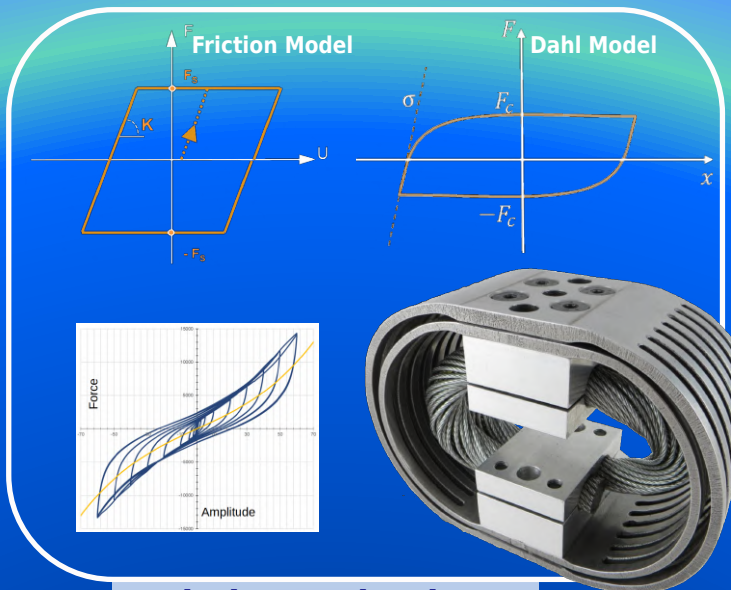
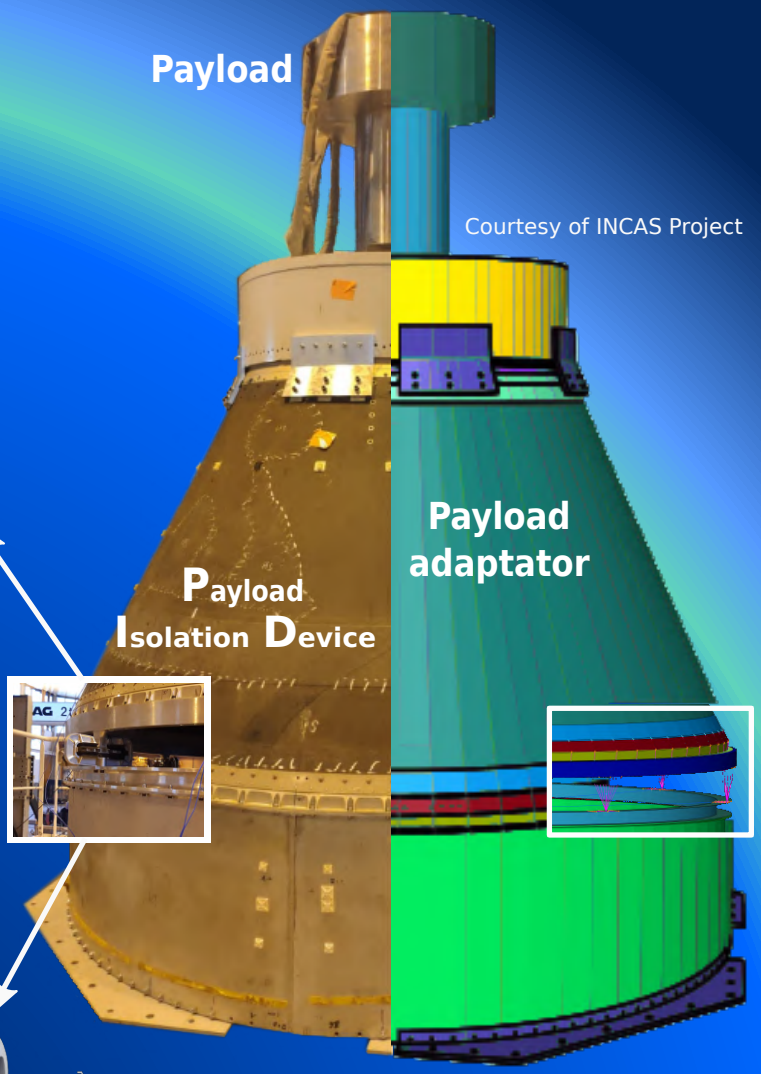
PERMAS

