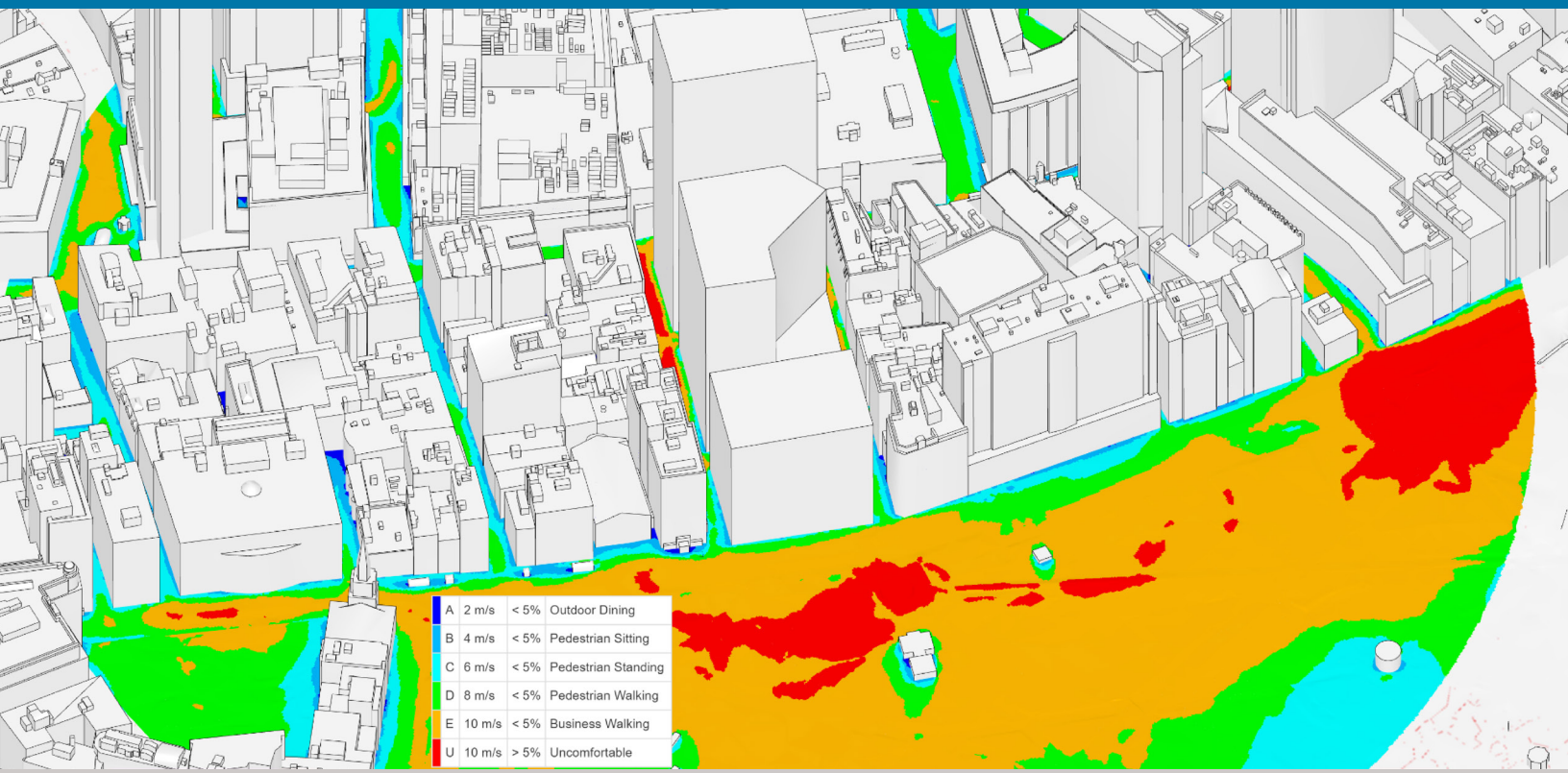
SIMSCALE
DATASHEET

ARCHITECTURE, ENGINEERING AND CONSTRUCTION—URBAN MICROCLIMATE



Architects and **engineers** globally can leverage powerful features in SimScale® for evaluating building aerodynamics, pedestrian wind comfort, outdoor thermal comfort, and structural wind loading on **buildings, structures,** and **entire cities.**

