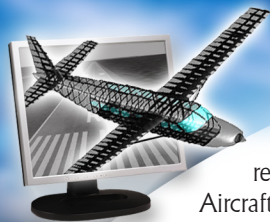


AEROPACK



AeroPack

is a collection of unique drawing tools created specifically for airplane design and drafting that can also read geometric information from the Advanced Aircraft Analysis (AAA) analysis modules. AeroPack is not an independent software application. AeroPack is an enhancement to Punch Software Shark and Shark FX, the new standards in Conceptual Computer Aided Design (CCAD).

Shark and Shark FX are full featured 2D & 3D digital design solutions that provide versatile modeling practices and precision drafting capabilities all within one seamlessly integrated package. Shark and Shark FX support an integrated collection of 2D, 3D, surface, and solid modeling tools, including numerous spline creation and modification commands, seventeen surface construction methods, blending, chamfering, shelling, stretching, twisting, bending, and foreign part editing tools. All surface and solid modeling operations transparently support associativity and a history tree for rapid design modifications.

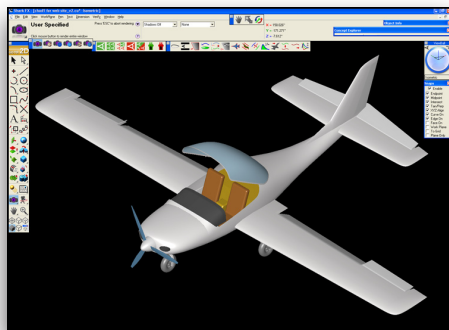
Shark and Shark FX have been designed, from the ground up, to be intuitive for the casual user as well as the professional engineer. And unlike faceted based conceptual design packages, Shark and Shark FX use a precise kernel that facilitates the sharing of data using IGES, STEP, and AutoCAD® DXF/DWG file formats. Shark and Shark FX supports reading native CATIA® v4 and PRO/E Wildfire® parts and assemblies as well as SAT for sharing with SolidWorks®.

Shark FX provides photorealistic rendering, animation, and precision drafting capabilities to add visual realism to your designs. Drag and drop materials, textures, and decals onto parts. Use the material editor to tweak reflectance, color, displacement, transparency, and texture space attributes. Add lights, backgrounds, foregrounds or environment maps to further enhance the scene. For output, generate poster size, ray traced anti-aliased images or add life to your presentations with object based animation or QuickTime VR. Keys to the innovative user interface include smart prompting and tips, intelligent snapping through LogiCursor, and over 80 minutes of training videos.

AeroPack Tools

• Polyconic Surfaces

A Polyconic Surface is a surface constructed along a path of smoothly changing conic sections. Adjacent surfaces can be easily made exactly tangent to each other so there will be no bumps or dips in your finished airplane. This result is very important in composite airplanes with smooth surfaces that reveal the slightest errors in curve geometry, but nearly impossible to achieve with conventional or freeform curve drawing methods.

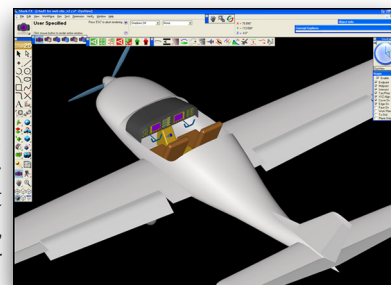


• Airfoil Generation

Airfoils can be constructed from files (spline through digitized points) or from NACA/NASA equations.

• Lifting Surfaces Planform Generation

Lifting surface planforms can be generated automatically given different combinations of span, root chord, tip chord, sweep, aspect ratio, taper ratio and surface area parameters.



• Area/CG Curve

This tool calculates and displays the cross sectional area of a component or complete configuration as a function of the distance along a specified axis. This tool is useful for area-ruling transonic or supersonic cruise airplanes.

• Obscuration Plot

The field of view of a pilot, sensor or antenna can be calculated and plotted.

