

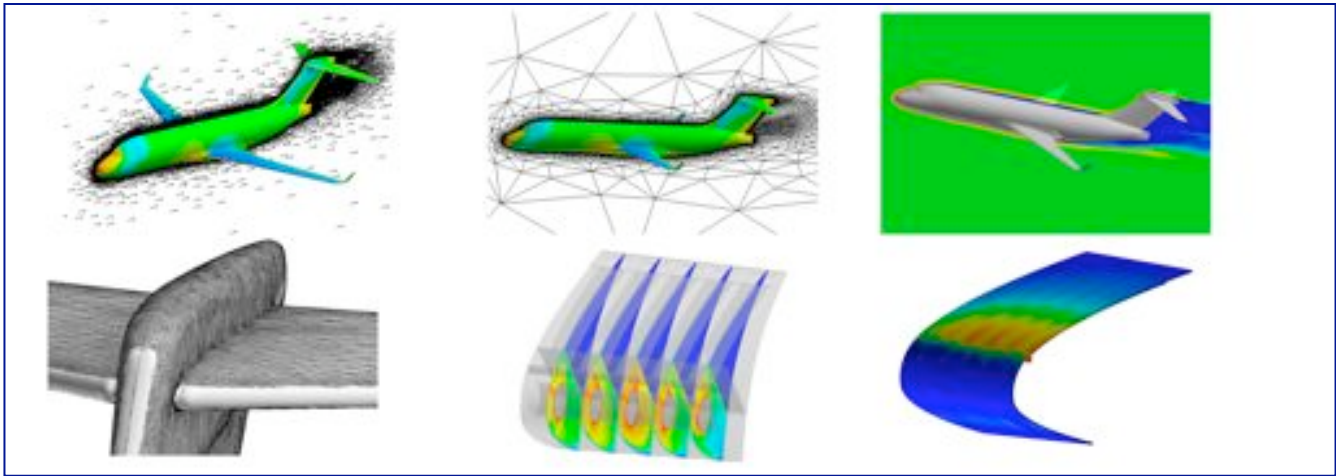


FENSAP-ICE

(FENSAP+ OptiGrid, DROP3D, ICE3D, CHT3D)

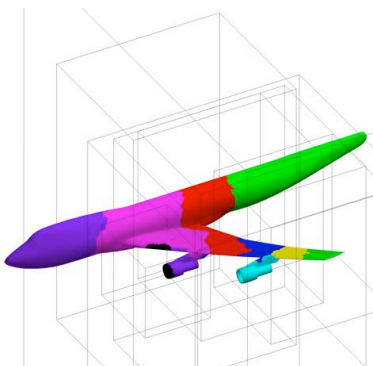
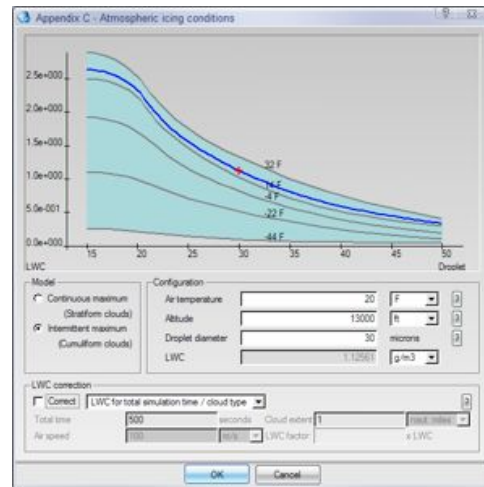
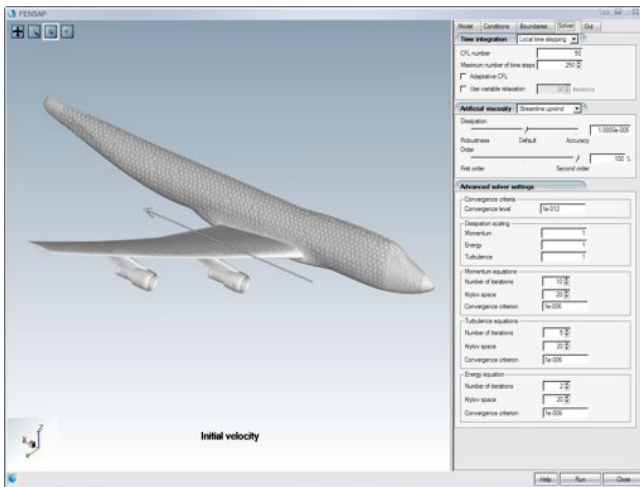
The most advanced and versatile
3D in-flight icing simulation system

