efforts have been to facilitate compliance with Environmental Protection

Agency Standards and, thereby, a better living environment for all Americans. The cases submitted in this contest by FSA member companies will describe, in detail, the application of new fluid sealing products and procedures employed. Independent industrial plant environmental experts will judge the cases entered in this competition and the ones showing the highest positive environmental impact will be honored in an awards presentation ceremony. Publicity of the event will be provided by FSA and *Chemical Engineering Magazine* publications and websites, in addition to other industry media.



The winners of the 2003 Awards Contest were honored at the Chem Show on November 18, 2003.

AWARDS

The following Awards will be given:

- Grand Champion
- Grand Champion, Runner-Up
- Division Champion,
Sealing Components & Molded
Packings
- Division Champion, Compression
Packings
- Division Champion, Mechanical Seals
- Division Champion, Metallic Gaskets
- Division Champion, Piping Systems- Non-Metallic Expansion Joints
- Division Champion, Ducting Systems-Non-Metallic Expansion Joints
- Division Champion, Non-Metallic Gaskets
- Environmental Champion(s) (for remaining significant entries)



ELIGIBLE PARTICIPANTS

Participating teams are to generally consist of an FSA Regular Member or Associate Member and the End-User Customer. However, a team could include one of each type of FSA member and also could include a local Fluid Sealing Distributor or an OEM, when appropriate. Each FSA member company may submit a maximum of three entries. A case entered may be based on a situation that occurred within the years 2001 through 2004.

COST OF ENTRY

The fee for each entry will be \$250, and a check should accompany the submittal, payable to the "Fluid Sealing Association". There will be expenses associated with this program but it is the intention of the awards committee to have this program be cost neutral to FSA. Categories of expenses include administration costs by the FSA staff, judging related expenses and the cost of award plaques. Multiple award plaques will be made available to the winners for an additional fee.

TO ENTER

Submit a completed Entry Case Folder to the Fluid Sealing Association by **December 17, 2004**. Each entry must have official signed approval by the appropriate management representative of each participating team member. All entries become the property of the Fluid Sealing Association and can be used in the media, as approved, to publicize the significant contributions to Environmental Protection of the FSA, its member companies, and of certain end-user companies.

FSA AWARDS ENTRY / Basic Format

Please see the enclosed sample entry as an example.

- Provide the following information:
 - Names of companies comprising a team
 - Complete address, telephone number, and web site for each company
 - Contact name and their email address for each company
 - Designate which of the six FSA Divisions the submission should compete in: Compression Packings, Mechanical Seals, Metallic Gaskets, Non-Metallic Gasketing, Piping Systems - Non-Metallic Expansion Joint, or Ducting Systems - Non-Metallic Expansion Joint
 - A Case Overview (see next section)
- Each submittal should be limited to two pages of typewritten text. Photos and charts may also be included in an appendix.
- Submit each entry to FSA in plain manila file folders (six sets to facilitate judging), letter size, labeled with team members' names only
- Be sure to include the \$250 entry fee as a check made payable to "Fluid Sealing Association".
- The enclosed release form must be completed and included with each entry.
- Submit to:
 - Chairman, Awards Judging Committee
 - Fluid Sealing Association
 - 994 Old Eagle School Road
 - Suite 1019
 - Wayne, PA 19087-1866

FSA AWARDS ENTRY / Case Overview

- The Case Overview should include a brief explanation of the process and of the prior situation. Provide the following information regarding the case:
 1. Plant identity and location
 2. Department and scope of process included
 3. Description of equipment included
 4. Fluid sealing product(s) involved (brand names may be mentioned)
 5. Specific installation procedures and practice employed that aided the situation
 6. Date of installation
 7. Data that quantifies a significant leak reduction and compliance with EPA standards (based on minimum 6 month history) and/or significantly lower usage of water and/or energy
- Mention new installation and/or maintenance training practices put into place
- Describe the relative roles played by the supplier and by the plant personnel
- Provide photographs, if applicable
- Write a brief summary of the results achieved

Please contact Pete Petrunich, FSA Technical Director, with any technical questions you may have by email at petepetru@aol.com or by phone at 864-234-6626.

All administrative questions may be forwarded to Hope Silverman, FSA Administrative Director, at info@fluidsealing.com or 610-971-4850, ext. 26.

Previous winning entries may be viewed at www.fluidsealing.com.