FAST

GPU enabled solvers provide access to a huge number of GPU cores drastically reducing solver job turnaround times. Plus ability to run as many jobs as needed in parallel.

ACCURATE

Integrated wind & climate data, advanced boundary conditions, sophisticated turbulence modeling and time transient solvers capture real world behavior.

ROBUST

Handles dirty and / or very detailed building / city scale CAD models gracefully, avoiding the need for tedious CAD cleanup and geometry simplification.

ACCESSIBLE

Cloud native deployment makes high-fidelity engineering simulation truly accessible from anywhere you have access to a browser and at any scale.

SimScale makes high-fidelity engineering simulation technically and economically accessible. **At any scale. In the cloud.**

SIMSCALE AEC | CAPABILITIES

COMPUTATIONAL FLUID DYNAMICS (CFD) FOR AIRFLOW ANALYSIS

Incompressible Lattice Boltzmann Method

- Wind and airflow simulation
- Integrated climate and wind data
- Transient analysis for real wind conditions and animations
- Building and city scale

Pedestrian Wind Comfort (PWC)

- Wind comfort and safety on ground, balconies, terraces
- Compliance criteria including: Lawson, Davenport, NEN8100, City of London
- Customizable outputs
- Up to 36 wind directions simulated in parallel
- Early stage to detailed wind studies

Greening Strategies

- SimScale allows its users to model trees, vegetation, wind screens and other mitigation measures through the use of porous media features.

WIND LOADING

Static

- Wind load forces on buildings and structures
- Average and peak loads
- Parallel studies for shape optimization
- Pressure and force outputs

MICROCLIMATE ANALYSIS

Outdoor Thermal Comfort

- Multi-direction wind analysis
- Custom script and workflow or Grasshopper/Ladybug
- Universal Thermal Comfort Index (UTCI) calculations
- Outdoor temperatures, wind speeds, and UTCI visualization

CONNECTIVITY (API Integrations)

- Grasshopper®
- Ladybug®
- Rhinoceros®
- Autodesk® Revit®

SIMSCALE

SIMSCALE AEC | FEATURES

PRE-PROCESSING

CAD Compatibility

- 3D Systems® STL
- Autodesk Inventor®
- Autodesk Revit
- Dassault Systèmes® ACIS®
- Dassault Systèmes CATIA™
- Dassault Systèmes SolidWorks®
- IGES
- PTC® Creo®
- Rhinoceros®
- Siemens® NX™
- Siemens Parasolid®
- Siemens Solid Edge®
- STEP

CAD Plugins

- SimScale Connector App for PTC Onshape®
- SimScale Integration for Autodesk Fusion 360™

CAD Mode

A dedicated environment to interact with your CAD model, delete, extrude, or scale CAD parts, and perform CAD-related operations directly within the platform. Operations being added continuously.

- Edit
- Create - Flow Volume-Internal
- Create - Flow Volume-External
- Close sheet
- Boolean
- Transform
- Simplify
- Fix Interferences
- Tools - Gaps
- Tools - Interferences
- Export

Automated Meshing Tools

Current meshing strategies available on the platform are:

- Standard
- Hex-dominant
- Hex-dominant parametric

Materials Library

Default materials include both solids and fluids according to the analysis type selected or define your own custom material.

Boundary Conditions

SimScale offers many boundary condition types for different types of applications.

