

nCode



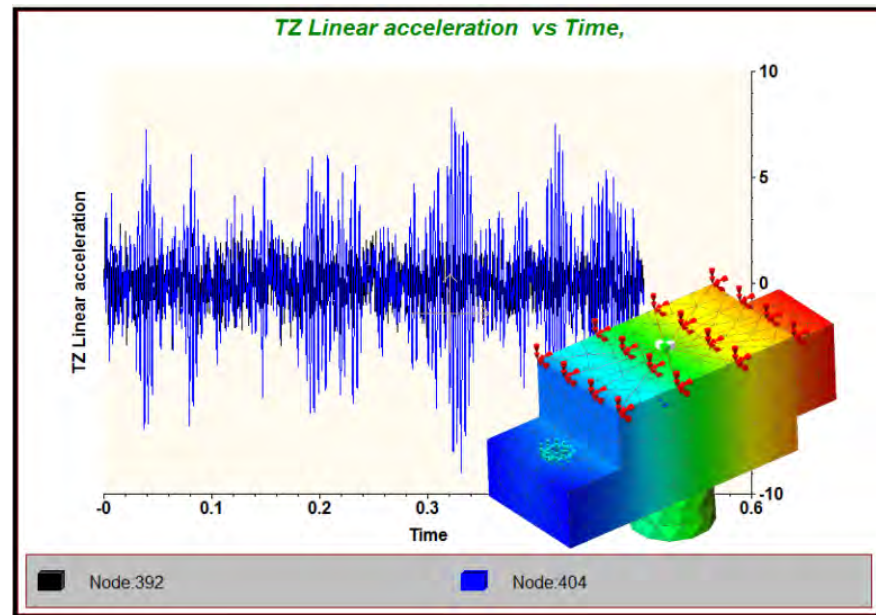
Go Further

nCode User Group Meeting | October 5-6, 2016

Prenscia 

Multiple uses for the Equivalent Fatigue Damage Spectrum Method

Glenn Reed
Mechanical Technical Expert
Ford Motor Company

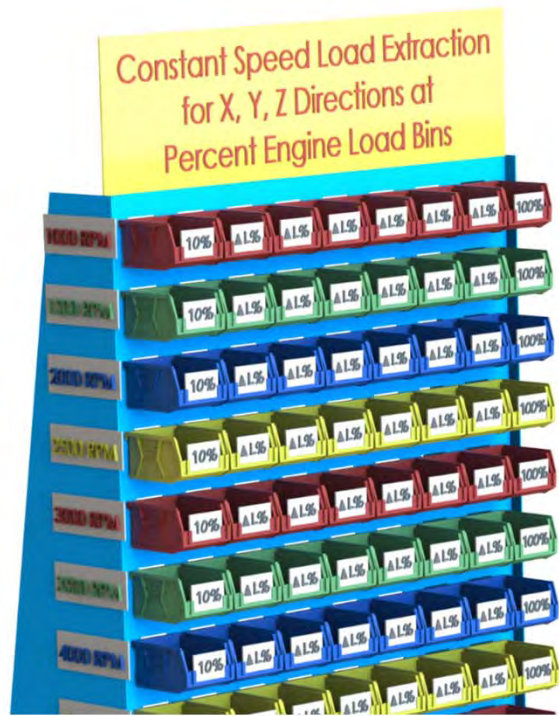


Multiple Uses for the Equivalent Fatigue Damage Spectrum

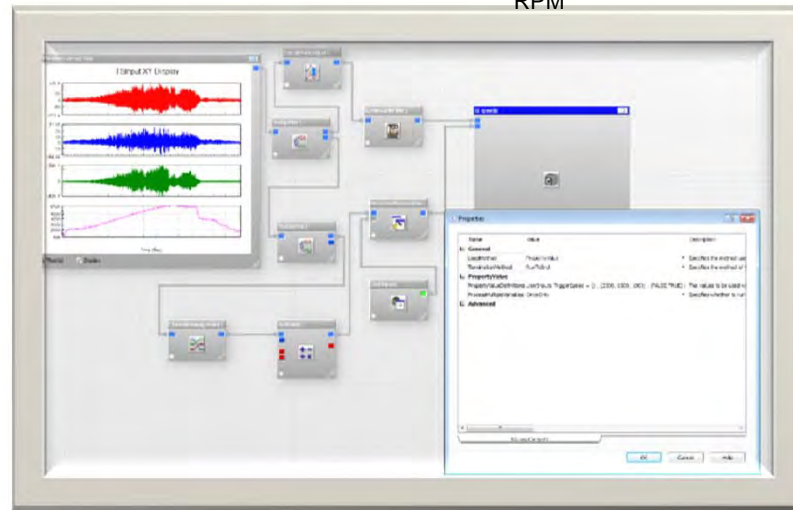
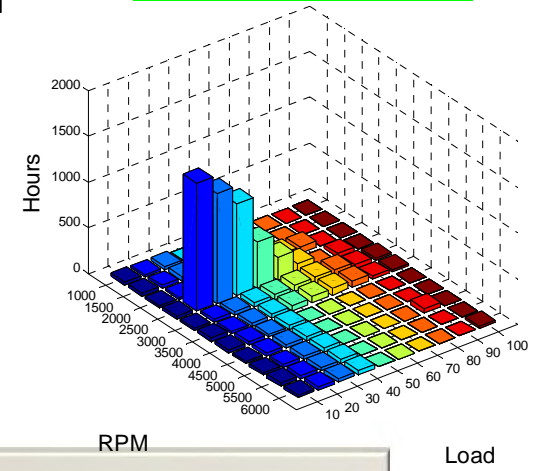
- F.D.S calculation for engine components.
- Comparing test profile F.D.S against the application F.D.S.
- Comparison of enveloped F.D.S and PSDs.
- Using FEM and transfer functions with F.D.S.