- Sum Curves
- Perimeter Curve
- Curve Integration

- Replace Curve
- Plot Curve
- Mean Geometric Chord

- Space Spline
- Import Airplane
- Export Curve

Shark FX-AP integrates AeroPack into Shark FX, which is a full-featured application that supports an integrated collection of 2D, 3D, surface, and solid modeling tools. Shark FX-AP includes numerous spline creation and modification commands, seventeen surface construction methods, blending, chamfering, shelling, stretching, twisting, bending, and local face operations. All modeling operations transparently support associativity for rapid design iterations.

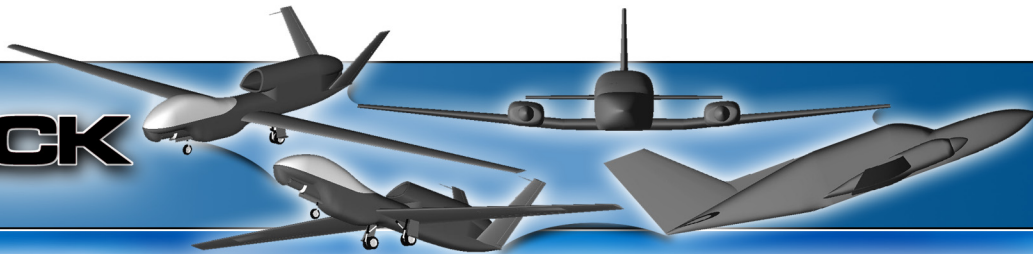
Shark-AP integrates AeroPack into Shark, for an affordable curve, surface, and solid modeling software application that provides state of the art modeling tools without sacrificing speed and ease of use. The simple user interface combined with intelligent snaps and integrated design methods make Shark-AP the perfect solution for amateurs and kit airplane builders.

Shark FX-AP has Photo Rendering and Animation

- RayTracing, Shadows, Transparency
- QuickTime OBJ VR Movies
- Camera Path Animation
- Object Path Animation
- Rapid Render Presets
- Drag/Drop Decal Library

Minimum System Requirements

- Microsoft Windows XP Professional, Vista or Windows 2000
- Intel Pentium or AMD Athlon class processor
- 512 MB RAM
- Mouse
- DVD Drive
- Mac OSX 10.4
- OpenGL
- G4 or G5
- 512 MB RAM
- DVD Drive
- Mouse (2 Button Recommended)



Features in Shark & Shark FX

Usability

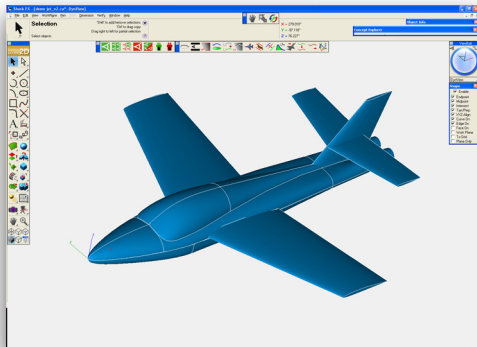
- Snaps for intelligently locating x y z coordinates, tangents, and perpendiculars
- Concept Explorer to examine and modify associative relationships and construction history
- Customizable key short cuts
- Prompt Window for prompting designer through commands
- Data Entry Window for explicit creation and modification of geometry
- Object show/hide tools
- Object Info Window
- Layers and Sub Layers
- Tool Tips
- User defined views, work planes, and pen styles
- Dual Monitor Support

Precision Kernel

- Precise kernel serves as foundation for NURB and analytic based geometry definitions

2D and 3D Wireframe

- Points, Lines, Arcs, Circles, Ellipses and Conics
- Double Line Tool
- Splines construction methods of Fit through point, Control Point, Bezier, On Surface, and Sketch
- Add, remove, elevate, smooth spline control points
- Dynamic modification of position and tangencies
- Smart Polygons
- Dynamic curvature plots
- Project curve to plane
- Best in class offset, trim and relimit curve tools
- Offset, trim and relimit curve tools
- Connect and Join
- 2D Fillet, Chamfer and Corner
- 3D Curve Fill
- Text (Horizontal, At Angle, Within Box, Along Curve)



