FabricAir

CFD Service

— DEMONSTRATING THE EFFICIENCY OF YOUR DISPERSION SOLUTION

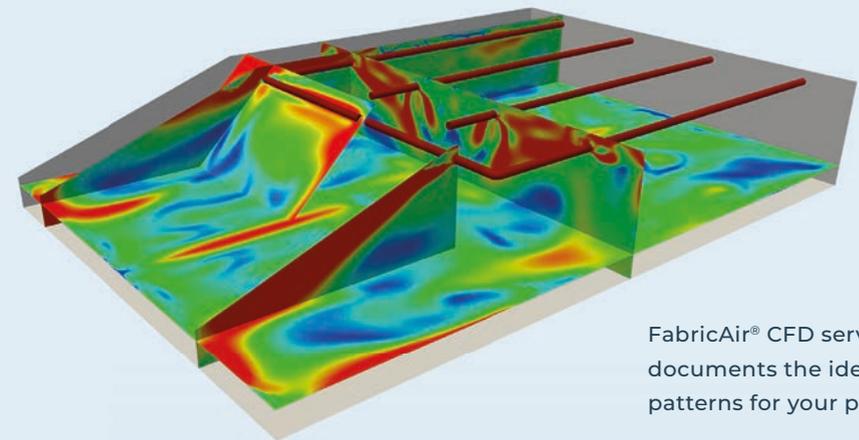smart air solutions.

ADVANTAGES

- EASY TO VISUALISE RESULTS
- DEMONSTRATE SYSTEM PERFORMANCE
- VISUALIZE AIRFLOW PATTERNS
- IDENTIFY POTENTIAL STALE AIR ZONES
- VERIFY AIR DISPERSION PATTERN / AIR VELOCITY / AIR TEMPERATURE
- PROVIDE PERFORMANCE ASSURANCE

FabricAir® CFD service documents the ideal flow patterns for your project.

Computational fluid dynamics (CFD)

Airflow analysis is an essential part of any FabricAir® offer. We have expanded this service to include the option of CFD reporting in 3D with several degrees of complexity.

CFD analysis is the most advanced method to predict and evaluate an air dispersion system's efficiency.

CFD is used to demonstrate the airflow patterns in a given space with 90% certainty depending on the accuracy of the parameters provided. This ensures the optimum design for your FabricAir® dispersion system.
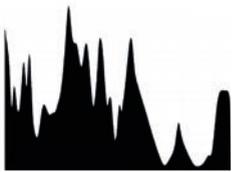
The software can calculate the flow patterns, pressure loss, air velocity and temperature. These properties are fundamental in selecting the right flow models.

Our CFD service provides visual confirmation that your air dispersion solution is ideally optimized for the given space.

You can choose from three different CFD package solutions, depending on the need of information, time availability and budget.

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Product Comparison CHART

PRODUCT	3D ESSENTIAL	3D STANDARD	3D PREMIUM
SIMULATIONS	1	1	Up to 2
FLOW MODELS	Up to 2	Up to 3	Up to 4
AIR DISTRIBUTION	✓	✓	✓
SECTION VIEWS	1	3	5
Transverse	✓	✓	✓
Longitudinal	–	✓	✓
Horizontal	–	✓	✓
Inclined	–	✓	✓
PROBES	–	+	Up to 2
TEMPERATURE	–	✓	✓
DIAGRAMS	–	✓	✓
ANIMATIONS Sample Report (or Click Here):	–	+	✓
EXTERNAL ELEMENTS	–	–	✓
ADDITIONAL SIMULATION(S)	+	+	+

