

## **AIR-CURTAIN SYSTEM FOR BLAST-WAVE SIMULATORS TO REMOVE COMBUSTION PRODUCTS FROM THERMAL RADIATION SOURCES**

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Large blast wave simulators already in operation in England and France and those undergoing construction in Germany and planned for the United States are being modified or designed with the capability of simulating both thermal and blast wave effects of nuclear explosion- If the thermal radiation source consists of a single torch or a line of torches in the simulator test section, the combustion of the fuel and oxidizer (eg aluminium particles and oxygen) produces hot reaction products inside the test section. If these combustion products are not removed before the arrival of the simulated blast wave, they accumulate in and around the test section and adversely affect the speed and shape of the simulated blast wave.

The concept and design of an air curtain system for both confining and removing these hot combustion products from blast wave simulators is presented. The system consists of 2 slotted air curtains, one on each side of the line of torches, the air delivery pumps for the curtains with their openings in the channel floor, and venting components in the channel roof. Both conventional fans and blowers as well as jet pumps have been considered for the air moving system. Also described in the time sequence and control of rapidly switching off the torches and air curtains prior to the arrival of the simulated blast wave. The control system includes rapidly activated mechanisms for closing both the inlet ports for the 2 air curtains and the venting ports for the outgoing combustion products and air curtain flows, and shutting off the air pumping components.