Fluid:

- Velocity inlet and Velocity outlet
- Pressure inlet and Pressure outlet
- Natural convection inlet-outlet
- Wall
- Periodic
- Symmetry
- Wedge
- Custom
- Empty 2D
- Contaminant transport (Passive Scalar)

Thermodynamics:

- Fixed value temperature
- Convective heat flux
- Surface heat flux
- Volume heat flux

SIMSCALE AEC | FEATURES

SIMULATION

Processor/Cloud

Run as many simulations in parallel as desired, while continuing to work. That's the power of the cloud.

Collaboration

Share projects with other users, within or outside an organization, and also with the SimScale support team.

Collaboration

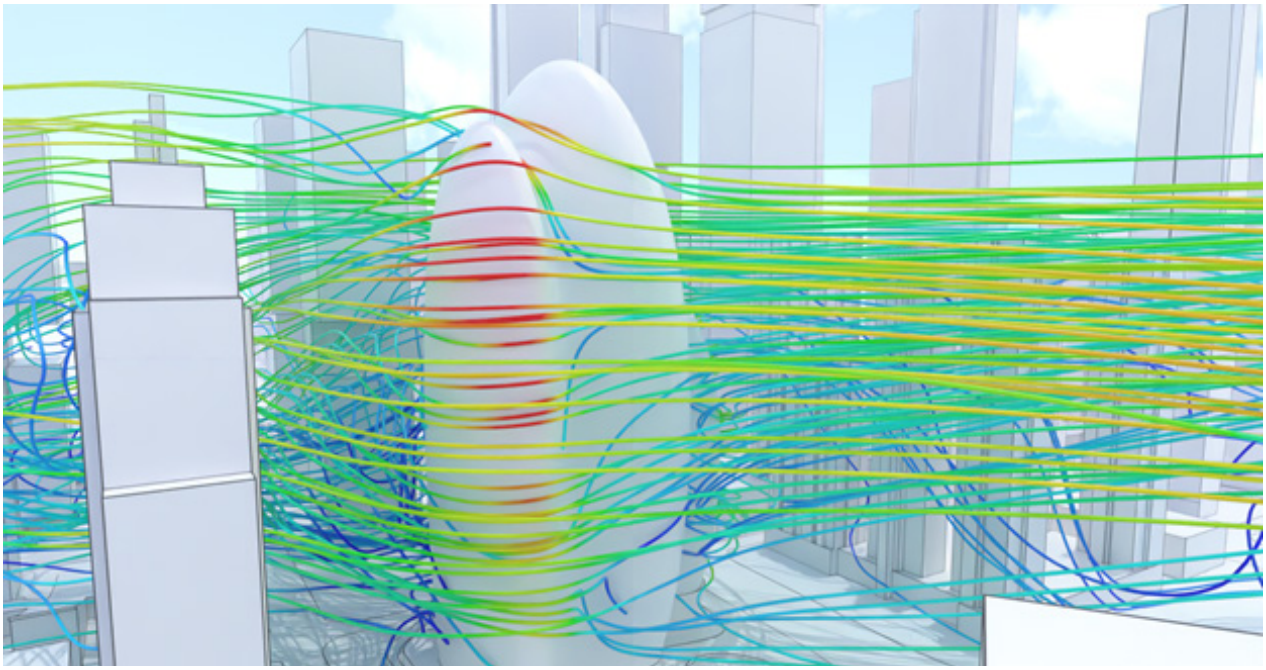
All numerical settings are made available for users to have full control over the simulation. These settings can be found for Fluid Dynamics (OpenFOAM®), and Lattice Boltzmann Method (pacefish®).

POST-PROCESSING

Visualization

SimScale's integrated post-processor offers 3D visualization of the result fields.

- Statistics and Inspect Point
- Visualization and Selection Modes
- Cutting Plane
- Iso Surface and Iso Volume
- Particle Trace
- Animation
- Field Calculator (Beta)
- Custom Camera Position
- Export in open formats (*.CSV) for further post processing in third party tools.



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