(**+** Add on services)
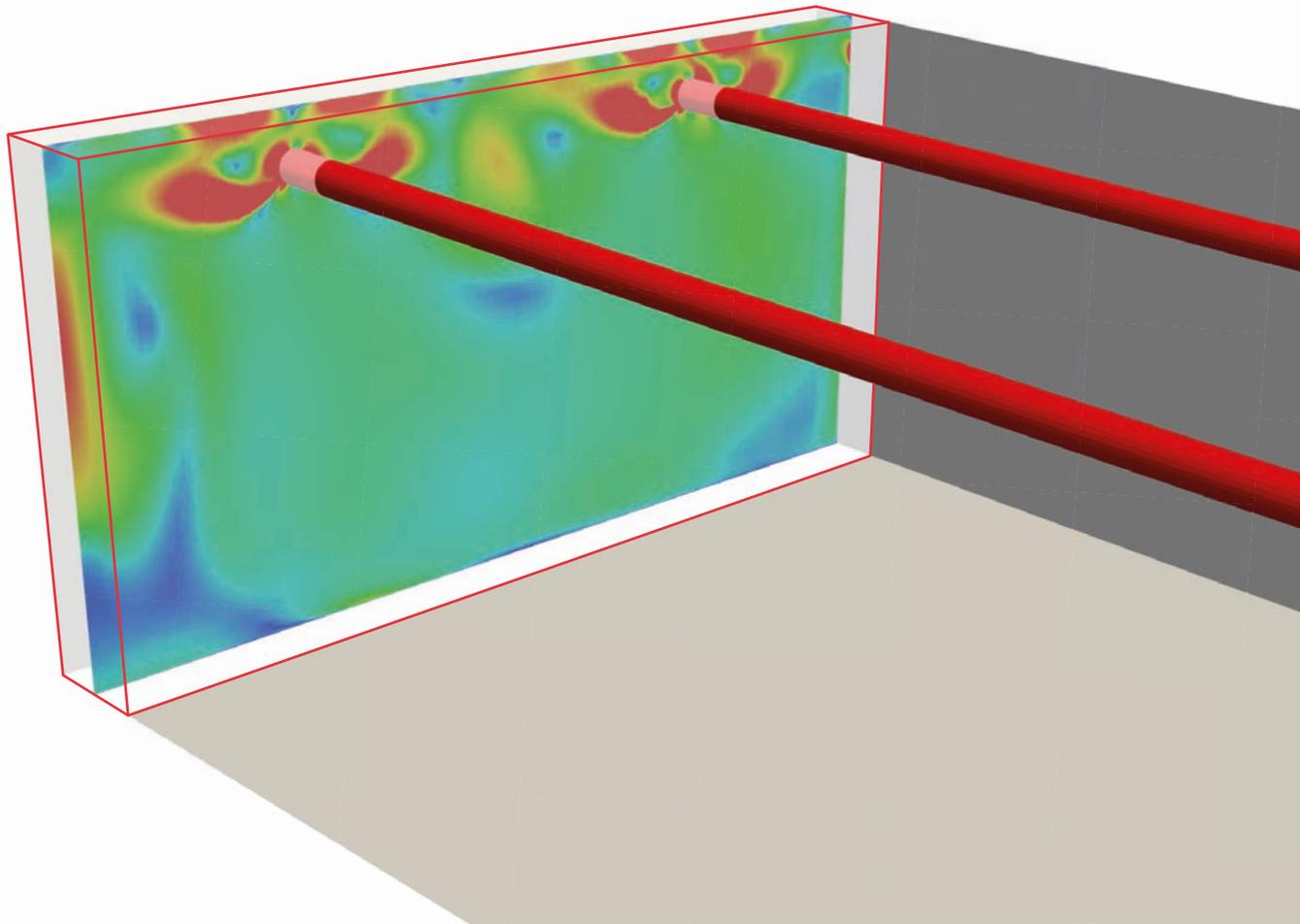
The red line marks analysed area

SIMULATIONS	1
FLOW MODELS	Up to 2
AIR DISTRIBUTION	✓
SECTION VIEWS	1
Transverse	✓
Longitudinal	–
Horizontal	–
Inclined	–
PROBES	–
TEMPERATURE	–
DIAGRAMS	–
ANIMATIONS	–
ADDITIONAL SIMULATION(S)	+

3D Essential

A report, which includes essential details about airflows with one or two flow models.

