

The logo consists of the lowercase letters 'cpp' in a white, sans-serif font, centered within a dark blue rounded square.

cpp

CERMAK
PETERKA
PETERSEN



AIR QUALITY SERVICES

WIND ENGINEERING AND AIR QUALITY CONSULTANTS

Exhaust Dispersion

Building exhaust can degrade indoor and outdoor air quality. Unless exhaust systems, stacks, and air intakes are properly designed and located, exhaust can pollute surrounding buildings, pedestrian-level areas, and even re-enter the building that produced it. Exhaust pollution can threaten the health and comfort of people in and around the building.

To ensure that exhaust does not re-enter a building or pollute its surroundings, CPP offers state-of-the-art design testing and analysis. Though valuable at any phase of the project, these services are especially useful in the early phases of design. To help ensure a healthy, comfortable, and efficient built environment, we evaluate each potential emission source for its effect on air intakes, plazas, operable windows, and other sensitive locations.

We provide practical design recommendations by working closely with the design team to understand project needs and priorities. We consider the surrounding buildings and terrain, chemical use, source types, local meteorology, energy costs, and the visual effects of stacks on the building and its surroundings.

Exhaust System Efficiency

An exhaust system can be a large initial and ongoing investment, especially for laboratories. Ensuring that the system is efficient without compromising occupant health or comfort is crucial.

Factors that affect exhaust system energy use include:

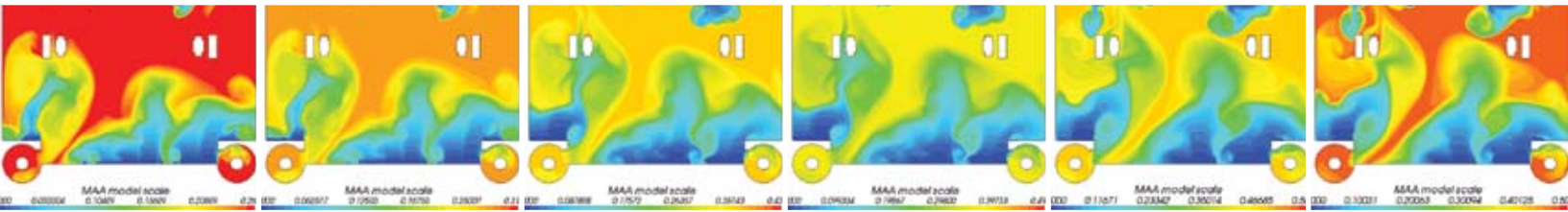
- Locations of exhaust sources and air intakes
- Nearby buildings
- Building elements such as screen walls and penthouses
- Exhaust volume flow rates and exit velocities
- The nature of the exhaust emissions

We evaluate exhaust systems on a case-by-case basis, regardless of exhaust design parameters, to ensure that air quality is maintained at all sensitive locations.

Variable air volume (VAV) systems control the fresh air that is brought into a space and conditioned. However, most VAV systems use constant-volume exhaust fans. Even when these fans use stepped controls, the system wastes energy and money.

CPP helps to minimize that waste by analyzing the system and defining the flow requirements so that each exhaust fan can run at less than 100% while still maintaining good air quality. This provides a more efficient system and significant energy savings.





Indoor Airflow

Indoor air quality is vital to occupant comfort. Comfortable occupants mean better productivity in office buildings, better learning environments in schools, and better sales in retail settings.

A powerful tool for testing your design is computational fluid dynamics (CFD). CFD simulations help you prevent problems, enhance the design, and save time during commissioning. For example, by simulating indoor airflow patterns, CFD can help identify dead zones, where air is not recirculating, and short-circuits, where fresh air is removed prematurely.

Some examples of buildings that benefit from CFD testing include:

- Office spaces
- Parking garages
- Arenas and theaters
- Computer data centers
- Laboratories and clean rooms

Smoke Management

To allow occupants to exit safely in the event of a fire, building codes recommend or require smoke management systems for spaces with high ceilings, such as atria. Building codes often prescribe a one-size-fits-all method for designing smoke control systems that does not work well for all large spaces, particularly tall narrow ones.

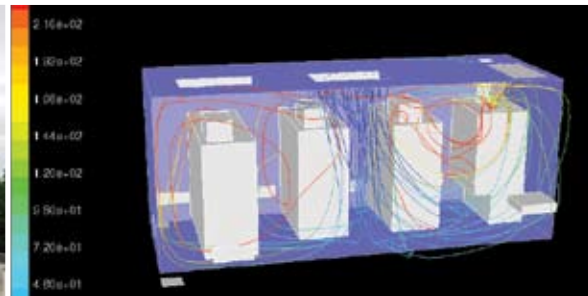
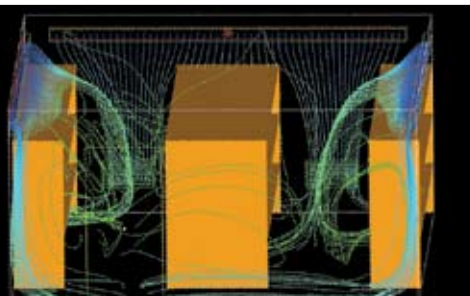
A performance-based system achieves the intent of the building codes through alternate methods. By using CFD to simulate air and smoke flow patterns, CPP helps you achieve a performance-based system that is more effective than strictly code-based designs.

Natural Ventilation

Natural ventilation uses “stack effect”—the rising of warm air—and outdoor winds to ventilate the building.

In most natural ventilation designs, even a gentle breeze will dominate indoor airflow patterns. Wind can change or reverse the expected flow of air and cause health and comfort problems. Wind can also reduce energy costs by supplementing indoor airflow. To help design professionals understand how wind affects indoor environments, CPP provides hybrid CFD/wind tunnel tests and expert consultation services.

To ensure effective natural ventilation, CPP performs wind tunnel tests using a scaled model of the building and its surroundings. These tests provide data that is used to design accurate CFD simulations of internal airflows and to show how the wind will affect natural ventilation under various conditions.



About CPP's Services

For over 25 years, CPP has been a premier provider of wind engineering and air quality services.

Since its founding in 1981, CPP has attracted and developed some of the finest wind engineers in the field. CPP principals and senior staff are key contributors to exhaust dispersion modeling guidelines, wind loading codes and wind tunnel testing standards around the world.

CPP's facilities include two large boundary layer wind tunnels, a multiple-CPU computer cluster for CFD simulations, an in-house model design and fabrication center, and a full-scale field site.

With world-class resources, over 25 years of experience and more than 1500 projects worldwide, CPP is the largest and most experienced US wind engineering company.



CERMAK
PETERKA
PETERSEN

CPP, Inc.
1415 Blue Spruce Drive
Fort Collins, Colorado, USA 80524

ph: 970 221 3371
fx: 970 221 3124
www.cppwind.com

Get LEED Credit Through CPP Services

