

**STUDY ON CUSHIONING CHARACTERISTICS OF
HYBRID AIRBAG SYSTEM**

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ABSTRACT

Airbag cushioning systems offer an attractive means for aerospace vehicle soft landing and heavy airdrop delivery. And the hybrid airbag system constructed by non-vented and constant-vented airbags can provide a soft support at the end point of a cushioning process. Based on energy conservation principle and thermal dynamics equations, a high-efficiency analytical model of hybrid airbag was proposed and validated by LS-DYNA. Then this model was used to investigate the deceleration characteristics of a hybrid horizontal cylinder airbag. A series of simulations were conducted to find out the influence of initial inflation pressure, dimensions, venting orifice area and pop pressure on cushioning properties. The research will provide valuable supports for design parameter selection of hybrid airbag systems.