F.D.S Calculation for engine Components

Constant Speed Load Extraction at Percent Engine Load



Non-Real Customer Usage



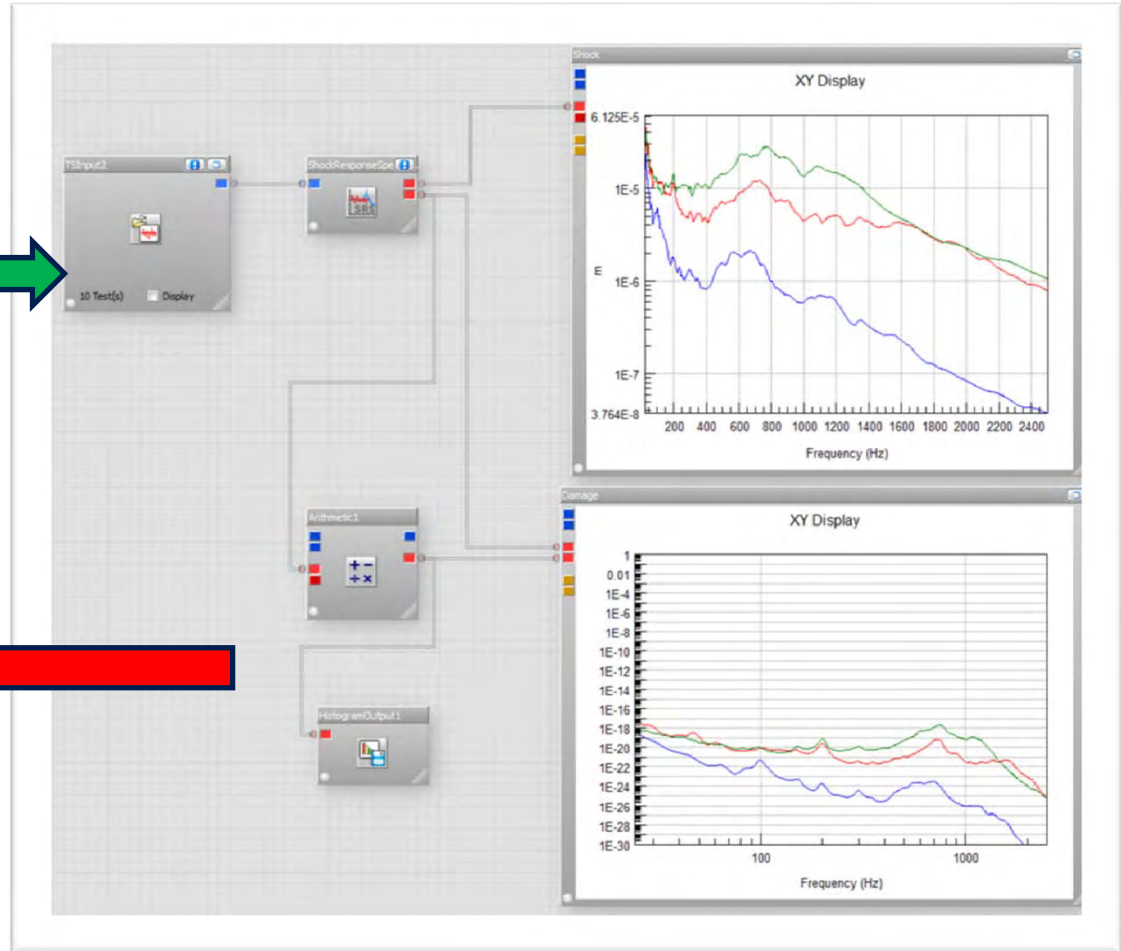
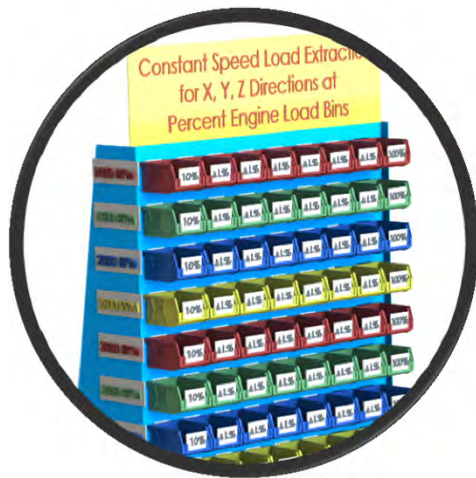
F.D.S Calculation for engine Components

