

Simulation of Horizontal Impact Test System Hydraulics and Drive

Lansmont Corporation, USA

Lansmont Corporation provides state-of-the-art technology to the world's leading companies, government laboratories and educational institutions. Since 1971, engineers around the world have relied on Lansmont technology to discover product vulnerabilities and eliminate unknowns, and ultimately find the perfect balance between a product's intended environment and its durability. In turn, Lansmont's customers reduce damage and improve quality while supporting sustainability.

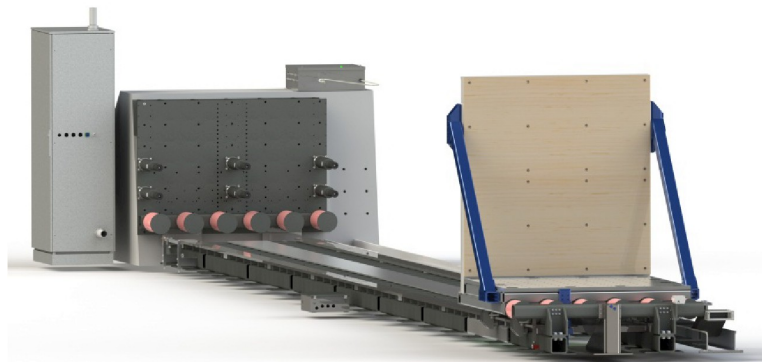


Figure 1: Horizontal Impact Test System Concept.

For Lansmont's next custom Horizontal Impact Test System, we turned to Controllab's 20-sim package to develop the Drive Systems to propel the product carriage down the track. Lansmont's Engineering team modeled the effects of Pneumatic Piston drives, A/C motor driven belts, and Linear Induction Motors on the product to select the best system for the machine and to ensure our customer's requirements are exceeded. Special care was given to increase the natural frequency, and lower the center of gravity of the testing apparatus to ensure that the highest fidelity possible for each test was achieved.

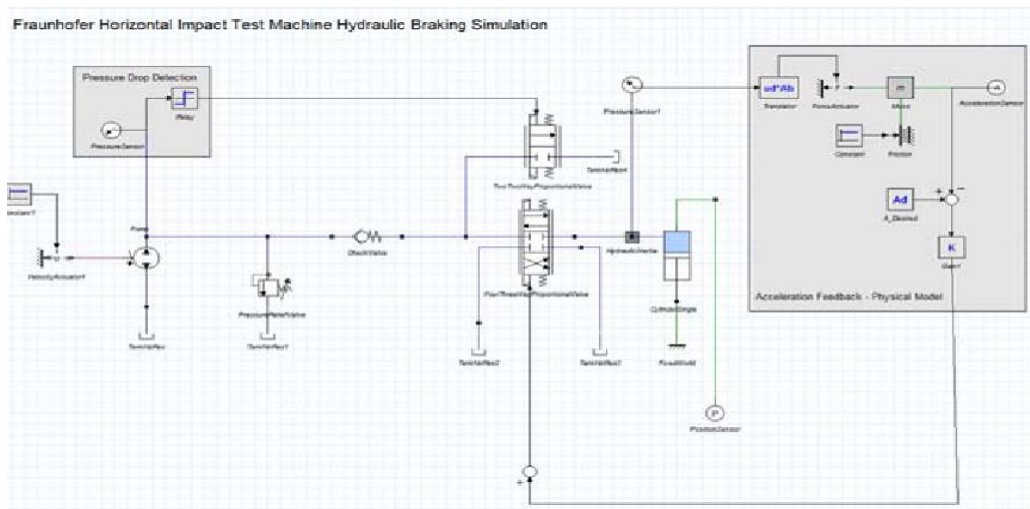


Figure 2: Model of a Developmental Hydraulic Circuit; a Mixed Model.

Lansmont's engineer's also used 20-sim to model the Hydraulic System, focusing on the optimization of the discrete sample rate for the control system, and the location of valves throughout the assembly. Using 20-sim's Iconic Library provided reduced development time for physical models, while the system diagrams allowed for mixed model in continuous and discrete domains. The numerical optimization packages and other toolbox features were found to rival competing, more expensive software and design packages.

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