The Finite Element solver

Non-Linear Vibrations

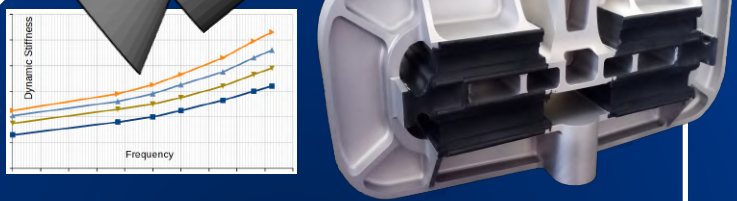


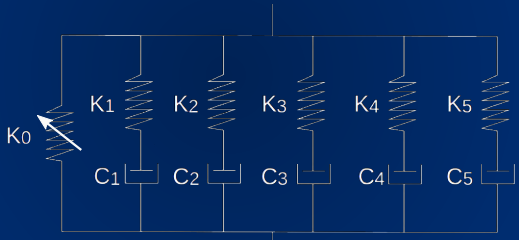
Friction Technology



"Vega-like" Upper Stage Simulation Demonstrator

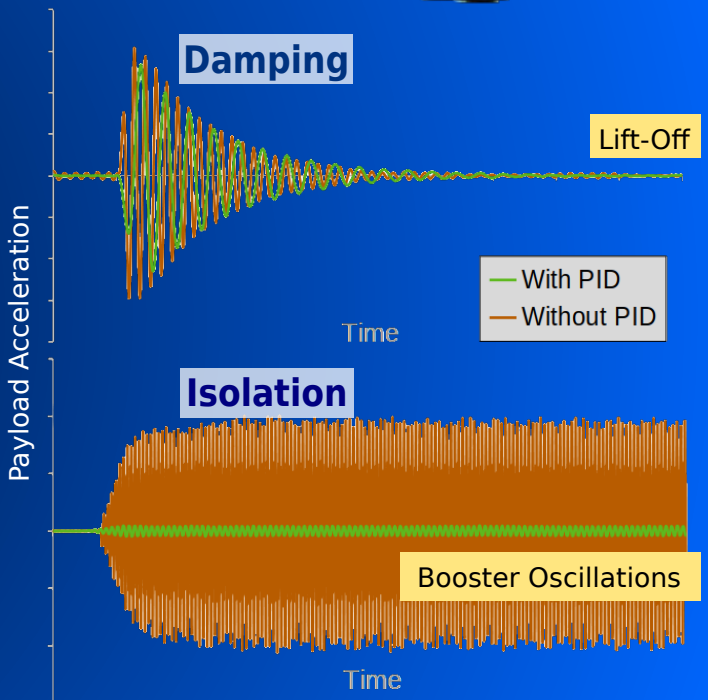
P.I.D.





Generalized Maxwell Model

Elastomer Technology



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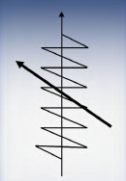
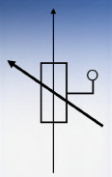
The Finite Element solver


