The primary goal of vibration tests of aerospace hardware is to identify problems that, if not remedied, would result in flight failures. This goal can only be met by implementing a realistic (flight-like) test with a specified positive margin. However, it has been known for over 30 years that the major cause of overtesting in aerospace vibration tests is associated with the infinite mechanical impedance of the shaker and the standard practice of controlling the input acceleration to the frequency envelope of the flight data. This approach results in artificially high shaker forces and responses at the resonance frequencies of the test item. The advent of piezoelectric triaxial force gages has made possible an alternative, improved vibration-testing approach based on measuring and limiting the reaction force between the shaker and test item. Also vibration test controllers now provide the capability to limit the measured forces and thereby notch the input acceleration in real time. To take advantage of this new capability to measure and control shaker force, Scharton of the Jet Propulsion Laboratory (JPL) developed a rationale for predicting the flight-limit forces. He and his colleagues at JPL have applied force limiting to many flight project vibration tests during the past fifteen years. Force limited vibration tests are now conducted routinely at several NASA Centers, Government laboratories, and many aerospace contractors. Force limited vibration testing theory, implementation methodology, and several application examples will be presented.