

Development Of A Plasma Ordnance Demilitarization System For Pyrotechnic Ordnance

Under the sponsorship of the Army's Demilitarization Technology R&D program for conventional ammunition, with coordination through the Defense Ammunition Center, and management oversight by PM-Demil, RDECOM-ARDEC is developing plasma arc technology to provide a system for the demilitarization of small, completely assembled, pyrotechnic, smoke and dye ordnance as an alternative to open burning/open detonation and conventional incineration. Other ordnance items can also be processed, with the exception of items containing over 0.20 pounds Net Explosive Weight of HE. Through an interagency agreement with the Department of Energy, the effort is being executed in partnership with MSE-Technology Applications, Inc., located in Butte, MT. A testing program was conducted by MSE using a full-scale plasma system test bed, which included a Retech, Inc. plasma arc centrifugal treatment unit having a 6-foot diameter processing chamber (PACT-6). Feasibility testing on 19 different live items, high feed rate testing, and duration testing was accomplished. Test results were used to design and fabricate a full-scale prototype system, called the Plasma Ordnance Demilitarization System (PODS), with a design basis of 425 lb/hr average throughput. The furnace portion of the system was proved out at MSE's facility. All components for PODS have been installed at Hawthorne Army Depot's Western Area Demilitarization Facility in Hawthorne, NV. The subsystems as well as the entire system has successfully completed start-up and is moving forward with Operational Verification Testing in preparation for the Comprehensive Performance Test which will demonstrate the PODS ability to comply with environmental regulations as well as demonstrate its ability to demilitarize small, fully-assembled munitions. Both the RCRA and air permits have been received for the facility. After conduct of the CPT, demilitarization of a stockpile of approximately 1,000,000 HC white smoke artillery canisters will commence, and will be cost competitive with incineration.