GENOA 5
Tested and Verified.™

GENOA FILAMENT WINDING (FW)

GENOA Filament Winding is an add-on package that allows users to design and analyze COPVs. Filament winding process is modeled and can account for liner pressure, variable liner, tape widths and overlaps. The result is a winded model with residual stresses to be used for the certification analysis which will include burst pressure analysis, loading / unloading, fatigue life assessment, impact analysis, and more. Tests can be reduced by 65% during this certification process.

Product Highlights

- ✓ Supports design and analysis of composite over-wrapped pressure vessels (COPVs).
- ✓ GENOA-FW combines advanced composite mechanics with a special module for filament winding analysis.
- ✓ The outcome is the recommended number of hoop/helical windings, thickness of each ply, estimated burst pressure, total composite weight after winding, and more.
- ✓ Duplicates the manufacturing process by generating the correct tape schedule at each location on the COPV FEM model and calculates residual stresses caused by the filament winding process with tape tension effects.
- ✓ Handles HOOP and HELICAL wrapping techniques. The winding angle, overlap, and number of circuits determine whether the wrapping covers the whole surface without gaps/voids.
- ✓ Permits variable thickness metallic liner, import external tank models, generate bonded and un-bonded liner for COPVs.
- ✓ **Couple with Progressive Failure Analysis of a COPV design to simulate complete certification process: burst pressure analysis, loading / unloading, fatigue life assessment, impact analysis, and more.**

Key Benefits

- Design of filament wound pressure vessels for defense, automotive and aerospace applications.
- Predicts failure location and corresponding load. Permits creation of design configurations with increased durability and damage tolerance.

System Requirements

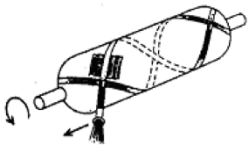
- Windows 2000/XP/Vista/7/8 or Linux (64-bit)
- Java 1.7 minimum Runtime Libraries

Minimum Configuration

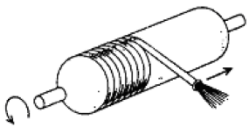
With the minimum configuration, performance and Functionality may be less than expected.

- 1 GHz or higher CPU, 4GB RAM, 10GB disk space

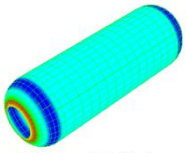
From Design to Certification of all Types of COPVs



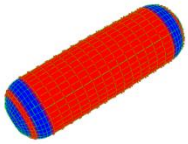
Helical winding



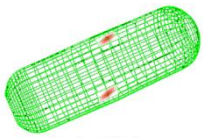
Hoop winding



Thickness Distribution



Damage Distribution



Fracture Initiation

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More of Alpha STAR's Test Validated products:

MCQ: Composites, Ceramics, Metals, Nano, Chopped

GENOA: PFA, PFDA, UAB, URD, ABS, PCP, PA, Quasi Static Fatigue & Random Fatigue, Harmonic & PSD Fatigue, Fatigue with Fracture Mechanics, PFA_AGING, VCCT, DCZM, Filament Winding, Jobspooler, GENOA_CLOUD