

SYSTEM FOR REMOVAL OF NOXIOUS FUMES FROM ROOFING MATERIALS

The Opportunity

Simon Roofing and Sheet Metal Corporation has developed and patented an innovative system for the removal of noxious fumes from the surrounding air during the application of a heated liquid roofing product onto a roof. The invention provides an innovative mobile collection method and device at a minimum cost.

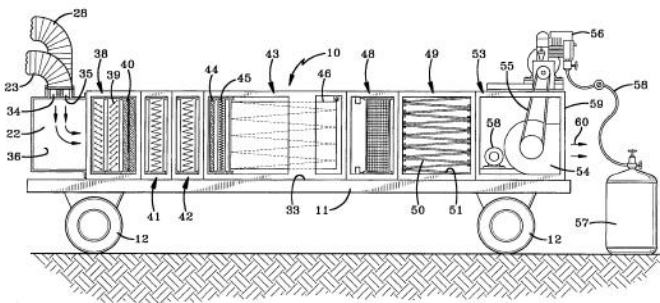
The system

- operates close to buildings on job sites
- allows the collection system to move along with heated roofing material
- materially reduces noxious fumes
- removes fumes from both the tanker vessel and the tender vessel simultaneously
- is compact and mobile, allowing easy movement between job sites.

Technology

The primary innovation is in the provision of a method to conveniently move the collection system along with the vessel of heated roofing material. This is accomplished by arranging for a fume recovery system to simultaneously capture fumes from both the tanker that feeds the roofing material to a roof vessel, and from the roof vessel itself, as shown at the right.

The Simon fume recovery system itself consists of a series of filters and other recovery apparatus, along with a cooling chamber for most effective removal of particulates and fumes, as shown below.



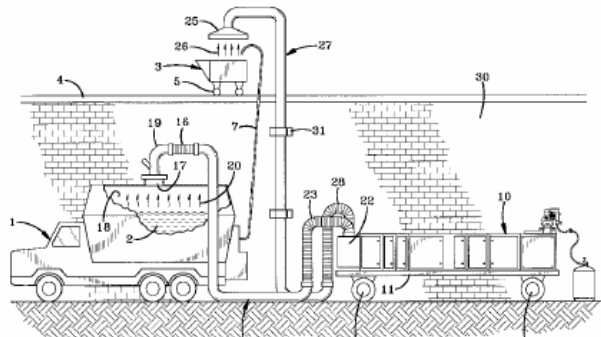
Simon is currently manufacturing the systems for its customers in-house. A product brochure is attached. Projections indicate that the systems could be sold more widely and profitably if produced and promoted by an appropriate partner.



Intellectual Property

The Simon design is protected by several US Patents:

#	Patent	Title	Issued
1.	5,591,244	System for removal of noxious fumes	1/7/1997
2.	5,762,664	Mobile vessel for removal of noxious fumes	6/9/1998
3.	5,873,919	System for removal of noxious fumes	2/23/1999
4.	5,951,725	System for removal of noxious fumes	9/14/1999
5.	6,022,389	System for removal of noxious fumes	2/8/2000



For More Information

The Company is seeking qualified licensees to bring its innovative fume removal technology into wider commercial use. For more information, contact:

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Proven Technology

Proven Technology

filters away
fumes and
odors during
built-up
roofing





FRS Systems

Eliminate Fuming

Facilities managers, building owners, and contractors no longer have to worry about the fumes and odors that come from coal tar or asphalt during hot bituminous roofing projects. The FRS technology captures and systematically filters fumes and odors to nearly undetectable levels, thus eliminating this objection. The FRS systems can filter tankers, kettles, roof edge, and can filter coal tar and asphalt simultaneously.

Minimize Downtime

It is no longer necessary to shut down operations during bituminous installation or pay for premium priced night shifts for certain projects due to the presence of fumes and odors. Odors or particulate are eliminated through filtration and carbon absorption.



FRS-6000®

The filtration capacity of the FRS-6000® is capable of filtering four sources at one time. A series of filters are used to remove objectionable components. It has a true 99.97% efficient HEPA filters down to .3 microns, and activated carbon. The FRS is designed to remove everything from oils and dust particles, down to the smallest vapors that cause odors. Five different filtration modules, each uniquely designed for specific airborne pollutants, ensure optimum efficiency.