It provides a 3D representation of the data analysis from a partial section of the conditioned space.

This 3D CFD image is ideal in cases where supply air is parallel to return air when the system comprises up to two flow models.

Sample Report:

SIMULATIONS	1
FLOW MODELS	Up to 3
AIR DISTRIBUTION	✓
SECTION VIEWS	3
Transverse	✓
Longitudinal	✓
Horizontal	✓
Inclined	✓
PROBES	+
TEMPERATURE	✓
DIAGRAMS	✓
ANIMATIONS	+
ADDITIONAL SIMULATION(S)	+
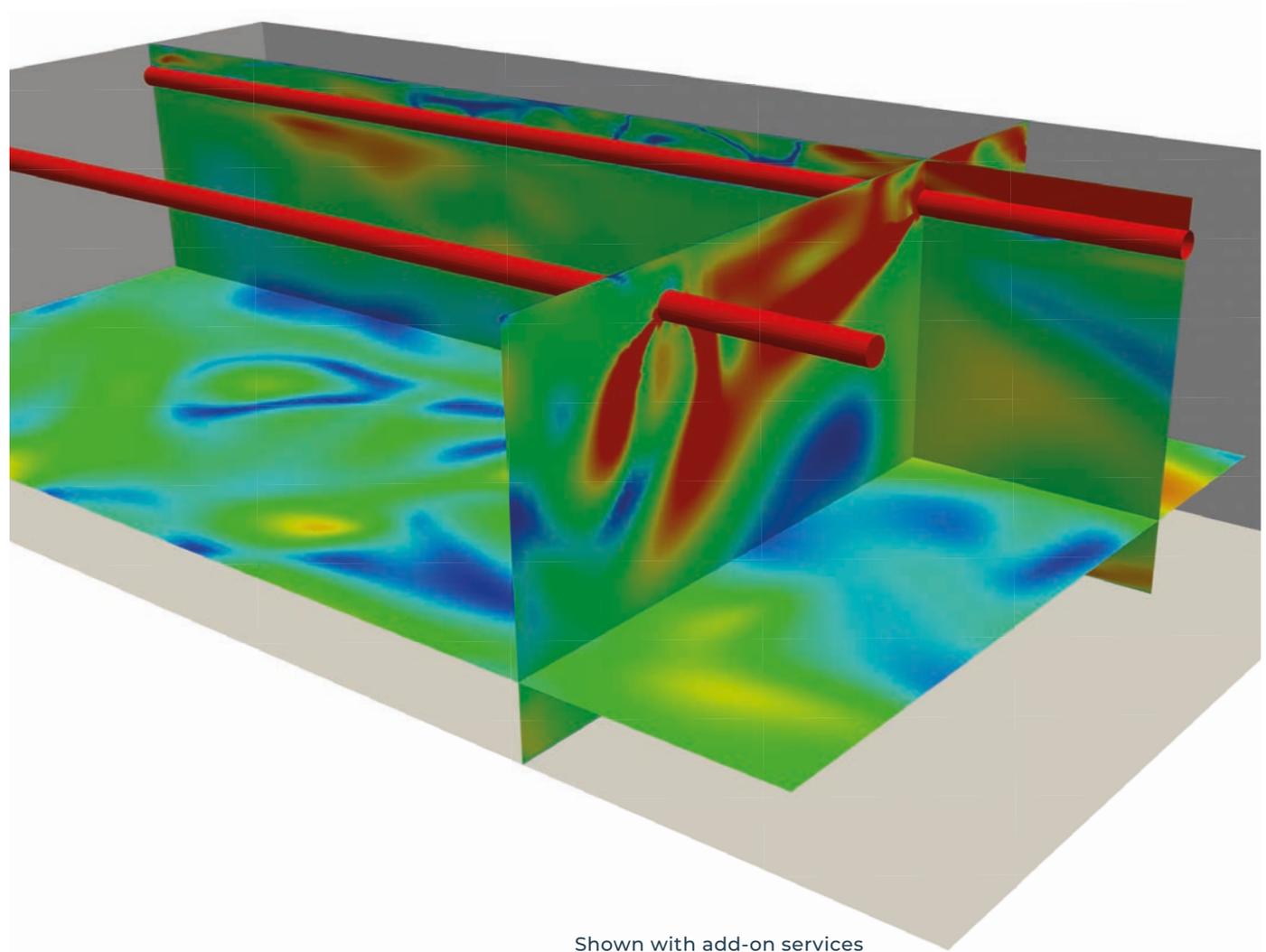
Shown with add-on services