Customer Drive Cycle Impacts Damage



F.D.S Calculation for engine Components

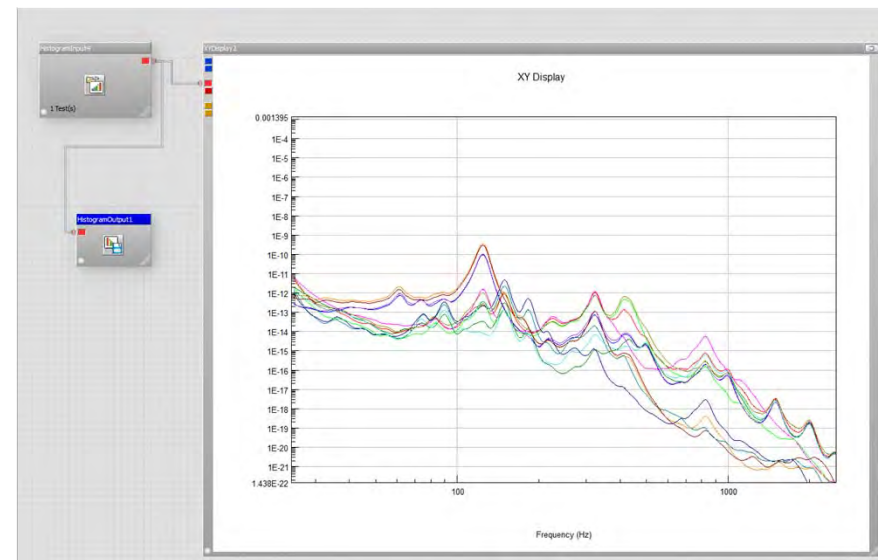
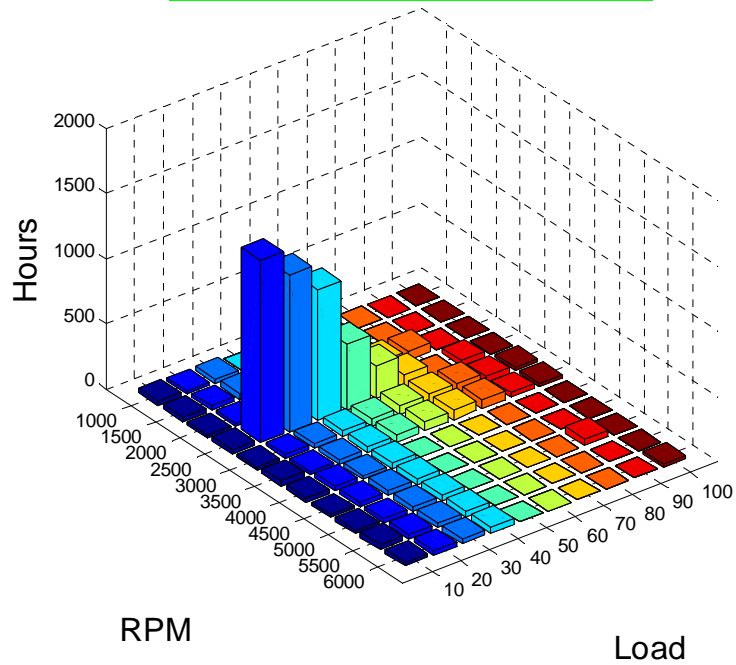
SRS and FDS Calculation