FRS-3000™

The cabinet of the FRS-3000™ is more compact and allows for greater mobility than its larger counterpart, yet does not sacrifice its diverse abilities to filter a kettle, tanker, or at the roof edge. Although it filters from only two sources, it utilizes all of the same filtration technology as the FRS-6000®.



The FRS Systems dramatically reduce the risk of airborne contaminants and eliminates objectionable odors during the application of hot BUR.

Food and Beverage Processing



Manufacturing Processes



Medical Facilities



Retail Facilities



Schools and Public Buildings



Office Environments



Case Studies

Problem: When Winter Park Memorial Hospital, Winter Park, FL, needed to replace 45,000 square feet of roof, hot BUR was chosen for its durability. Because administrators were concerned that fumes might make patients nauseous, the roofing contractor proposed using an FRS-6000® fume recovery system. According to Ray Hutnak, Director of Plant Operations, due to the smoke and fumes he would either have to do the work at night or move patients to another area—both costly solutions.

Fume Recovery System Keeps Hot Asphalt Smells Away From Patients



Solution: Although there are patient rooms right next to the roof, the project has not forced any of them to be moved. What Hutnak likes best about having the fume recovery system on site is the absence of complaints about smells.

"Odors from hot mopping turn out to be almost negligible," Hutnak notes. "The majority of the fumes come from the kettle or tanker, and the fume recovery system removes those odors very effectively."

During roofing operations, the equipment sat just outside the offices of the VP of nursing, "Success is inversely proportional to the number of complaints you get." Hutnak says.



Electronics Facility Keeps Overhead Down—Production Up

Problem: At the AT&T Columbus, Ohio facility, over 200,000 square feet of roof needed complete refurbishment. Hot BUR was the preferred choice, but fumes and odors were a major concern. In the past, when complaints came in, the plant maintenance manager was forced to shut down the project.

Because of AT&T's regard for workers and the environment, the company wanted a safe, effective fume recovery system. Over 2,000 employees in the large office complex had to remain productive during roofing operations.

Solution: AT&T accepted the recommendation of the roofing contractor, to use an FRS-6000®. Once roofing operations began, fumes and odors that previously escaped the tar kettle were captured. Workers were able to install hot BUR roofing during normal business hours without disturbing employees.

The FRS effectively reduced odors and smoke to nearly undetectable levels. One worker said he could walk right up to the tanker and hardly notice any smell, smoke or fumes.

Keeping Great Performances "Under Cover"

Problem: The biggest challenge to replacing the roof of the Kennedy Center in Washington D.C. came from the very nature of the facility itself. As the nation's busiest center for the arts, the activities are virtually constant and it is situated next door to the Watergate. The architectural firm selected hot BUR, however two things were understood by everyone involved in the project: The work must be invisible to patrons and neighbors and must not interfere with the centers performances.

Initially work was done at night, but, due to the elements, work had to shift to early morning. According to Clifton Jeter, Vice President of Facilities, "Total coordination was necessary to ensure that the appropriate intake vents were closed as the kettles were moved around the roof, but this did not solve our odor problem."

Solution: The challenges of working unseen and unheard were manageable through communication. However the odors of fumes were another challenge entirely. The solution was the FRS-6000®. It virtually eliminated the possibility that neighbors or passersby could detect the presence of coal tar or asphalt fumes. Workers had two kettles in continuous use, one for coal tar and the other for asphalt. The FRS-6000® system recovered fumes at both kettles and at the points where coal tar or asphalt were placed into luggers for distribution to roofing areas.



FRS Systems

The FRS Systems are designed to maintain air quality rather than redirect particulate emissions. They reduce exposure to below OSHA permissible limits.