3D standard

Better insights for more complex projects involving up to three flow models.

The report includes a more detailed analysis with three section views to demonstrate occupant comfort aspects in specific locations within the conditioned space, and an overview of air movement seen in all dimensions.

This 3D CFD image is ideal regardless of the location of the air supply.

Sample Report:
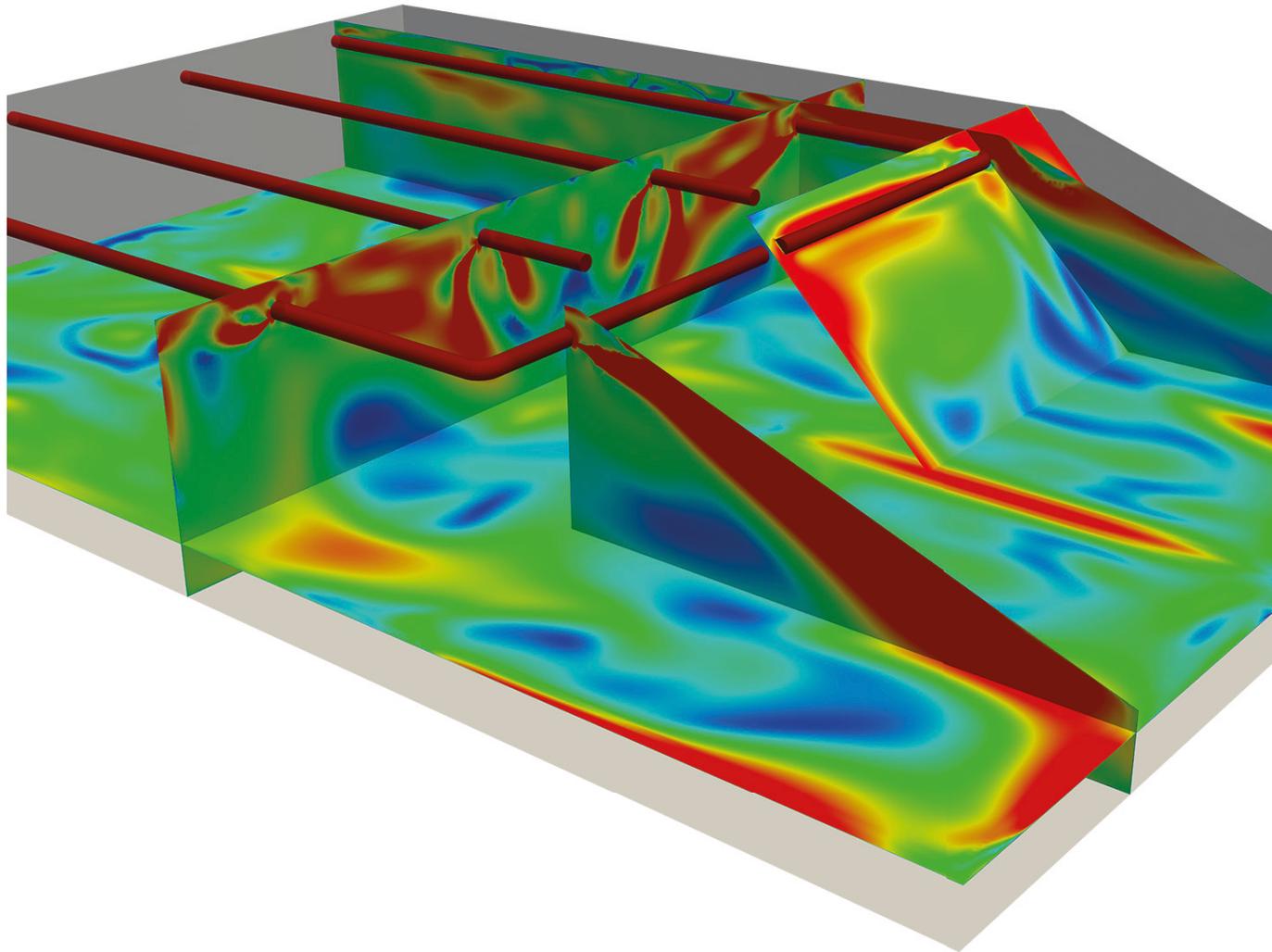
SIMULATIONS	Up to 2
FLOW MODELS	Up to 4
AIR DISTRIBUTION	✓
SECTION VIEWS	5
Transverse	✓
Longitudinal	✓
Horizontal	✓
Inclined	✓
PROBES	Up to 2
TEMPERATURE	✓
DIAGRAMS	✓
ANIMATIONS	✓
ADDITIONAL SIMULATION(S)	+

