

# SolidWorks Flow Simulation Matrix

FEATURES	SOLIDWORKS FLOW SIMULATION	SOLIDWORKS FLOW SIMULATION AND ELECTRONIC COOLING	SOLIDWORKS FLOW SIMULATION AND HVAC
<b>SIMULATION TYPES</b>			
Two- and three-dimensional analyses	■	■	■
Symmetry planes	■	■	■
External and internal fluid flows	■	■	■
Laminar, turbulent, and transitional flows	■	■	■
Time-dependent flow	■	■	■
Subsonic, transonic, and supersonic regimes	■	■	■
Calculation of relative humidity in gas flows	■	■	■
Multi species flows	■	■	■
Conjugate heat transfer	■	■	■
Heat transfer in solids	■	■	■
Flows with gravitational effects (buoyancy effects)	■	■	■
Fluid flows with liquid droplets or solid particles	■	■	■
Cavitation	■	■	■
Joule heating		■	
<b>FLUID AND SOLID PROPERTIES</b>			
Incompressible and compressible liquid	■	■	■
Compressible gas	■	■	■
Real gases	■	■	■
Water vapor (steam)	■	■	■
Non-Newtonian liquids (to simulate blood, honey, molten plastics)	■	■	■
Semi transparent materials			■
Library of solid surface radiation conditions	■	■	■
Library of building materials			■
Library of contact thermal resistance		■	
Library of typical IC packages		■	
Additional database of solid materials		■	■

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<b>DESIGN TOOLS</b>			
Multiple studies / "what if" scenarios	■	■	■
Automatic cavity/fluid volume detection	■	■	■
Parametric study	■	■	■
Check geometry	■	■	■
Leakage browser tool	■	■	■
Engineering database	■	■	■
Gas dynamic calculator	■	■	■
<b>ENVIRONMENT</b>			
Velocity	■	■	■
Mach number (for gases)	■	■	■
Mass flow rate or volume flow rate	■	■	■
Static pressure, total pressure and environment pressure	■	■	■
Fans	■	■	■
Additional library of fans		■	■
Porous media (simulation of filters)	■	■	■
Perforated plates	■	■	■
Walls with roughness	■	■	■
Tangential motion of walls (translation and rotation)	■	■	■
Rotating regions (for fans and pump applications )	■	■	■
Heat sources	■	■	■
Temperature	■	■	■
Radiative surface	■	■	■
Radiation source	■	■	■
Solar radiation	■	■	■
Library of environmental radiation for geographic, time-of-day, month, and atmospheric conditions	■	■	■
Thermal contact resistance	■	■	■
Library of thermoelectric coolers	■	■	■
Heat sink simulation		■	

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<b>ENVIRONMENT</b>			
Radiation: spectrum and absorption in solids			■
Printed circuit boards model		■	
Heat pipes model		■	
Two-resistor components model		■	
Library of two-resistor components		■	
Electrical conditions (current, voltage)		■	
Electrical contact resistance		■	
<b>RESULTS TOOLS</b>			
Cut plot	■	■	■
Surface plot	■	■	■
Isosurfaces	■	■	■
Flow trajectories	■	■	■
Particle study	■	■	■
Surface, volume, and points parameters	■	■	■
X-Y plot	■	■	■
Multiple and dynamic animation	■	■	■
Probe tool	■	■	■
Evenly spaced surface streamline algorithm	■	■	■
Comfort parameters (include MRT, operative temperature, PMV, PPD, ADPI, draft temperature, CRE, and LAQI)			■
Tracer study (study the flow of an admixture [tracer] in a carrier fluid)			■
<b>ENGINEERING COLLABORATION</b>			
.DOC report formats	■	■	■
Publish eDrawings of flow simulation results	■	■	■
Save plots as BMP, JPEG, PNG, VRML, or AVI files	■	■	■
Save results in Excel	■	■	■
Export finite volume mesh	■	■	■
Exporting results (total pressure, static temperature, and convective coefficients ) to SolidWorks Simulation	■	■	■