F.D.S Calculation for engine Components

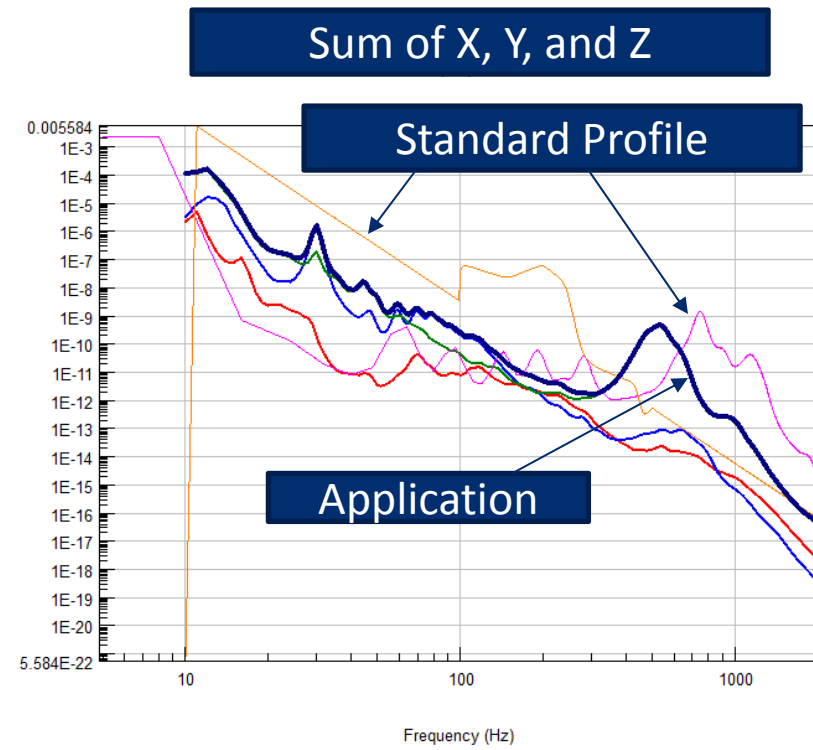
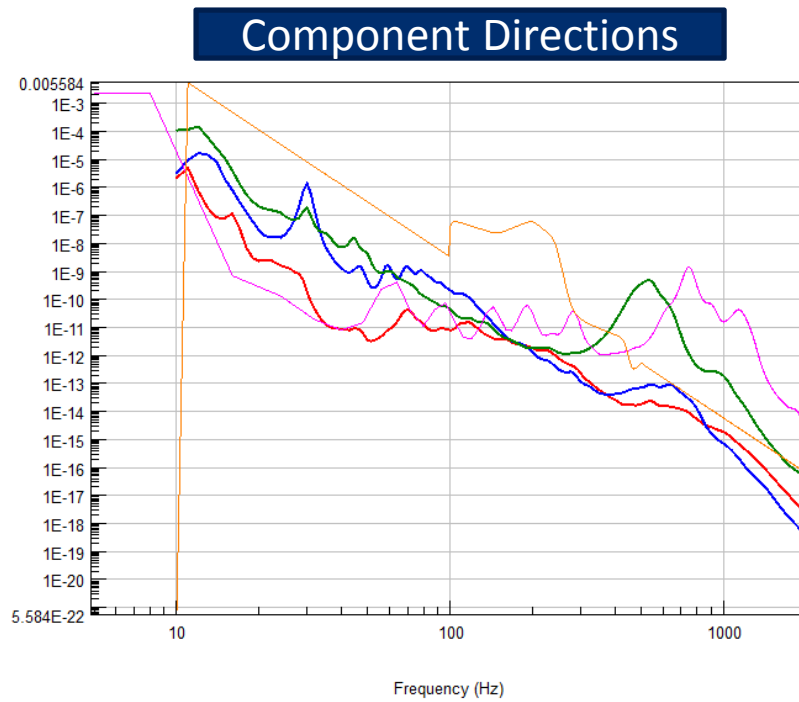
Create Schedule for Application Damage

