

Recent Updates

Additional Updates

Recent Updates – API

Overview:

- OpenVSP’s application programming interface (API) provides functions that can be called from external programs written in Python, AngelScript, MATLAB, or C++
- Full API support for all OpenVSP capabilities
 - Sometimes things are missed – report unavailable features to developers
- Continuous integration and deployment also supported

✓ Windows 64

✓ Windows 32



Released in 3.22.0:

- Fixed managers (VSPAERO, Wave Drag, etc.) not updating from API
 - Manager updates may be disabled to optimizing execution time
- Added API functions to set and get VSPAERO path
- Added MATLAB API support to OpenVSP repository
 - “matlab_api” template with SWIG wrapper files and example API tests
 - VSP_ENABLE_MATLAB_API CMake flag compiles MATLAB API if MATLAB and SWIG executables are found
 - Requires unreleased version of SWIG and valid MATLAB license – users must compile
- Analyses, tests, and examples for Trimmed Surfaces, CFD Mesh and FEA Mesh
- Continuous integration scripts translated to GitHub Actions

✓ Ubuntu 18.04

✓ Ubuntu 20.04

✓ macOS 10.15

 justingravett pushed  0219fe8 [build](#)

Recent Updates – API

Released in 3.24.0:

- Improved API documentation CMake build (“doc” project)
- Improved error handling in VSPAERO API tests to catch execution failures
- Various fixes and minor improvements for API tests
- Added Prop ID specification for BEM API analysis
- API function unit test framework:
 - Example code from API documentation extracted and output as unit tests
 - Single *.vspscript output with unit tests for each example
 - Fixed many errors in example code – documented examples execute successfully
- MeshGeom ID returned from applicable export functions
 - Facilitates mesh after analysis
- AngelScript updated to 3.35.1-WIP 2021/04/15
- Fixed control surface grouping API function

Released in 3.25.0

- VSPAERO API test suite improvements

```

◆ EditXSecInitShape()
void EditXSecInitShape( const string &in xsec_id )

Initialize the EditCurveXSec to the current value of m_ShapeType (i.e. EDIT_XSEC_ELLIPSE)

// Add Stack
string sid = AddGeom( "STACK", "" );
// Get First (and Only) XSec Surf
string xsec_surf = GetXSecSurf( sid, 0 );
ChangeXSecShape( xsec_surf, 2, XS_EDIT_CURVE );
// Identify XSec 2
string xsec_2 = GetXSec( xsec_surf, 2 );
// Set XSec 2 to linear
EditXSecConvertTo( xsec_2, LINEAR );
EditXSecInitShape( xsec_2 ); // Change back to default ellipse

See also
INIT_EDIT_XSEC_TYPE

Parameters
[in] xsec_id XSec ID
  
```

Recent Updates – VSPAERO

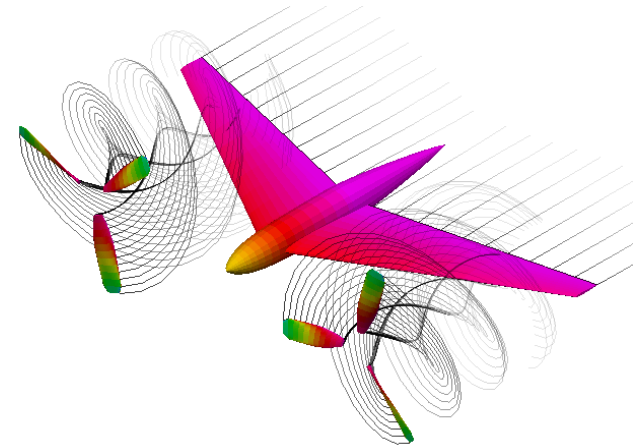
Overview:

- Support the development and integration of VSPAERO with OpenVSP
- Test new versions of VSPAERO through V&V studies – Master V&V Script
- Provide GUI and API updates for VSPAERO

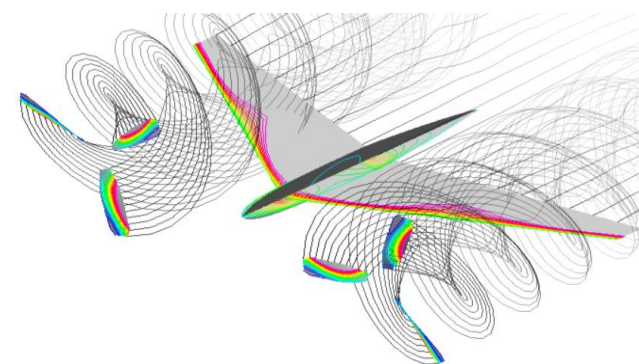
Released in 3.23.0:

