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EPA

SF_6 Emissions Reduction Partnership for Electric Power Systems:

An Opportunity for Industry

What is SF_6?

Sulfur hexafluoride (SF_6) is a synthetic gas used as an insulating medium in the electric power industry. SF_6 is also used as a cover gas in the magnesium industry, for plasma etching in semiconductor manufacturing, as a reactive gas in aluminum recycling to reduce porosity, as thermal and sound insulation, and in atmospheric tracer studies and medical applications.

Southern Company is happy to be working with EPA in this voluntary partnership to track our SF_6 usage and doing our part to reduce greenhouse gas emissions. This is an excellent example of how industry and government can work together to address an issue in a way that's in the best interest of society. Southern Company has been reducing SF_6 emissions for several years, and the opportunity to take part in this joint effort reaffirmed our belief that we were headed in the right direction and identified various ways in which we could improve upon our management of SF_6.

Charles Goodman
Senior Vice President, Research and Environmental Affairs
Southern Company

An Effective Insulator

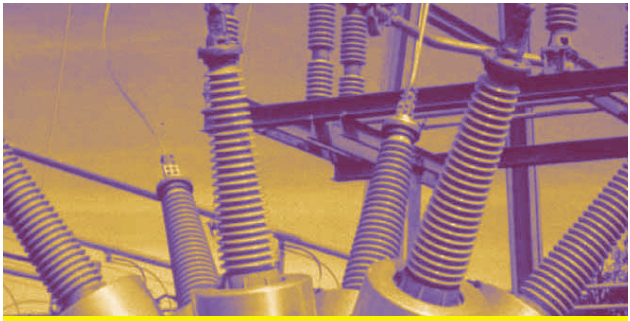
The most common use for SF_6, both domestically and internationally, is as an electrical insulator in equipment that transmits and distributes electricity. Since the 1950s, the U.S. electric power industry has used SF_6 because of its dielectric strength and arc-quenching characteristics. SF_6 is used widely in gas-insulated substations, circuit breakers, and other switchgear.

A Potent Greenhouse Gas

SF_6 is also a highly potent greenhouse gas. Over a 100-year period, SF_6 is 23,900 times more effective at trapping infrared radiation than an equivalent amount of carbon dioxide. With an atmospheric lifetime of 3,200 years, SF_6 is also a very stable chemical. Because of its long lifespan and high potency, even a relatively small amount of SF_6 can have a significant impact on global climate change.

Challenge

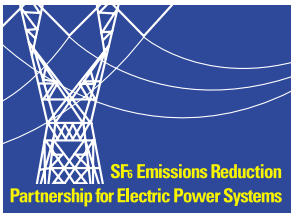
The electric power industry uses a significant percentage of the SF_6 produced worldwide each year. Under ideal operating conditions, SF_6 would remain entirely contained within the transmission and distribution equipment. However, during real-world equipment operation, maintenance, and SF_6 recycling activities, gas is emitted into the atmosphere. Fugitive emissions of SF_6 can escape from gas-insulated substations and switchgear through seals, especially from older equipment. It can also be released during equipment installation and when equipment is opened for servicing. In 1998, U.S. emissions of SF_6 were estimated at 10 million metric tons of carbon equivalent (MMTCE). A significant percentage of these emissions are attributable to the electric power industry.



Recognizing our environmental and natural resource stewardship responsibility, we are pleased to be among the first electric utilities to join EPA's SF_6 Emissions Reduction Partnership for Electric Power Systems. Being a publicly owned utility, we feel especially responsible to set a leadership example through active corporate citizenship.

Thomas W. Richards, P.E.
Director of Electric System
Fort Pierce Utilities Authority

Opportunity



The SF_6 Emissions Reduction Partnership for Electric Power Systems is a voluntary, non-regulatory partnership between the U.S. Environmental Protection Agency and the electric power industry aimed at reducing SF_6 emissions. The partnership provides a forum for EPA and the electric power industry to work together to reduce SF_6 emissions to technically and economically feasible levels—thereby helping to avoid global climate change. The electric power industry has an enormous opportunity to help reduce the nation's SF_6 emissions through cost-effective operational improvements and equipment upgrades.

The SF_6 Emissions Reduction Partnership for Electric Power Systems is one of a suite of voluntary EPA programs working with industries that emit the most potent of greenhouse gases. EPA has also developed partnerships with the aluminum industry (perfluorocarbons (PFCs)), semiconductor manufacturers (PFCs, SF_6, and hydrofluorocarbons (HFCs)), and magnesium producers and casters (SF_6).

Participants in these programs value the flexibility and benefits voluntary programs offer: cost-effective pollution prevention, protection of the environment, information sharing, and positive company recognition.

Partnership Benefits

Protect the environment

The partnership provides an exciting opportunity for the electric power industry and EPA to work together to reduce SF_6 emissions and prevent global warming.

Save money

The SF_6 Emissions Reduction Partnership for Electric Power Systems can help you improve your bottom line. SF_6 is a relatively expensive gas, so reducing emissions saves money. Through improvements in the leak rate of new electrical equipment, refurbishing of older equipment, and the use of efficient operation and maintenance techniques, utilities often find technologically and economically feasible ways to reduce SF_6 emissions.

The SF_6 Emissions Reduction Partnership for Electric Power Systems is a win-win-win. The environment wins from the reduction of greenhouse gas emissions. Cinergy wins by reducing the emission of an expensive gas and improving equipment operations. EPA and Cinergy win by forging a better relationship of mutual cooperation working towards the same goal.

