A New Broom for Steel Dust
Minimizing Electric Arc Furnace Dust Saves Millions in Treatment Costs

Electric arc furnace (EAF) steelmakers are among U.S. utilities' best customers. Thirty-eight percent of the over 90 million net tons of steel produced annually comes from EAFs, which use about 15 billion kWh per year. Consumption is bound to increase, as advances in efficiency bump up production at a rate of about 10% per decade.

Relieving Customers Of An Enviro-Economic Albatross

EPRI-CMP is helping utilities and their steelmaking customers cope with a crippling problem: dust. About 650,000 tons of EAF dust are generated by U.S. steel operations every year, and that should rise to more than 800,000 tons by the year 2000 as nine new EAF steel makers begin production by 1997. The Environmental Protection Agency (EPA) has listed EAF dust as a hazardous waste because of its lead, cadmium, and chromium content. Unlike some substances, which can qualify for special landfill permits, EAF dust must be treated before it can be disposed of in accordance with regulations. EAF operators pay an average processing fee of $150 to $200 per ton of dust processed. The steel industry is eager to find other options. "High-temperature metals recovery" being used to treat most dust is not only costly, but has an element of risk in terms of long-term liability.

A 10% reduction in flue dust would result in savings of about $10 million a year in treatment costs. EPRI-CMP is thus targeting the problem at the source, striving to find ways to minimize dust generation. EPRI-CMP estimates that it is possible that the generation of EAF dust can be reduced by 30% by 2000 through the modification of present operating practices — 70% by 2010.

In a collaborative project with the steel industry, EPRI utilities, and the Department of Energy (DOE), EPRI-CMP has identified two major ways to minimize dust. The first involves selectively capturing the high-impurity dust, the second, suppressing dust formation in the furnace. Factors that can control the amount of dust being generated in the furnace include scrap selection, scrap preheating, rate of oxygen injection, rate of power input, draft in the furnace, etc.

DOE is helping to fund the project, which is now in its second and final phase. CMP is currently in the process of: demonstrating dust minimization on a small-scale EAF to be followed by commercial EAFs; providing techno-economic evaluations of promising technologies; conducting workshops to exchange information with project co-funders and to encourage commercial adoption of promising technologies. To date, 17 steel companies and seven EPRI utilities have joined the project, which is slated for completion in the fall. For more information, contact Bob Schmitt at EPRI-CMP: 412/268-6442 or fax: 412/268-6852.
In the Works.... A Sampling of New EPRI Projects

Portable Auto Paint Curing & VOC/HAP Treatment System

Many auto body shops have moved to air-dry, high-solids paint and are looking for ways to increase the rate of drying. Meanwhile, the EPA and state environmental groups are forcing such operations to limit their emissions of Volatile Organic Compound (VOC) and Hazard Air Pollutant (HAP). EPRI-CMP is helping to develop a portable system that will dry paint quickly, with electric IR, while capturing and incinerating the VOCs and HAPs given off in the process. How it works: a quartz infrared heating panel within the unit accelerates the drying and curing of freshly painted surfaces. “Scrubbing” air blows over the surface, capturing emissions. The air moves to the incinerator, where fumes are destroyed. Clean air is exhausted out into the workplace atmosphere. The unit improves workplace conditions while at the same time saving time, protecting the environment, and complying with environmental regulations. EPRI-CMP is submitting a proposal to the New York State Energy Research and Development Authority to develop this transportable paint dryer/VOC incinerator. Contact Jim Seals at EPRI-CMP: 614/421-3440 or fax: 614/421-3446 or 614/241-2867.

Gas-Electric Transmission Opportunities Outlined In New Reports

EPRI’s Chemicals and Petroleum Office announces the availability of two reports, Proceedings of the Electric Power for Compression Symposium II: Expanding Gas and Electric Industry Partnerships (CR105835) and Electric Motors for Gas Pipeline Compressors - Volume III Baltimore Workshop Work- book (CR 105877). Gas transmission firms are seeking ways to reduce their nitrogen oxide emissions and reduce costs in their compressor facilities. Perfect time to explore a natural synergy — gas for power generation and electricity for transmission to market. First report covers a symposium held last September in Houston and outlines environmental factors, economics, reliability and operating and maintenance costs. Baltimore report summarizes material presented at an August workshop and covers the basics of electric drives for gas compression. It also features a tour of a gas pipeline compressor station that uses three electric driven compressors.

Infrared Association Formed

EPRI-CMF has joined leading equipment manufacturers to form the Infrared Equipment Association (IREA) promoting the expanded use of electric IR heating and marketing the technology to potential users.

IREA will address the needs of electric utilities, IR equipment manufacturers and their suppliers, and the end users of IR technology. Members will have access to technical literature, presentations, and exhibits, and a database of case histories documenting successful technology applications as well as other guidelines and information. For membership information, contact Gary Walzer, EPRI-CMF Director: 614/421-3440.

Upcoming CMF Workshop on Electrotechnologies

The Center for Materials Fabrication will present a workshop on new electrotechnologies for the materials fabrication industry twice in ‘96. The first session meets May 21st - 23rd in Charlotte, N.C. Times and location for the second session, which will meet in the fall, will be announced at a later date. Contact EPRI-CMF for details: 614/421-3440 or fax: 614/421-3446.

Mark Calendars for International Conference

The International Congress for Electricity Applications will be held June 16th - 20th at the International Convention Centre in Birmingham, U.K. Delegates from over 25 countries worldwide will exchange new information on the applications of electricity for industrial and heating processes. Focus will be on the efficient use of electricity for increased productivity and improved environment. Contact EPRIAMP Customer Assistance Center: 1-800/4320-AMP or fax: 1/800-UFAX-AMP.