

ABSTRACT

WRINKLE CHARACTERIZATION AND PERFORMANCE PREDICTION FOR COMPOSITE STRUCTURES

Methods that provide wrinkle characterization and performance prediction for wrinkled composite structures using automated structural analysis. In accordance with some embodiments, the method combines the use of B-scan ultrasound data, automated optical measurement of wrinkles and geometry of cross-sections, and finite element analysis of wrinkled composite structure to provide the ability to assess the actual significance of a detected wrinkle relative to the intended performance of the structure. The disclosed method uses an ultrasonic inspection system that has been calibrated by correlating ultrasonic B-scan data acquired from reference standards with measurements of optical cross sections (e.g., micrographs) of those reference standards.

Fig. 5