FSA Environmental Awards Entry (SAMPLE ENTRY)

Participating Team

Graftech Inc.- FSA member
PO Box 94637
Cleveland, OH 94637
1-800-253-8003
www.graftech.com
Al Mariconda – al.mariconda@ucar.com

Alliance Compressor – Manufacturer of refrigeration compressors
200 North Street
Hartford, CT 06111
860-250-2800
www.alliancecomp.com
David Rasp – david_rasp@alliancecomp.com

Competing in FSA Division: Compression Packing Division

Case Overview

Alliance is a manufacturer of reciprocating refrigeration compressors used in commercial refrigeration and air conditioning systems. In an effort to provide more value to their customers they began running their machines at higher throughputs. This resulted in higher head temperatures, approaching 450-500°F, and failure of their traditional compressed sheet head gaskets. Failure would begin with small leakage of refrigerant, which in some cases led to gross leakage and catastrophic gasket failure. While they may have been able to solve the problem by redesigning the machines to get higher loading on the gasket, this would have been very costly. They opted to try and find a gasket solution. As the result they contacted their gasket supplier, Mueller Specialty. The General Manager of Mueller, who I had worked with on several other projects, contacted me to see if we had something to offer. We then made a joint call on David Rasp the engineering manager at Alliance. David liked what we had to say and decided to test one of our materials.

Testing of the first GRAFOIL® Flexible Graphite sheet gasket material was started in February 2000. The initial tests were conducted in ten, 5 horsepower compressors. The machines were run 24 hour a day for 6 months, maintaining head temperatures in the 450°F range. At the conclusion of the 6-month test period no head gasket failures had been experienced. Any other material Alliance had tested had not demonstrated this capability. The GRAFOIL Flexible Graphite did not bake on the flanges the way rubber bound materials had, offering an opportunity for easier maintenance. Yet a small amount of refrigerant leakage could be detected from the head gasket at the beginning and end of the test period. While all the other performance characteristics were great the material was rejected because of minimal detectable leakage. GRAFOIL® Flexible Graphite because of its nature has a small amount of gas leakage. Yet they didn't want to give up on the material since it performed better than the other materials they had tested. Alliance asked us if we would be interest in working with them to reduce the leakage of the material.

In an effort to solve the sealability issue we initiated a 6-month research program to find an additive that would increase sealability to an acceptable level and hold up under the 450-500°F temperatures.

The development effort was undertaken at our laboratory in Cleveland. After extensive research and trials of many additives, the proprietary additive X that was settled on showed a significant improvement over standard GRAFOIL® Flexible Graphite as shown by the data below:

	Standard GRAFOIL	With additive A	With Additive X
Room Temperature	1.3 cc/min.	0.10 cc/min.	0.025 cc/min
400°F	0.7 cc/min	0.04 cc/min	0.008 cc/min
600°F	0.6 cc/min	0.03 cc/min	0.006 cc/min

Note: All reported data represents an average of 10 individual tests. The leakage rates reported are for refrigerant R-263. Test gaskets were 1/16” thick with a 50 mm ID and 90 mm OD. The test fixture used smooth flanges and a simulated flange load of 1750 psi., which was comparable to the average flange loading of the Alliance compressor designs.

Following material development in our lab the material was tested at Alliance Compressor in Hartford, CT. The test consisted of installing the material in five, five horsepower machines and five, ten horsepower machines. The machines were run 24 hours per day for 6 months, which simulated a minimum of 10 years of service. The head gaskets were sniffed for leakage several times per day. The results were zero head gasket failures and zero detectable leakage.

These tests were completed in February 2002 with the next step being deployment of 100 machine to actual field sites around the country. The deployment of the 100 test units was completed in April 2002. These machines are being monitored on a monthly basis. To date all are performing fine. This test will continue for one year from the date of commissioning. If results continue to be positive a complete conversion to the new material will occur in the spring of 2003.

Case Summary

Through the use of a proprietary additive we were able to significantly reduce the leakage rate of GRAFOIL® Flexible Graphite gasket materials. This enabled Alliance Compressor to push their machines to higher operating levels, providing their customers with a lower cost and higher efficiency package. In addition this new head gasket material increased warrantee performance beyond their older machines, that typically used a rubber containing head gasket material. All machines tested have been in full compliance with EPA refrigerant leakage requirements, providing an environmentally friendly machine.



**Fluid Sealing Association
2005 Awards Contest
Excellence in Environmental Protection**

Participants Release Form

Our two companies have submitted an entry to the Fluid Sealing Association for the 2005 Awards Contest for Excellence in Environmental Protection.

We are pleased to grant the FSA the requested approval to use the submitted entry in the media to publicize the significant contributions to environmental protection of the FSA, its member companies, and of certain end-user companies.

We realize that all entries, once submitted, become the property of the Fluid Sealing Association.

Approving Signatures:

FSA Member Contact Person

Date

Title

Company Name

End-User Company Contact Person

Date

Title

Company Name