3D premium

Advanced CFD imaging for complex projects that require a higher degree of customization with up to four flow models, and may incorporate specific boundary conditions.

The report includes a highly detailed analysis with five sectional cuts of the conditioned space. These views demonstrate occupant comfort aspects in specific locations and provides an overview of air movement seen in all dimensions regardless of room complexity.

This premium 3D CFD image is ideal regardless of the location of the air supply.

Sample Report:

TERMINOLOGY

Simulations

Each simulation has a set of necessary essential parameters: room dimensions, room temperature, dispersion air temperature, dispersion air static pressure and location of return air. In 3D Essential, return air will be calculated as running parallel to the duct. In 3D Premium boundary conditions can be added.

Temperature

The temperature distribution (in Kelvin) is visualized using a traditional color scheme. The temperatures are shown after the room is fully balanced to evaluate the full effect of the air dispersion solution.

Diagrams

The diagram shows the distribution of air velocities at a specified height (typically 1.8 m, marking the beginning of the occupied zone) on a diagonal from one corner of the room to the opposite corner.

Probes

A probe is a specific spot anywhere in the room that will provide that spot's unique data on air velocity and temperature.
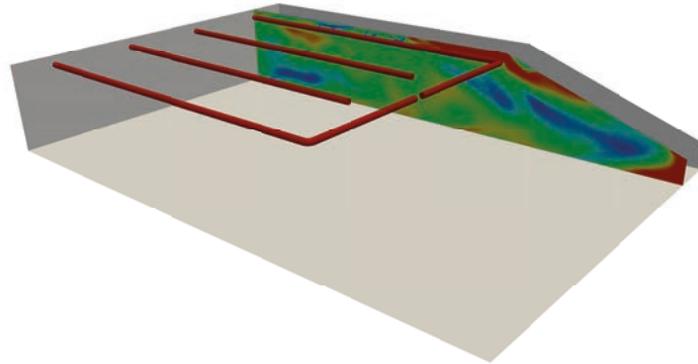
Flow Models

This indicates the number of flow models per duct in a simulation.

External Elements

These are elements such as machines, heat sources, movables, etc., as well as boundary conditions, such as window panes, insulation, etc. that affect the conditioned space and thus affect the outcome of the CFD analysis.

