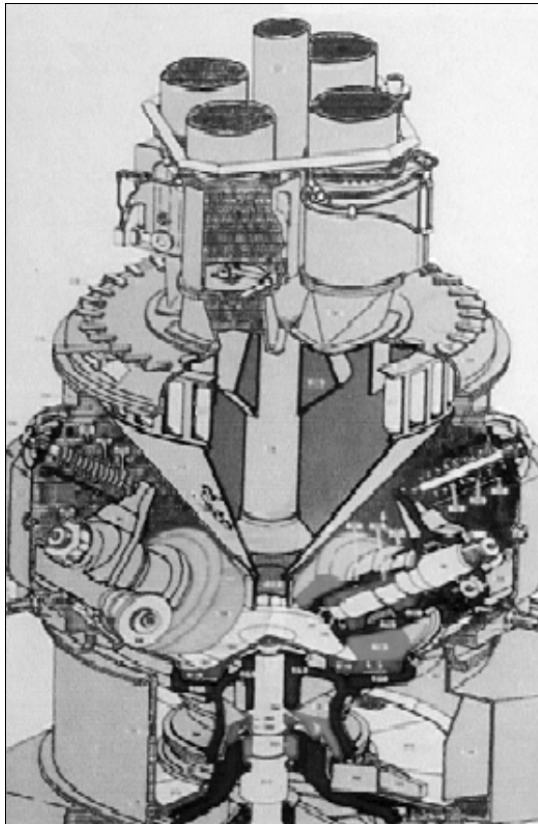


Industrial Case Study (Engineering Consultants Group, Inc. – Machinery Vibration)



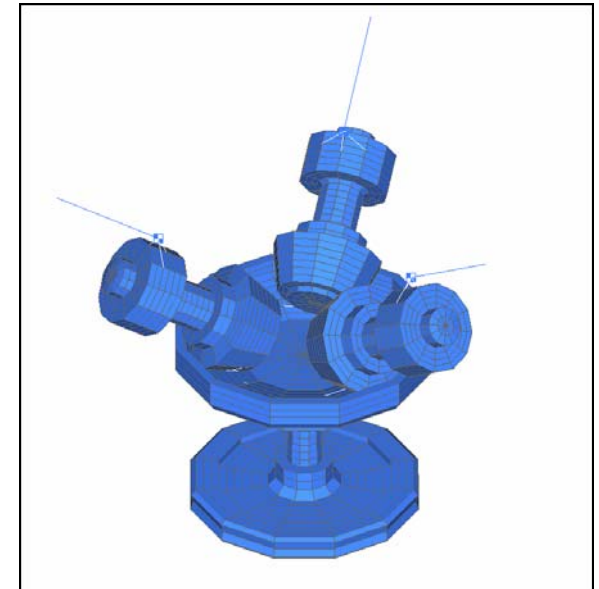
Engineering Consultants Group, Inc. (www.ecg-inc.com) used NEi Nastran to analyze a coal mill (left) that was observed to go into resonance at various coal feeder speeds.

First, the company measured the dynamic displacements of the three grinding rollers using instrumentation techniques developed in-house. It was determined that shaft failures occurred as a result of the resonant condition.

Next, a finite element model of the mill and grinding rollers was developed (right). The two major components of the FEA model were tied together through the coal bed stiffness.

The results showed that bearing excitation frequencies initiate resonance of either the first or second mode of vibration. Measured mode shapes corresponded to the ones calculated by the FEA analysis.

For the future, support is being sought to evaluate the effects of installing dampers in the mill to reduce resonance, which will significantly prolong shaft life. The company plans to use commercial dampers and use a random vibration analysis available in NEi Nastran to evaluate damper designs, fabricate a design, install the damper and measure the response.



NEi Software, Inc. is aggressively focused on commitment to the customer. Detailed documentation, customized on-site training, and comprehensive technical support ensures that you will see immediate return on your investment.

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