Non-Real Customer Usage



F.D.S Calculation for engine Components

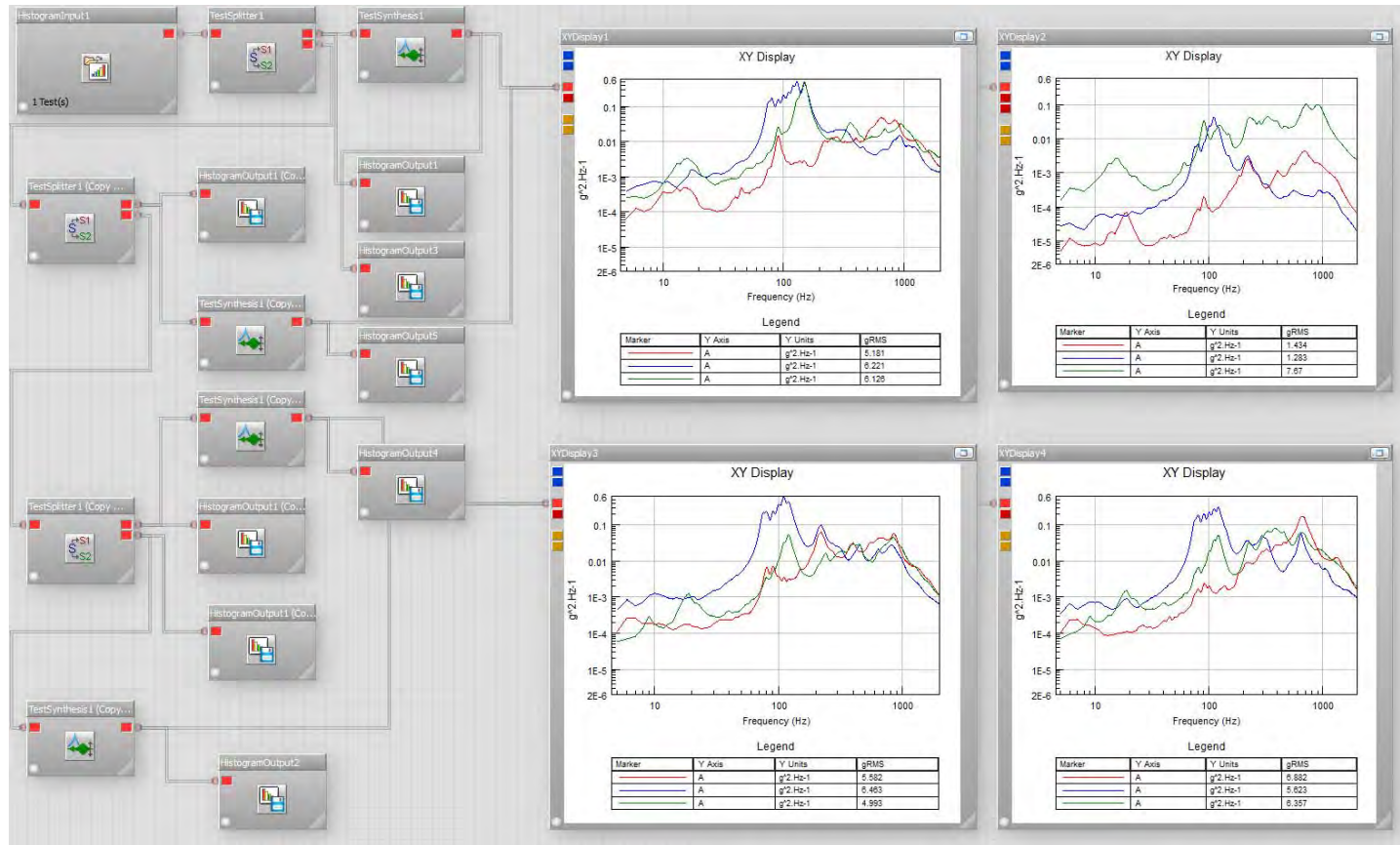
Component Direction RFDS Against Standard Vibration Schedule RFDS



Comparison of Enveloped F.D.S and PSDs

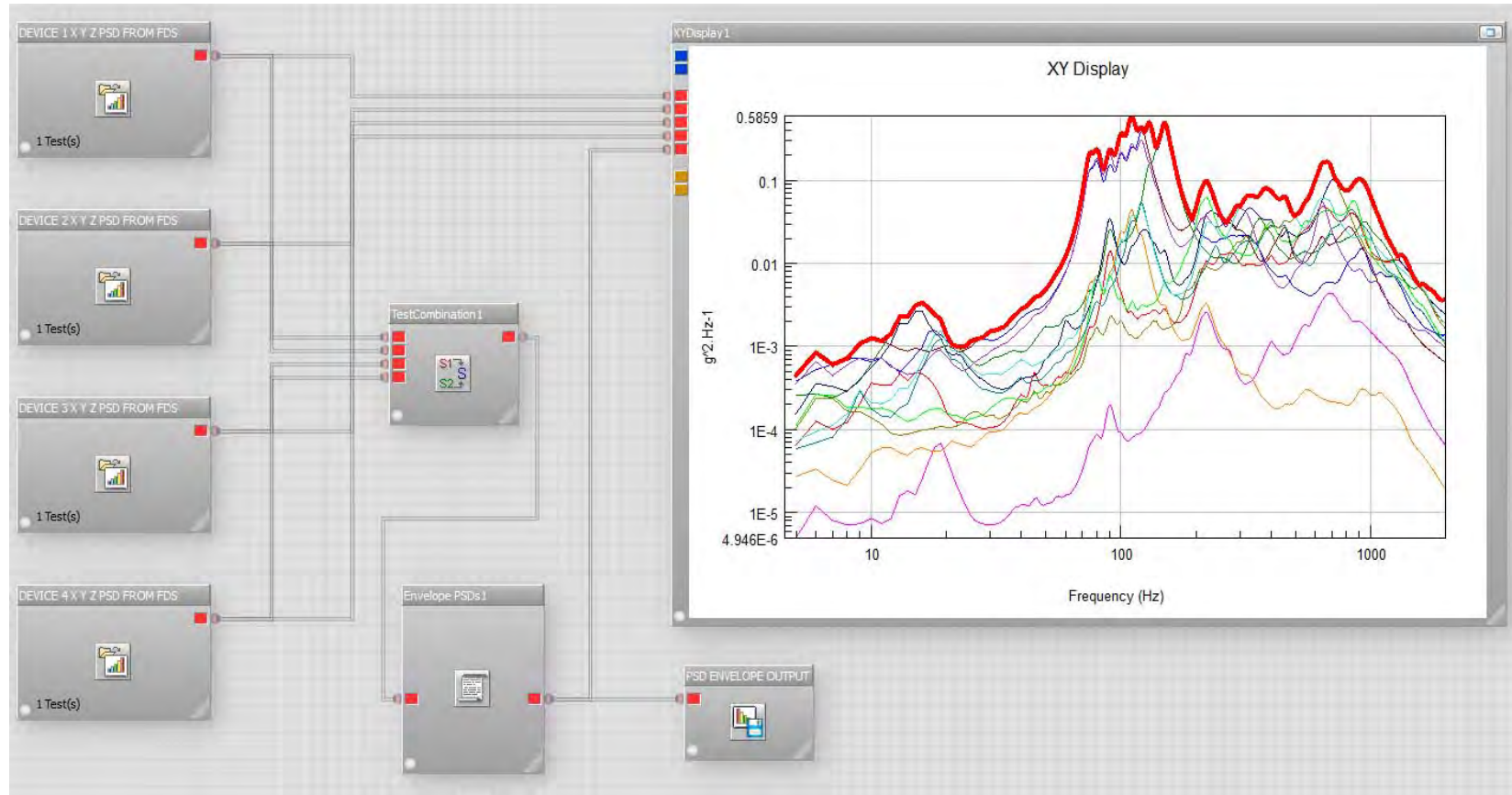
Calculate Damage and PSDs for Multiple Device Locations

