



Monitoring Irreversible Changes in Burning Structures

Fellows: Leah Anderson, Vatche Aronian, Zach Lupci, Zack Rubin, Casey Schilling, Ben Taborsky
Advisor: Professor Ziyad Durón
August 2007

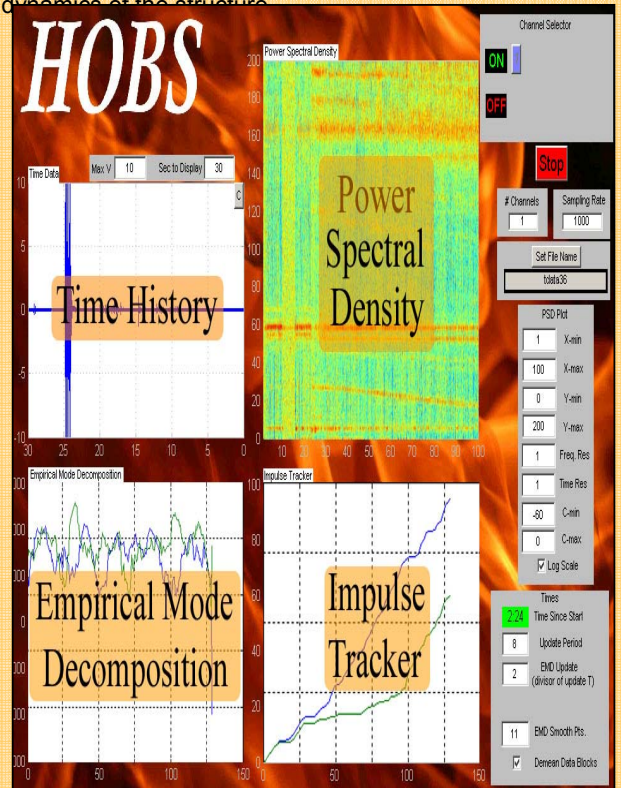


Project Overview

The De Pietro Fellowship's fire research is a part of NIST's Building and Fire Research Laboratory, BFRL. The BFRL is concerned with performance prediction and technical advances to improve constructed facilities and reduce the human and economic losses resulting from structure collapse. The fellowship hopes to develop tools and procedures that will increase firefighter's understanding of burning structures and help them to remain safe.

HOBS (Health Of Burning Structures)

HOBS, or Health of Burning Structures, is a MATLAB-based structural health monitoring tool. It acquires vibration data from accelerometers and implements several real-time algorithms to identify changes in the dynamics of the structure.



WTCA Truss Burn

In the past, the De Pietro Fellowship has conducted dozens of burns ranging from simple beam structures to malls and high schools. This summer, two wooden truss structures were burned at the Los Angeles County Firefighters Training Facility in Pomona, CA. This burn was in anticipation of an upcoming burn in Iowa with the Wood Truss Council of America, WTCA. The burn in Iowa will be a side-by-side comparison between the behavior of joists and trusses when they are exposed to high intensity fires.