- Automate actuator disk hub diameter setting for Props (disk mode)
- Cleanup command line arguments (read from *.vspaero file)
- Introduce VSPGEOM file format
 - Mixed thick-thin surface representation
 - Specify VLM set and Panel Method set
 - Will replace DegenGeom and Cart3D input files

*See Dave Kinney's VSPAERO Updates presentation for more details



Panel Method Unsteady Analysis



VLM Unsteady Analysis – Contour Line VSPVIEWER Option

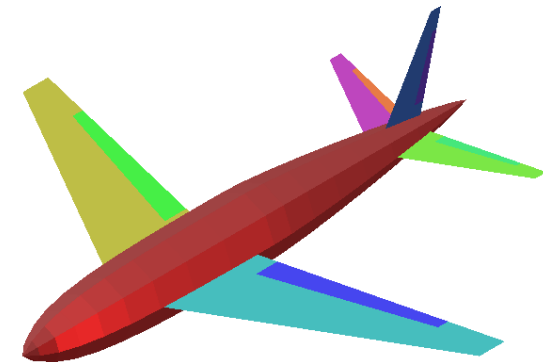
Recent Updates – VSPAERO

Released in 3.24.0:

- Fixed reporting of control surface stability coefficients – allows OpenVSP to read, plot, and export correctly
- Fixed symmetric control surfaces being left in groups (Issue #175)
- Fixed DegenGeom memory management issue
 - Reduced need to recompute geometry in iterative VSPAERO API scripts
- Fixed uniform RPM update issue for Props

Released in 3.25.0

- Updated VSPAERO Solver, Viewer, and CpSlicer to 6.2.0
- Support for ReCRef sweeps
- VSPAERO Polar results read into OpenVSP
- Fixes clearing of CpSlicer results
- Experimental VSPAERO geometry file support (VSPGEOM)
 - GUI and API support
 - Tested in V&V script



**Mixed thick-thin VSPGEOM
representation**

*See Dave Kinney's VSPAERO Updates presentation for more details

Recent Updates – Mesh Capabilities

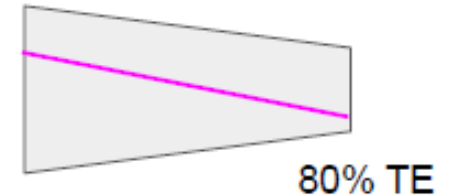
Overview:

- Meshing transforms analytical OpenVSP surfaces into discrete triangles
- Many tools use surface triangulation – Mass Properties, CFD Mesh, VSPAERO, etc.
- Meshing algorithm can be slow, define intersections poorly, fail to close, or crashes

Released in 3.22.0:

- Fixed CFD Mesh surface tagging issue
- Bug fixed in Wave Drag meshing algorithm
- Option to rotate FEA Ribs with wing dihedral
- Added FEA Spar sectional root/tip parameterization option
- Fixed non-watertight half mesh with far field settings
- Improved bookkeeping of Point Masses in Mass Properties

20% LE



Released in 3.23.0:

- Jonathan Shewchuk’s original “Triangle” replaced with an improved CMake version (<https://github.com/wo80/Triangle>)
 - More robust
 - Improved error handling – Crash in Triangle will no longer take down OpenVSP with it
- Fixed update issues with mesh visualization

Recent Updates – Mesh Capabilities

Released in 3.24.0:

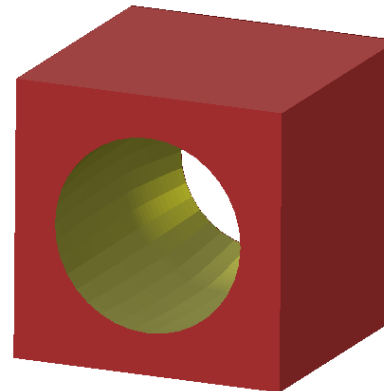
- Fixed bookkeeping for negative volumes in CompGeom
- Fixed Parasite Drag calculations for grouped components
- Modified Triangle library build to support CMake 2.8
- Fixed Wave Drag GUI crash selecting flowthrough surfaces

Released in 3.25.0:

- Updates shell property specification in NASTRAN export

Unreleased:

- Fixes surface ID mismatch in CFD Mesh (Issue #195)



Comp Geom - Mesh, Intersect, Trim

File Export

.txt Unnamed_CompGeom.txt ...

.csv Unnamed_CompGeom.csv ...