Damage from Schedule



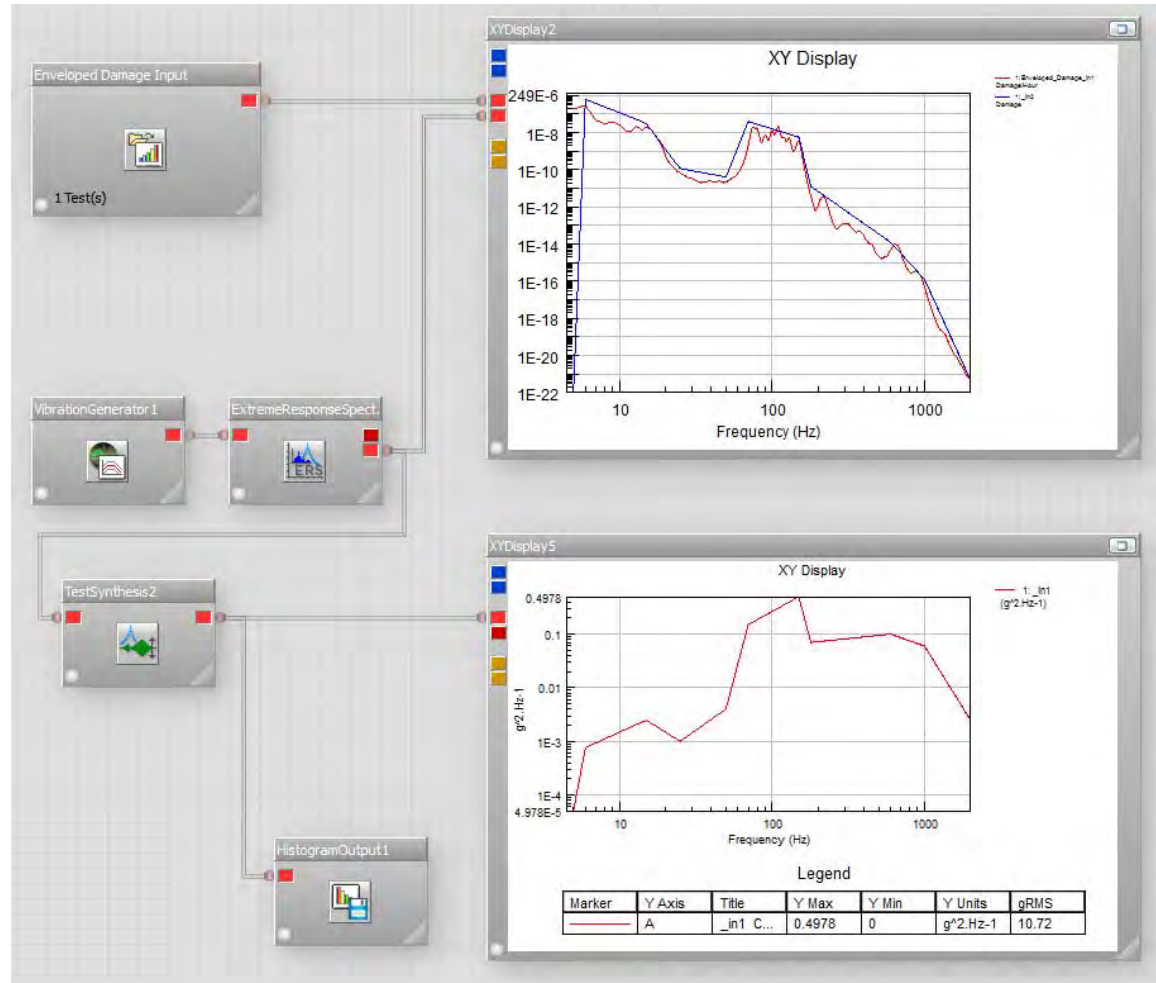
Comparison of Enveloped F.D.S and PSDs

Envelope PSDs for Multiple Device Locations



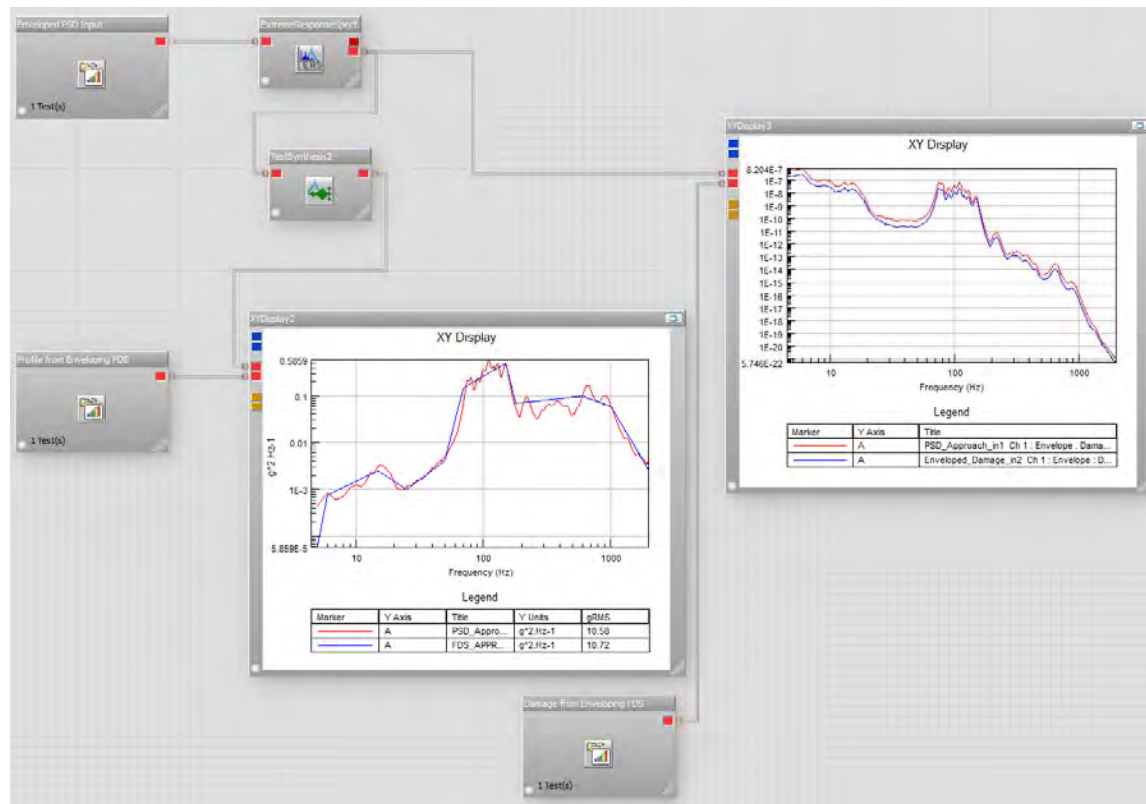
Comparison of Enveloped F.D.S and PSDs

Envelope RFDS Process