Non-Linear Stiffness


Non-Linear Damping


Non-Linear Control Element


Non-Linear Bouc-Wen Element

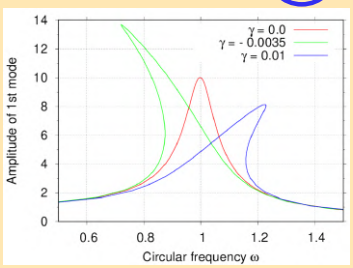
Non-Linear Elements Library

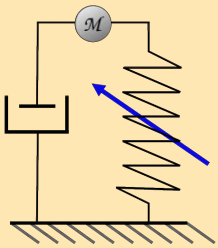
Harmonic Balance Method

Based on Modal or Direct Integration with Fluid-Structure Interactions

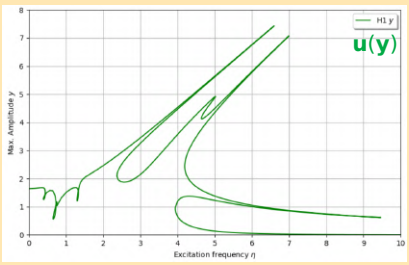
Duffing Oscillator

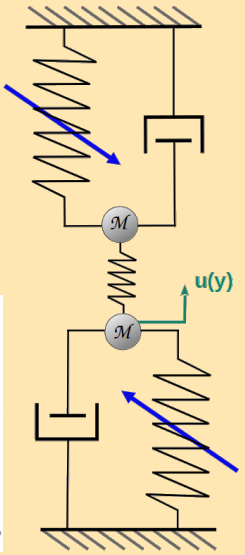
$$\ddot{x} + \delta\dot{x} + \alpha x + \beta x^3 = \gamma\cos(\omega t)$$

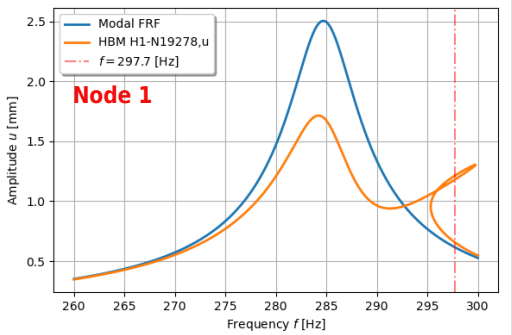


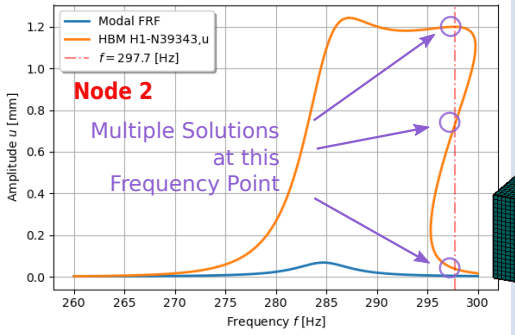


Double Duffing Oscillator

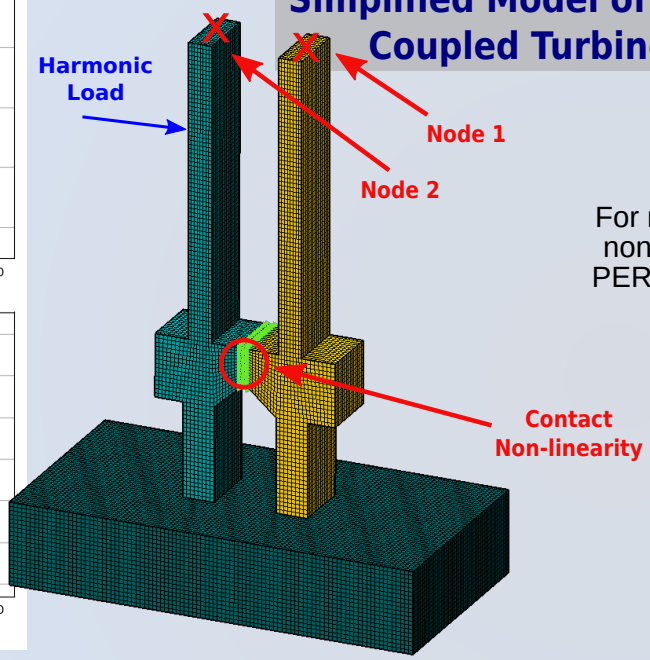








Simplified Model of Non-linearly Coupled Turbine Blades



For more information about non-linear simulations with PERMAS, visit our website
www.intes.fr
or send us an email at
point-contact@intes.fr

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