FETC SUCCESS
U.S. Department of Energy
Federal Energy Technology Center

ENVIRONMENTAL MANAGEMENT

- [ ] fossil energy
- [x] environmental
- [ ] energy efficiency
- [ ] other

M99000405 P6.5

Oxy-Gasoline Cutting Torch Reduces Size of Metal Components

States Impacted:
Ohio, Tennessee, Texas, New York, Washington, California, Pennsylvania, Utah, Idaho

Benefit Areas:
Environmental Quality Improved, Reduced Cost, Improved Worker Safety

Participants:
Federal Energy Technology Center, Petrogen International; Integrating Contractor Team consisting of Fluor Daniel Fernald, B&W Services, Foster Wheeler Environmental Services, TetraTech NUS, NUS Halliburton, Fluor Daniel, Jacobs Engineeering

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Description

Petrogen International has developed the oxy-gasoline cutting torch under the Federal Energy Technology Center's (FETC's) Deactivation and Decommissioning Focus Area. One of several technologies being developed under the Department of Energy's Environmental Management Program for improved decontamination and decommissioning (D&D) technologies, the system consists of a 2.5-gallon fuel tank with automatic flow shutoff valve, a gasoline supply hose, and a cutting torch, and is supplied with pressurized oxygen. Gasoline is delivered to the tip of the torch as a confined liquid, which expands to a vapor when mixed with oxygen to form a combustible gas, eliminating the possibility of backflash in the fuel line and keeping the torch head cool.

In October 1996, the oxy-gasoline cutting torch was demonstrated alongside the baseline technology, the oxy-acetylene cutting torch, at the Fernald Plant 1 Large-Scale Demonstration and Deployment Project (LSDDP). The oxy-gasoline torch cut more cleanly, without resolidification of the metal, in about half the time with the oxy-acetylene torch. The oxy-gasoline cutting torch uses about $3 of gasoline per day compared to $50 per day for a tank of acetylene necessary for the acetylene torch. The oxy-gasoline torch system is also easier to transport because its fuel tank weighs nine times less than a standard acetylene tank. Cost analyses indicate a 40 percent cost savings when using the oxy-gasoline torch.

Goals

The goal of the LSDDP at the Fernald Plant 1 is to demonstrate a suite of improved D&D technologies and to validate their superior performance compared to competing baseline technologies. It is expected that the improved D&D technologies will actually be deployed to decommission DOE's surplus facilities at significant cost savings to the Department.

Tangible Benefits

National: The oxy-gasoline cutting torch has already been deployed domestically at ten DOE sites, and internationally, the Russian Defense Nuclear Agency has already purchased over 100 torches to dismantle weapons and equipment in the former Soviet Union.

Regional/Local:
Successful demonstration of this technology has led to an intense technology transfer effort. Fluor Daniel Fernald plans to furnish about twenty oxy-gasoline cutting torches and the necessary training to four unions (two local Iron Workers Unions, a Pipe Fitters and Plumbers Union, and Labors Union), and two vocational schools in the greater Cincinnati area (Hamilton County Vocational School and Butler County Vocational School). This deployment will allow over 1,800 workers at Fernald, and throughout the DOE complex, to be trained on the use of this technology.

August 1999