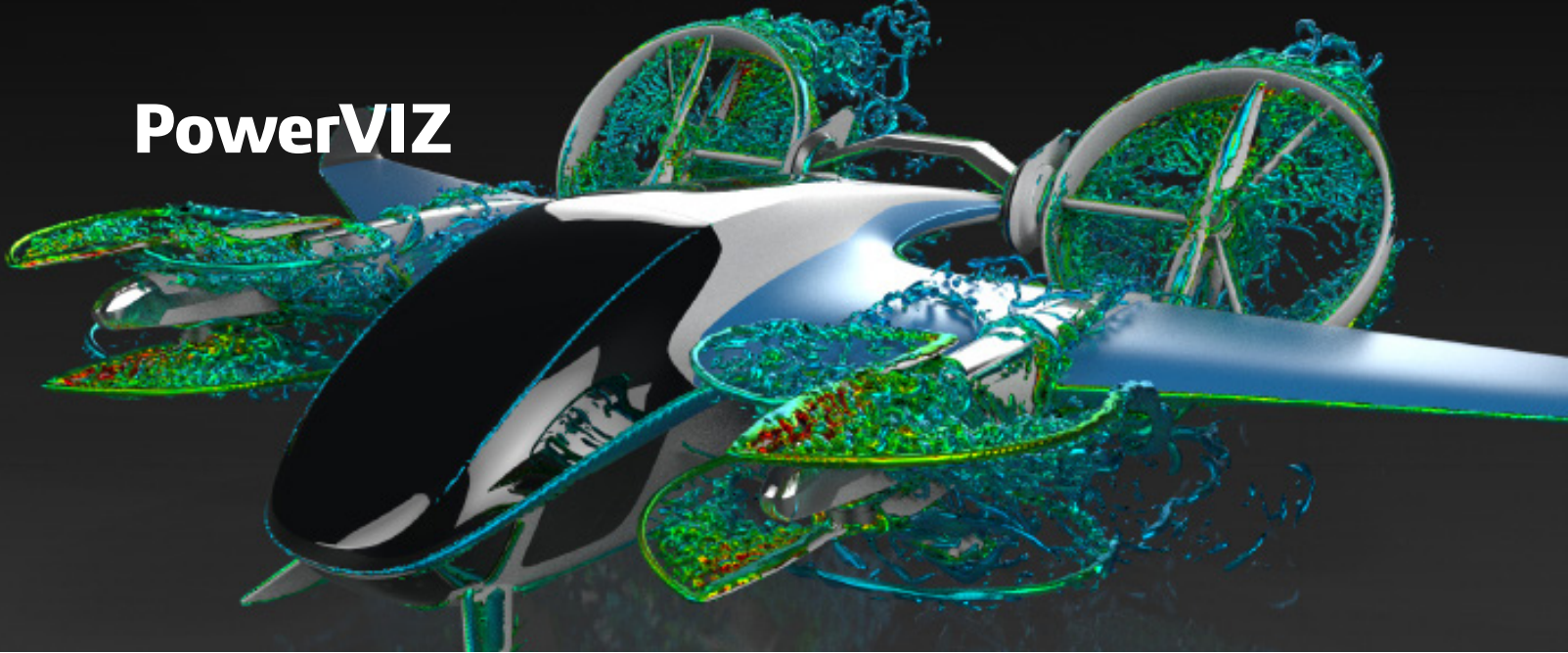# PowerVIZ

EASY AND VERSATILE ANALYSIS OF POWERFLOW RESULTS

PowerVIZ® is a high-performance 3D visualization solution for PowerFLOW® measurements and PowerACOUSTICS® spectral analysis results. Fast visualization of large transient datasets, the ability to easily combine several powerful visualization techniques, and options to interactively examine results in 3D or automatically generate complete analyses with PowerINSIGHT® allow you to extract maximum value from your simulation data as never before.