Parasite Drag Output

.tsv Unnamed_DragBuild.tsv ...

```

...Comp Geom...
2 Num Comps
2 Total Num Meshes
21512 Total Num Tris
  
```

Theo_Area	Wet_Area	Theo_Vol	Wet_Vol	Name
600.000	531.928	1000.000	960.368	Box
414.524	228.877	-620.192	-370.949	PodGeom

1014.524	760.805	379.808	589.420	Totals

Tag_Theo_Area	Tag_Wet_Area	Tag_Name
600.000	531.928	Box_Surf0
414.524	228.877	PodGeom_Surf0

Normal Set: Shown

Degen Set: None

Half Mesh Subsurfs

Execute

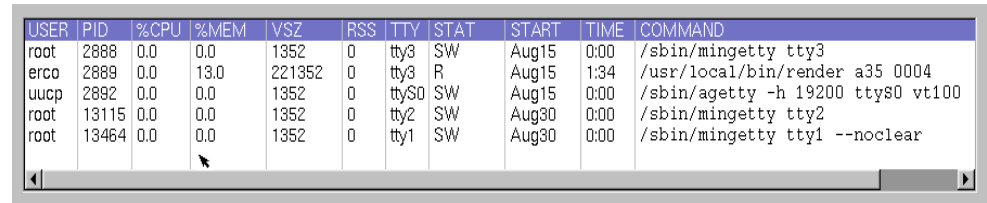
Miscellaneous Developments

Released in 3.22.0:

- Resizable columns for GUI tables
- Fixed Code-Eli bug for Super Ellipse symmetry (Issue #157)
- Seat Group orientation fixed

Released in 3.23.0:

- Lots of “Faster Update” bug fixes



USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	2888	0.0	0.0	1352	0	tty3	SW	Aug15	0:00	/sbin/mingetty tty3
erco	2889	0.0	13.0	221352	0	tty3	R	Aug15	1:34	/usr/local/bin/render a35 0004
uucp	2892	0.0	0.0	1352	0	ttyS0	SW	Aug15	0:00	/sbin/agetty -h 19200 ttyS0 vt100
root	13115	0.0	0.0	1352	0	tty2	SW	Aug30	0:00	/sbin/mingetty tty2
root	13464	0.0	0.0	1352	0	tty1	SW	Aug30	0:00	/sbin/mingetty tty1 --noclear

Released in 3.24.0:

- Vertical skew and individual radii specification for Rounded Rectangles
- Parasite Drag GUI fixes
- More “Faster Update” fixes
- Added support for old GCC compilers (GitHub Issue #179)
- Updated libraries:
 - GLM to 9.9.8
 - STB image to 2.26 & image_write to 1.15
 - LibXML2 to 2.9.10
 - GLEW updated to 2.1.0
 - CMinPack updated to 1.3.8
 - FLTK updated to 1.4-Pre: Support for higher resolution displays

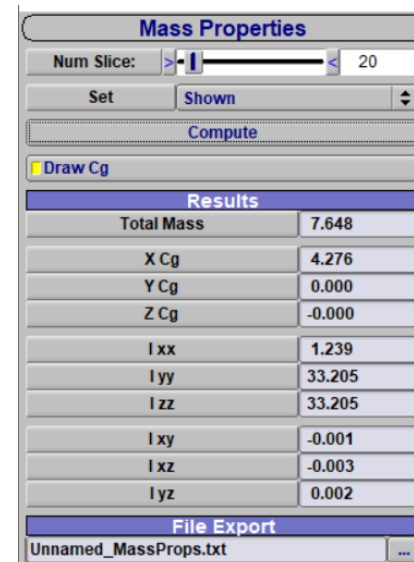
Miscellaneous Developments

Released in 3.25.0:

- Total wing parameter calculation fixes
- Even more “Faster Update” fixes
- Fixes upper/lower design mode for BOR Geoms
- Minimum CMake version requirement updated to 3.1

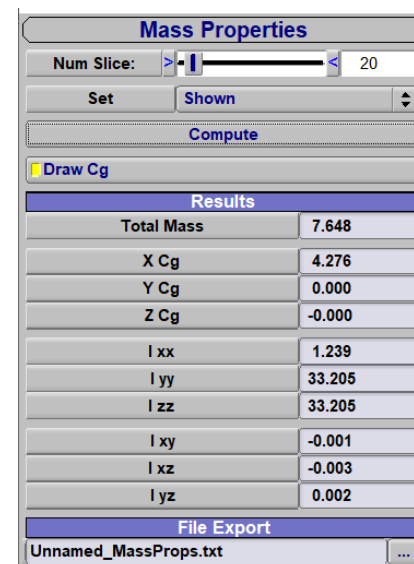
Upcoming Developments:

- New spar type for FEA Mesh to improve behavior between wing sections
- Final fix for GitHub Actions Python version identification
- Continued support for OpenVSP by ESAero through AFRL funding
 - New features and improvements in discussion



Results	
Total Mass	7.648
X Cg	4.276
Y Cg	0.000
Z Cg	-0.000
I xx	1.239
I yy	33.205
I zz	33.205
I xy	-0.001
I xz	-0.003
I yz	0.002

Windows 1.0 DPI (3.23.0)



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Windows 1.25 DPI (3.24.0)

Questions?