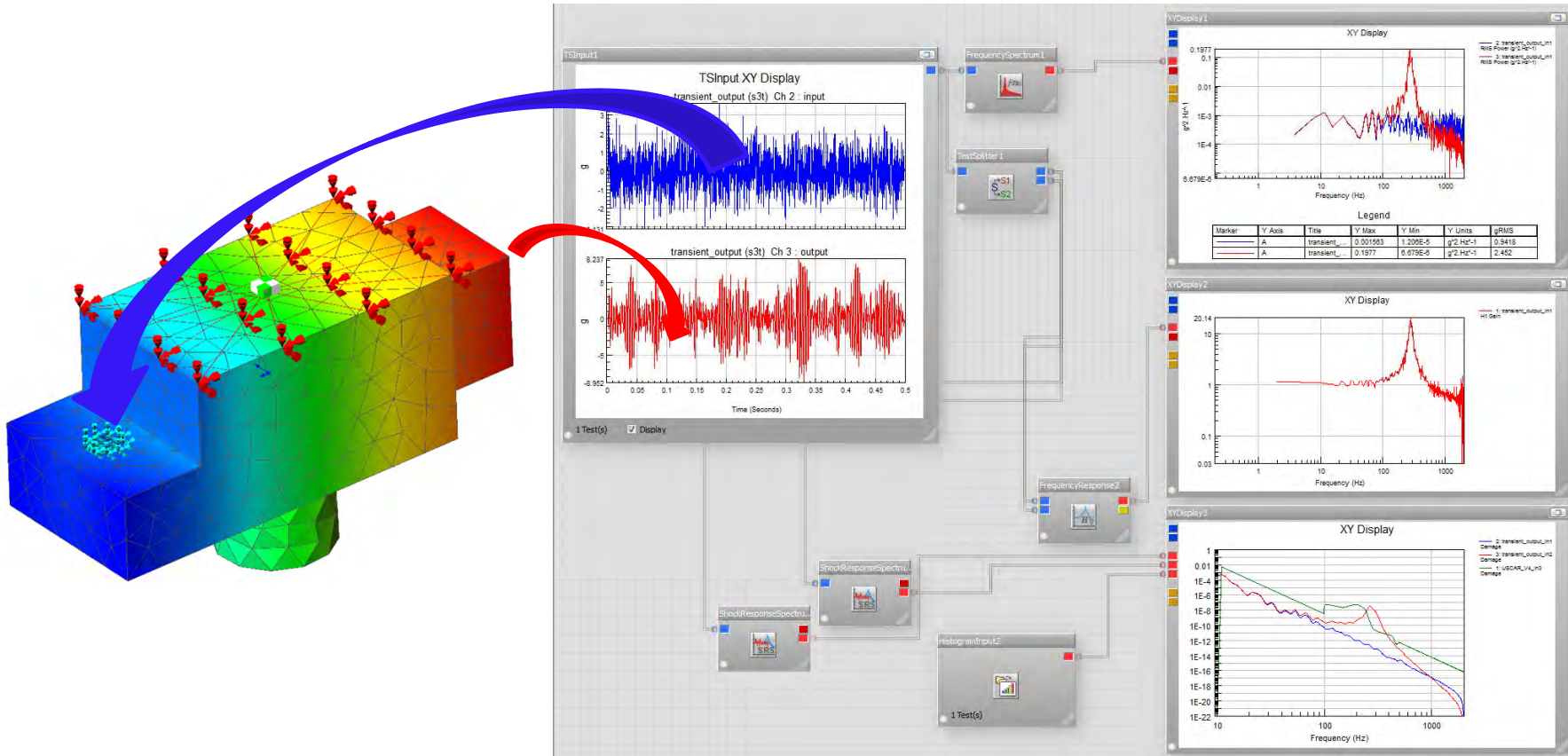


Comparison of Enveloped F.D.S and PSDs

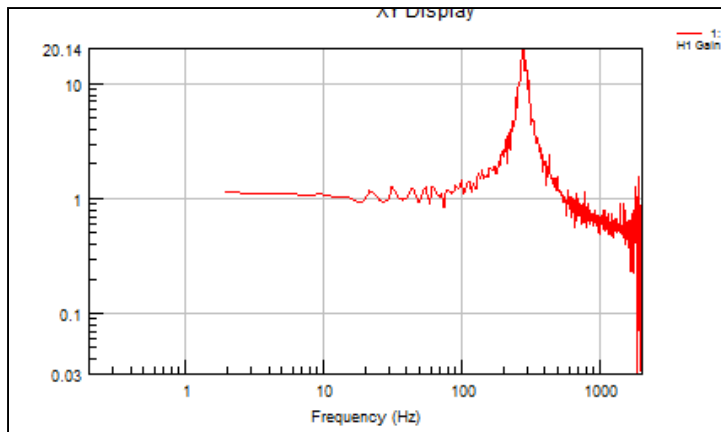
Synthesized Test and Damage Comparison for Enveloped PSD and RFDS Approaches



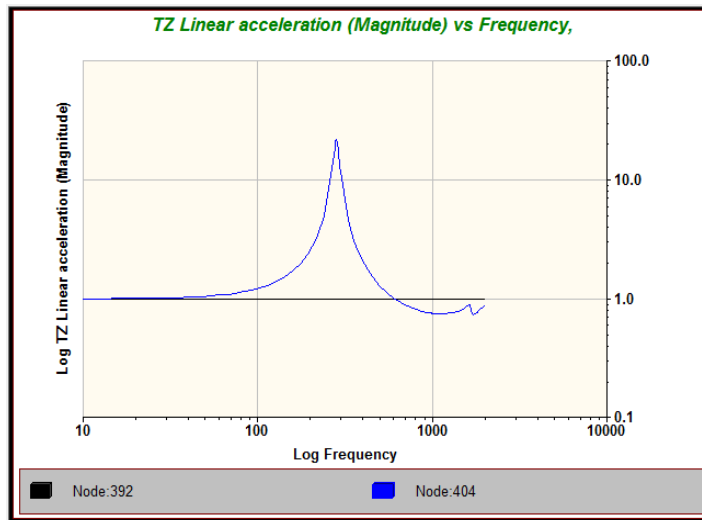
Using FEM and transfer functions with F.D.S.



Using FEM and transfer functions with F.D.S.



nCode GlyphWorks
Frequency Response
using time data



Modal Frequency
Response

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Thank-You