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PROGRESSIVE FAILURE ANALYSIS OF COMPOSITE FLAT PANELS WITH CIRCULAR CUTOUT USING HASHIN'S CRITERIA

GAUSPIRA S. MAKANDAR

*Assistant Professor
Department of Mechanical Engineering,
G.M. Vedaik institute of technology, Tala
gousmakandar@gmail.com*

VAIBHAV APPASO UGARE

*Design Engineer,
Sparkline Equipments Pvt. Ltd.,
Pune, India.
ugarevaibhav@gmail.com*

ABSTRACT:-A progressive failure analyses (PFA) approach is developed for fiber reinforced composite panel with cutouts using Hashin's criteria. The objective of this project is to simulate the initiation and material degradation of a laminated panel due to intralaminar and interlaminar failures and understand the physical response of a composite panel under compressive loading. Progressive damage will be analyzed through the application of Hashin's failure criteria in built within ABAQUS. As a result of failure, the appropriate material stiffness properties will be reduced. The inclusion of the failure criteria will allow for the identification of the failure mode. The set of results with different cutout sizes are obtained to indicate initiation and complete failure.

Keywords— Progressive Failure Analysis, Hashin criteria, UMAT, Damage Initiation, Damage Evolution etc.



ELECTRIC FIELD STRUCTURE ANALYSIS OF ELECTROSPINNING OF POLYMER NANOFIBERS BY ANSOFT AND ANSYS

PROF P.MAUTADE

*Asst. Professor
Department of Mechanical Engineering,
G.M. Vedaik institute of technology, Tala
pramodantade45@gmail.com*

DR. H.N.NARASIMHA MURTHY

*Professor and Dean
PG Studies
R.V. College of Engineering,
Bangalore, India*

ABSTRACT:- Electrospinning is one of the reliable industrial technologies used to produce nanofibres. Highly controllable electrostatic field parameters are essential for the expected size and properties of the nanofibres. Comprehensive study of the parameters of electrospinning process for their influence on the diameter of electrospun nanofibres was undertaken. Diameter of the electrospun fibres were computed by using the Scaling law and the same was validated with the experimental diameter of electrospun nanofibres. Finite Element Analysis was carried out for the electric field structure. Validation of FEA results with the experimental diameter of electrospun nanofibres was performed. The electric field distribution was analysed in different voltage levels and results were obtained with the help of Ansoft and ANSYS software. Electric field values were calculated theoretically and determined through software. The minimum diameter was 381.02 nm for 15 kV. Based on the finite element calculation theory of electric field, finite element model of electric field was established using Ansoft and ANSYS software. Minimum diameter obtained using Ansoft was 192.60 nm for 15 kV and that by ANSYS Software was 200.52 nm for the same voltage.

Keywords—Electrospinning, Electrospun, TCD, FEA, ANSYS