Efficiency

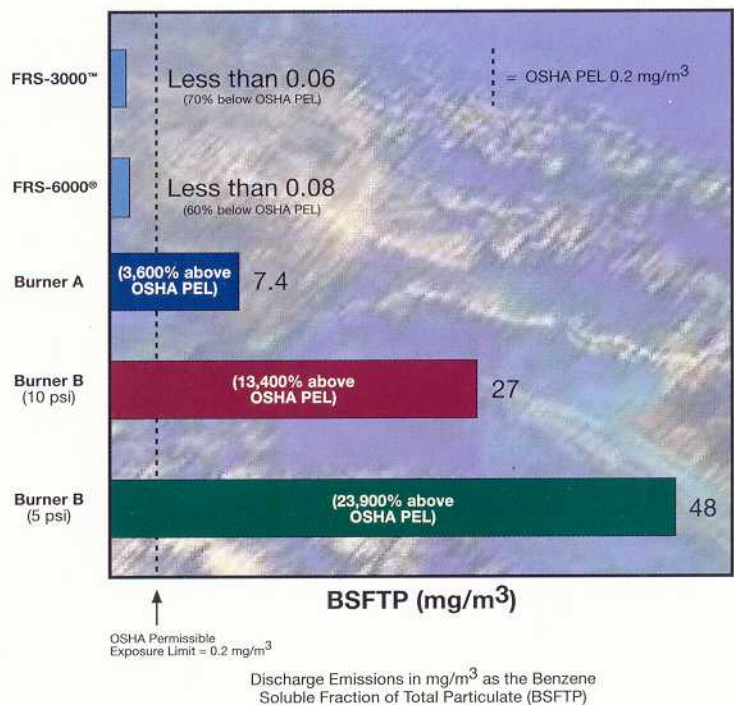
	FRS-6000®	FRS-3000™	Burner
• HEPA filtration 99.97% efficiency down to .3 microns	X	X	☐
• Odor absorption through carbon	X	X	☐
• Eliminates fume escape when loading the kettle	X	X	☐
• Eliminates fumes during loading lugger at roof edge	X	X	☐

Versatility

	FRS-6000®	FRS-3000™	Burner
• Filters two sources simultaneously	X	X	☐
• Filters four sources simultaneously	X	☐	☐
• Filters Tanker or Kettle simultaneously	X	X	☐
• Filters asphalt & pitch simultaneously	X	X	☐
• Adapted to any existing kettle	X	X	☐

Safety/Environmental

	FRS-6000®	FRS-3000™	Burner
• Provides contaminant free discharge to atmosphere	X	X	☐
• Reduces exposure potentials below OSHA permissible exposure limits	X	X	☐
• Capture and efficient removal of fumes/odors	X	X	☐
• Creation of redirected particulate emissions	☐	☐	X
• Carbon monoxide/greenhouse gas production	☐	☐	X
• Combustion by-products contribute to emissions	☐	☐	X
• Burning source near combustible fumes	☐	☐	X



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United States Patent [19]

[11] **Patent Number:** **5,591,244**

Vross et al.

[45] **Date of Patent:** **Jan. 7, 1997**

- [54] **SYSTEM FOR REMOVAL OF NOXIOUS FUMES**
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George V. Fagan, Woodbridge, N.J.
- [73] Assignees: **Simon Roofing and Sheet Metal Corp.**, Boardman, Ohio; **Aercology Incorporated**, Old Saybrook, Conn.

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Primary Examiner—C. Scott Bushey
Attorney, Agent, or Firm—Sand & Sebolt

- [21] Appl. No.: **478,785**
- [22] Filed: **Jun. 7, 1995**
- [51] **Int. Cl.⁶** **B01D 50/00**
- [52] **U.S. Cl.** **55/356; 55/323; 55/385.4; 55/467; 55/472; 55/485; 55/486; 96/136; 96/142; 454/65; 454/92**
- [58] **Field of Search** 55/319, 320, 321, 55/322, 323, 356, 385.1, 385.4, 385.7, 467, 472, 485, 486; 96/135, 136, 138, 140, 142; 454/63, 64, 65, 92, 117
- [56] **References Cited**

[57] ABSTRACT

A system which reduces the transmission of noxious fumes into the surrounding air during the application of a heated liquid roofing product on a roof. A mobile tanker or kettle contains a supply of the heated liquid. The air space within the tanker or vessel above the liquid product communicates with a mobile filtration unit by a first duct. A rooftop carrier for the liquid product has a fume collection hood which communicates with the filtration unit by a second duct. A blower in the filtration unit creates negative pressure which draws the noxious fumes from the tanker or vessel and carrier through the ducts and into and through the filtration unit. The filtration unit has a series of airtight chambers mounted on a mobile truck bed, each containing a different type of filtering medium to remove various components of the noxious fumes as the fumes move through the filtration unit.

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22 Claims, 2 Drawing Sheets