PowerFLOW's unique ability to perform transient simulations on highly detailed geometry produces a wealth of highly detailed transient measurements. Powerful and sophisticated analysis techniques help to analyze the results, understand the nature of the fluid flow, identify the impact on vehicle performance and thus gain the most value from the simulation. PowerVIZ provides a wide array of such techniques, including volume visualization, stereo viewer support, particle tracking, animations, quantitative analysis, and the ability to export a visualization scene to photorealistic rendering solutions like RTT's DeltaGen. And of course all of the standard visualization techniques expected in a modern fluids analysis tool are also available: fluid slices, isosurfaces and surface contours, streamlines, fluid and surface plots, and many others.

HIGH PERFORMANCE

PowerVIZ is easy-to-use with its interactive and intuitive user interface; high performance on even the largest data sets; and flexible with dozens of analysis techniques for nearly any need.

DEEP PRODUCT PERFORMANCE INSIGHT

PowerVIZ's best-in-class visualization techniques allow transient flow details to be identified, studied, and communicated.

REALISTIC RESULTS COMMUNICATION

Stereo viewing, real-time volume visualization, photo-realistic rendering, and animations of transient effects enable clear and powerful communication results.

ACCURATE QUANTITATIVE ANALYSIS

Compute specific, meaningful quantities such as net force and mass flux, or create detailed images to illustrate complex flow features. PowerVIZ has built-in features to compute specific, quantities such as force and torque acting on a body, mass flux, or integrate any quantity in the fluid or on the surface.

3S DASSAULT SYSTEMES

CAPABILITIES & EXAMPLES

Fluid Measurement Visualization

- Slice planes with contours, flooded contours, 2D streamlines and vector display options
- Isosurfaces, optionally colored by fluid property values
- Measure flux through arbitrarily complex openings
- Locate property extremes in flow field
- 3D streamlines with line, ribbon, 3D tube and animated 3D arrow options
- Volumetric integration
- User-defined variables using a full featured equations language

## Surface Measurement Visualization

- Surface contours
- Surface streamlines
- Integration and averaging over surfaces and parts
- Graphs of surface property values
- User-defined variables using a full featured equations language

Quantitative Analysis

- Force and moment development graphs
- Torque and lift coefficient calculations
- Time graphs of nearly any surface or fluid property
- Graphs of a property along an arbitrary line

Soiling and Water Management: (With The Optional Soiling Module)

- Arbitrary particle emission rakes
- Tracing particles with or without mass
- Takes into account gravitation, fluid drag, and near-surface effects
- Particle-surface bounce, stick, re-entrainment
- Measures surface hit points and accumulation density
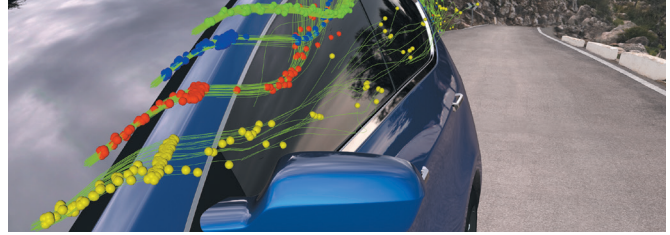
Visualize soiling and particles though the PowerVIZ Soiling Module—it allows users to trace particles and track their impact hit points on surfaces as well as measure accumulation density.

Animations

- Key frame animation to create sophisticated movies
- Can include streamlines, particle traces, hit points or any visualization

Stereo Viewing

View PowerVIZ data in 3D stereo; with the proper graphics hardware and glasses, your PowerFLOW® simulation data was never easier to communicate.

Real-Time Volume Visualization and Animation

Volume visualization is a technique for directly displaying and manipulating a 3D scalar field in real-time; users may choose either direct volume rendering or volume-based isosurface rendering. PowerVIZ exploits the massive floating-point capabilities of modern graphics processors (GPUs) to perform real-time volume visualization—impractical on conventional CPU systems as it is too graphics-intensive.

Photorealistic Rendering

Nearly all PowerVIZ visualization techniques can be exported as VRML and imported into photorealistic rendering packages, such as RTT DeltaGen®, providing a life-like image of the vehicle with overlaid simulation results.

Comparative Analysis

Apply the identical visualization technique to multiple measurement data sets simultaneously. PowerVIZ synchronizes the views as you manipulate the models in 3 to make comparison of results easy.

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