The CADFIL®-Axsym package can generate winding programs for all rotationally symmetric components including pipes, spheres, gas bottles, golf shafts, storage tanks… the possibilities are endless. The following information briefly describes the basic stages of program generation and shows some of the many features of the system. Other software options exist for more complex parts such as pipe bends, Ts, and elliptical sections to name but a few of the options. Cadfil software operates on standard PC hardware using Windows.

The Mandrel Geometry and winding machine clearance envelope can be quickly entered and modified from a single easy to use dialogue box. The graphics and text windows are automatically updated.

Convex and concave arcs can be fitted between data positions and edited as required.

The clearance envelope allows close control whilst preventing machine collision with the mandrel. For simple shapes an envelope can be automatically created.

Having created the mandrel geometry the user can interactively create non-slip geodesic fibre paths. Non-geodesic paths can be created using the friction facilities. In this way the user can control wind angles and turning diameters.

The 3D geometry and paths can be viewed from pre-set viewpoints or from any user-defined viewpoint.

For parts such as gradually tapered shafts (e.g. golf shafts) the user can generate constant wind angle (non-geodesic) paths using the constant angle option.
Having created fibre path with two turning points the software calculates the number of circuits required to cover the mandrel based on material parameters such as the fibre band width and the number and type of rovings to be used.

A band pattern table is created (see across) and the user can select the band structure required. If required the number of cycles can be adjusted to give alternative patterns.

The selected band structure can be viewed in the 3D viewing system (see below).

The user is given important data such as a thickness graph of the part and the amount of fibre used. Neutral file interfaces can be supplied to output data for Finite Element Software.

Machine positions are calculated using the envelope and saved to a data file. All CADFIL data files are text files and can be viewed if required.

The machine positions can be displayed in 3D around the mandrel or if required the user can define the machine fibre dispensing head using brick and cylinder solid shapes and perform a full 3D animation including all machine motions such as eye roll and eye yaw. An example of this is shown in the panel opposite.
All Cadfil software is complete with datakey and a comprehensive online manual. Telephone support and software upgrades for the first 12 months are also included in the purchase price. Cadfil-Axsym also includes QuickCAD options for simple parametric program generation for pipes and dome ended vessels (Cadfil-Lite).

For further information on CADFIL-Axsym or other filament winding software contact:

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