Utilities

- Group, Lock
- Transformations: Translate, Rotate, Mirror, Scale (and Non Uniform), Linear and Polar
- Duplicate, Align, Stretch, Twist

- Verify (2 Point Distance and Angles, Lengths and Minimum Distance, Interference Detection, 2D Planar Properties (Area, Centroid, Principle Moments), Dynamic Curvature Plots)

Surfacing

- 1 and 2 Rail Sweep
- Extrude by Vector
- Cover (Coon's and N-Sided)
- Skin, Skin with Guides, and Skin with Draft
- Nets (MxN curve networks)
- Offset
- Blend with user defined takeoff magnitudes
- Fillet
- Rebuild, Elevate, and Join
- Thicken
- Capping and Filling
- Match G1 or G2
- Trim and Untrim
- Associativity for all creation and modifications
- Gaussian, Zebra, Draft Analysis

Solid Modeling

- Constant and Variable Filleting and Chamfering
- Shelling, Holes, Bosses
- Extrude, Sweep, Lathe
- 1 and 2 Rail Sweeps
- Protrusions and Cutouts
- Booleans (Add, Subtract, Union).
- Trim and Split
- Thicken To Solid
- Stitching and Healing with user defined tolerances
- Primitives
- Holes
- Bosses
- Lofting between Faces
- Inflate/Deflate Face
- Feature Patterns
- Pipes
- IBrached Solids

Solid Editing

- Parametric Features
- Associative History Tree
- Deform Face
- Remove, Offset, Move, Replace, Match Face
- Bend and Bend Along Curve
- Draft Faces
- Stretch, Twist, Bend, Bend Along Curve
- Mate, Align, Insert Faces

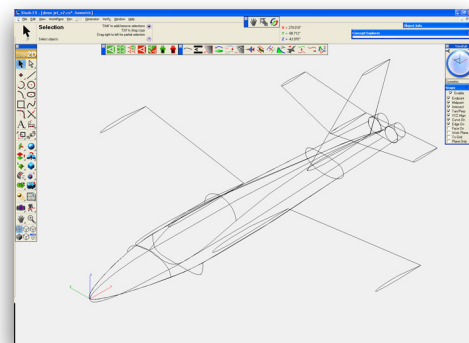
Animation/Detailing

- Generate side, front, top, and isometric views automatically from 3D models and templates
- Easily Create Section, Detail, and Auxiliary Views
- Pen Weights, Patterns, Styles
- Horizontal, Vertical, Radial, Diametric, Center
- Marks, Leaders, Callouts, Angular Dimensions

- Tolerances and User Settings for Dimension
- Attributes
- Stacked, Dual, Fractions
- Hatching and Fill Patterns
- Bill of Materials
- Text (Normal, Angle, Path)

Photo Rendering & Animation (Shark FX Only)

- Raytracing with Anti-Aliasing
- Unlimited Point, Spot, and distant lights
- Adjustable soft and hard shadows
- Drag and Drop from Material Library
- Backgrounds and Foregrounds
- Environment Maps
- Rapid Render Presets for Glass, Metal, Mirror, & Plastic Materials
- Material Editor for controlling reflectance, color, displacement, transparency, and texture space
- Walk Through, Fly By
- QuickTime Object VR
- QuickTime Panoramic VR
- QuickTime Event Recording
- Object Based Animation



Data Exchange

- DXF/DWG
- SAT, IGES, STEP
- CATIA® v4
- Pro/E® (Import Only)
- Adobe Illustrator® (up to v9)
- 3DS, COB, Rhino (Import Only)
- STL/STL (ASCII & Binary)

Part Library

- 26,000+ Part Library Electrical, HVAC, Mechanical Construction, Bathroom, Kitchen
- LAN, CMOS, Fasteners Doors, Windows, Counters
- Drag and Drop

2D Constraints

- Coincident, Tangent
- Perpendicular, Parallel
- Offset, Collinear
- Auto Constrain
- Variables & Equations
- Dimension Driving
- Animate Dimensions