Damage classification in CFRP laminates using the NDT/E approach

ABSTRACT

There are two main factors that need to be considered as important parameters that affect the response of a structure: kinetic energy ($E=1/2mv2$) and potential energy ($E=mgh$). For instance, if one has a large mass but with lower height, the amount of damage produced on the structure may not be the same as if one has a smaller mass with a higher dropping height although the potential energies will be the same. Therefore, before performing tests on the structures, the selection for the appropriate test apparatus and test procedures must be made carefully to ensure that the test conditions are similar to the actual impact conditions. In this current work, a study was conducted to fully understand the damage progression and growth, not only should the impacted surface be evaluated, but also the cross sectional defects on the impacted area must be accurately identified and examined. In this current work, the impacted test specimens will be observed at different magnifications to distinguish the types of failure mechanisms using Scanning Electron Microscopy (SEM). To perform this, the impacted specimens will be examined by two different approaches: surface defects and cross-sectional defects. This allows the failure mechanism to be observed more precisely.