Animations

The animation consists of a sequence of transverse section views, typically starting at the inlet and moving along the ducting to the end of the room. This provides an overview of how the airflows behave across the conditioned space.

Longitudinal

The longitudinal section view is a view that runs down the middle of a duct, showing how the air moves immediately beneath and above the flow model(s).
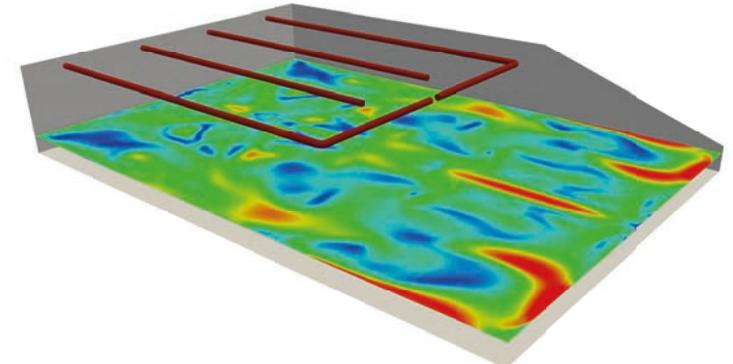

Horizontal

The horizontal section view shows air movement in a horizontal slice through the room. The cut can be placed at any relevant height, e.g. floor level, beginning of the occupied zone or at head level in a meeting room.
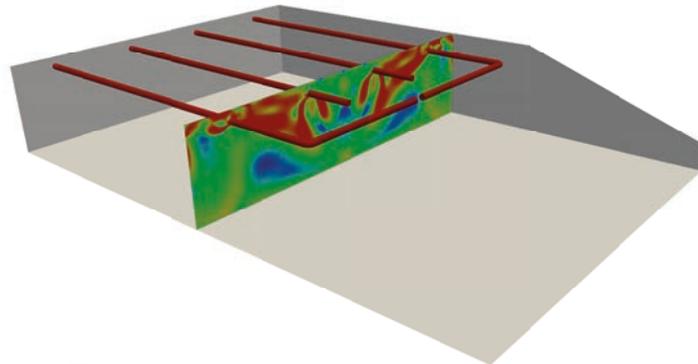
Transverse

The transverse section view is a cross section through the flow model(s) of the duct. It shows the airflow in a slice of the room and how the air moves in that slice.
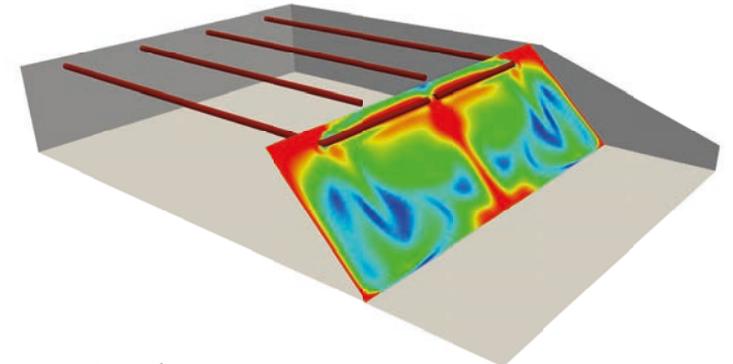
Inclined

The inclined section view shows a slice at an angle from ceiling to floor and how the airflow patterns perform in that section.

FabricAir

Innovating the HVAC industry since 1973

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smart air solutions.

Disclaimer: The FabricAir® CFD Service is exclusively created for FabricAir products, where we know the technical details; the results are thus not valid for similar products from other manufacturers.

The FabricAir® CFD service relies on accurate information about the project parameters provided by our customers.

The parameters are a prerequisite for running the simulation and typically include temperature, pressure, installation height, etc.

Depending on the project complexity the prerequisites vary to include parameters such as sun rails on roof surfaces, U values and R values, etc. 3D Premium takes the building's boundary conditions into consideration.

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