

## CPP History

Modern wind engineering began in the 1950s with the work of Dr. Jack Cermak, his colleagues, and students. As a professor and researcher at Colorado State University, Dr. Cermak pioneered now-standard methods of modelling and testing pollutant dispersion and the effects of wind on buildings and structures. In 1964, his laboratory tested the design of the World Trade Center Twin Towers in New York City, bringing wind engineering to the attention of architects and engineers around the world.

In 1981, Dr. Cermak and Dr. Jon Peterka co-founded America's first commercial wind engineering company. Three years later, Dr. Ron Petersen joined and the company was renamed Cermak Peterka Petersen (CPP). Since its founding, CPP has been lead by the most experienced wind engineers in the world.

Now, with leading experts located in Australia and the United States, CPP's expertise is even more accessible and convenient.

## CPP's Services

- Wind tunnel testing for cladding and structural loads
- Wind resource assessment and wind farm siting
- Wind turbine performance testing and siting
- Pedestrian-level wind testing and mitigation
- Computer simulations for design comparisons, indoor airflows, and smoke management
- Natural ventilation assessment and consulting
- Exhaust dispersion, exhaust/intake design

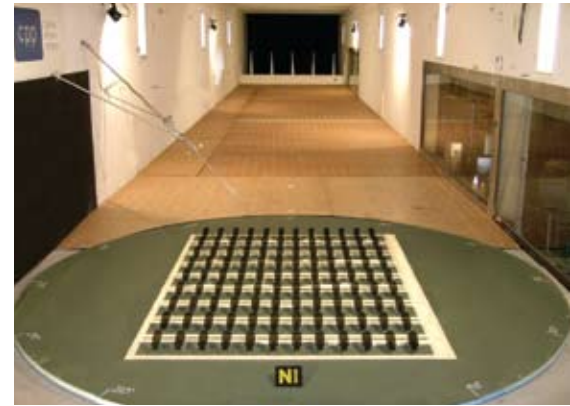
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Wind can stress or damage solar panels and arrays, reducing their efficiency and requiring costly maintenance or replacement.

### Wind-related Problems

Wind interacts with PV and heliostat panels in many ways. Though each project is unique, common issues include:

- **Wind damage to roof-mounted panels.**  
We can test the effects of wind on roof-mounted panels, recommend the minimal effective ballast, and assess the wind interactions with solar panels, exhaust stacks, HVAC units, penthouses, parapets, and other roof features.
- **Wind damage to solar panel arrays.**  
Panels on the outer ring of an array can act as wind shields for the inner panels. Because of this, the outer panels experience higher wind loads and more potential damage. We find the specific wind effects and work with you to find the right solution for the project.
- **Inaccurate computer wind simulations.**  
Many projects use computational fluid dynamics (CFD) to simulate wind effects on solar panels. Without a clear understanding of wind characteristics, turbulence, and the physics behind CFD, results can be incorrect or misleading. We apply our advanced expertise in CFD and physical modeling to arrive at reliable, accurate results.
- **Building code obstacles.**  
Building code inspectors and authorities do not accept CFD reports unless they are validated through acceptable engineering methods like wind tunnel testing. Contact us before the permitting process to avoid costly delays or unusable simulations.



Solar panels in wind tunnel

### Virtual, Model-scale, and Full-scale Testing

In addition to wind tunnel modeling and CFD simulations, we have full-scale testing capabilities for projects that do not lend themselves to scaling. We work with you to understand the details and priorities of your project so that we apply the right tools and methods for your needs.

### The Solution is in the Details

Wind-related problems change with the local wind environment, nearby terrain, surrounding buildings and vegetation, and the shape, weight, and positioning of solar panels. We look at all the relevant details to provide you with accurate and useful information.