The SF_6 Emissions Reduction Partnership for Electric Power Systems has solidified Cinergy's efforts for reducing SF_6 emissions. Cinergy was already interested in SF_6 emissions reduction, but the voluntary program has given Cinergy a coherent approach to implementing the reductions.

Tammy L. Jett
Senior Environmental Specialist
Cinergy

Learn from others

EPA will work with its partners to share information on best management practices and other issues that can help achieve the goals of the partnership. EPA will also sponsor periodic SF_6 conferences where partners and others from the industry can keep up-to-date on the latest developments in this area and learn from others.

Enhance your public image

EPA will provide opportunities for recognition of your organization's participation and efforts to reduce SF_6 emissions at industry events, in trade publications, and on EPA's Web site.

Since signing the MOU with the EPA, AEP has:

- *Reviewed its maintenance policy regarding SF_6-containing equipment*
- *Implemented preventative maintenance programs to start reducing gas leakage rates*
- *Enhanced its training program on proper handling of SF_6 gas*
- *Utilized laser imaging leak detection technology*

These efforts to reduce SF_6 emissions have paid for themselves through avoided gas purchases. Future savings from equipment tested to date, estimated at $20,000, will be realized by not having to purchase replacement gas. Subsequent leak detection and equipment repair/replacement will increase savings even more. Replacing older, high-volume equipment with new low-volume equipment will reduce the amount of SF_6 gas purchased. Annual savings of $50,000 are projected.

Dale E. Heydlauff
Senior Vice President
Environmental Affairs
American Electric Power

Joining the Partnership

To become a partner you need to sign a Memorandum of Understanding (MOU). The MOU is an agreement between the partner and EPA that details the roles and responsibilities of both EPA and the partner. EPA developed the MOU with significant industry input in order to make it flexible and user-friendly. It is up to the partner to determine what emission reduction actions are technically and economically feasible for its operation.

Through participation in EPA's SF_6 partnership, we have found that tracking our SF_6 leak rate and reclaiming processes is easier than we had imagined. By working with EPA on a voluntary basis, we have cut our gas emissions to an all-time minimum. Management has been working with us to replace the older leaking equipment that we have on our system.

Michael Mahurin, General Foreman
Bill Icke, Assistant General Foreman
San Antonio City Public Service

EPA Responsibilities:

- Act as a clearinghouse for technical information on successful strategies to reduce SF_6 emissions
- Provide partners with recognition for their achievements in reducing SF_6 emissions
- Provide a credible repository for data on the emissions reduction achievements of the partners
- Work to obtain commitments from all electric power system operators to join the partnership

Partner Responsibilities:

- Annually inventory emissions of SF_6 using standardized inventory protocol
- Establish a strategy for replacing older, leakier pieces of equipment
- Implement SF_6 recycling
- Ensure that only trained personnel handle SF_6
- Submit annual progress reports

The tracking and reporting scheme implemented under the SF_6 Partnership will enable companies to document early contribution to the prevention of global climate change.

Eighteen months after joining, Partners agree to set an emissions reduction goal that they determine to be technically and economically feasible.

Many partner utilities have aggressive programs in place,

Partners

as of 3/02

Allegheny Power
American Electric Power*
Athens Electric Department*
Austin Energy
Bangor Hydro-Electric Company*
Big Rivers Electric Corporation*
Bonneville Power Administration*
Central Maine Power*
Central Vermont Public Service Corporation*
Cinergy Services, Inc., on behalf of The Cincinnati Gas & Electric Company and PSI Energy, Inc.*
City Light, Water & Cable*
City of Monroe
Columbia River PUD*
Commonwealth Edison*
Commonwealth Electric*
Connecticut Light and Power Company*
Consolidated Edison Company of New York*
Crisp County Power Commission*
Duquesne Light Company*
Edison International
El Paso Electric Company*
Eugene Water & Electric Board*
FirstEnergy Corporation*
Florida Power & Light Company*
Fort Pierce Utilities Authority*
GPU Energy*
Grand Island Utilities Department*
Hastings Utilities*
Kings River Conservation District*
Lower Colorado River Authority
Maine Public Service Company*
Manitowoc Public Utilities*
Menasha Electric and Water Utilities*
Montana Power Company
Muscatine Power & Water*
Nashville Electric Service
Nebraska Public Power District
New York Power Authority
Niagara Mohawk Power Corp
North Atlantic Energy Service Corporation*
Northeast Utilities Services Company*
Northern Indiana Public Service Company
OG&E Electric Services*
PG & E Corporation*
Public Service Company of New Hampshire*
PUD No. 1 of Douglas County
PUD No. 1 of Pend Oreille County*
Reliant Energy HL & P*
Rochester Gas & Electric
Salt River Project*
San Antonio City Public Service*
Silicon Valley Power
South Carolina Electric & Gas Company
Southern Company*
Southwestern Electric Power Company*
Tennessee Valley Authority
Texas Municipal Power Agency*
The Memphis Light, Gas & Water Division
Town of Wallingford*
TXU*
Village of Prairie du Sac*
Wellton-Mohawk Irrigation & Drainage District*
West Texas Utilities*
Western Massachusetts Electric Company*
Wisconsin Electric Power Company*

* Charter Partners

Contact Information

Visit the Web site of the SF_6 Emissions Reduction Partnership for Electric Power System at www.epa.gov/highgwp1/sf6 for more information and to download a copy of the partnership MOU.

If you have any additional questions, please contact:

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