FENSAP-ICE has established itself as the premier in-flight icing simulation comprehensive “system”, used worldwide at major aerospace companies. FENSAP-ICE is the only available software that uses truly 3D CFD-based technology throughout, and the only one that can simulate icing for aircraft, rotorcraft, jet engines, UAVs, instruments and probes. FENSAP-ICE’s features greatly enhance user-friendliness, increase robustness and speed, and its functionalities permit it to cover a broad range of applications.



Example of FENSAP-ICE application to civil aircraft:
 Meshing, Auto-adaptation, Clean Flow, Impingement, Accretion, Anti-icing, Auto-Remeshing

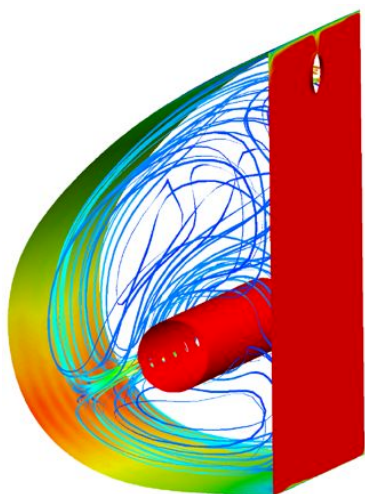
Ease of use is provided through an innovative graphical environment with intuitive file management and easy interactions between modules. In addition, users have on-screen access to the icing envelope of Appendix C, to pick and choose conditions. FENSAP-ICE then automatically determines droplet size, liquid water content, altitude, temperature and cloud extent, and introduces their values to the solver, eliminating possible interpolation and transcription errors.



FENSAP-ICE takes advantage of parallel architectures for large-scale calculations (left picture shows automatic MPI domain partitioning). FENSAP-ICE supports the following platforms: Linux, Windows, Solaris, AIX and HP-UX.

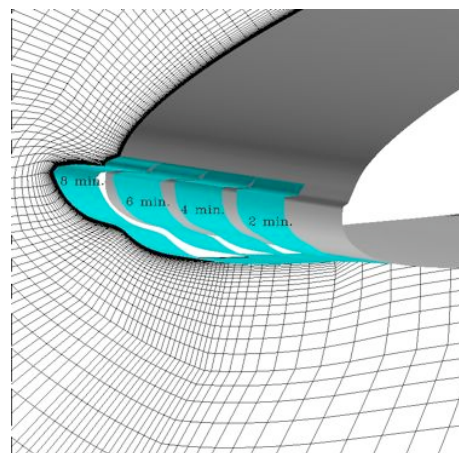
DROP3D, the droplet impingement module of FENSAP-ICE, can handle spatially varying droplet sizes and liquid water content, at any inlet or in mid-field. This feature allows a correct modeling of internal components, of combined internal/external geometries such as air induction systems, and of the non-uniformities encountered in natural flight and icing tunnel testing.

The ice growth module of FENSAP-ICE, ICE3D, can perform visibility studies for cockpits and car windshields in above-freezing temperatures, with runback. This feature also leads to enhanced ice growth accuracy on surfaces maintained above freezing by thermal ice protection systems.



The heat transfer module of FENSAP-ICE, CHT3D, used for bleed air ice protection or electro-thermal systems optimization, can simulate multiple air-solid interfaces and multi-layers conduction, with varying physical properties and phase change. FENSAP-ICE is an ideal tool to analyze and optimize electro-thermal system stack-up, with all layers, including dielectric, conductors and adhesive, as well as heater cycling, being modeled to give accurate skin temperature distributions in wet air.

FENSAP-ICE has functionalities such as automatic regriding of iced geometries for multiple accretion layers. This reduces human effort considerably and increases ice shape accuracy, especially in glaze ice conditions. It also includes a rotating frame of reference for the analysis of turbomachines, rotors and propellers.



All CFD images produced by FieldView



Newmerical Technologies International (NTI) develops and markets advanced CFD software and offers flow simulation services in the aerospace, architectural, automotive and marine markets. NTI is an acknowledged leader for in-flight icing simulation and related services.

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