Cfd Simulations Of Pollutant Gas Dispersion With Different

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Cfd Simulations Of Pollutant Gas
The present study performs CFD simulations for flow and dispersion fields around an isolated cubic building model with tracer gases being exhausted from an exit behind the building. The tracer gases are treated as neutral, light, and heavy gases according to the density differences with ambient air.

CFD simulations of near-field pollutant dispersion with ...
The current chapter presents the use of computational fluid dynamics (CFD) for simulating the combustion process taking place in gas turbines. The chapter is based on examples and results from a series of applications developed as part of the research performed by the authors in national and European projects.

CFD Application for Gas Turbine Combustion Simulations ...
In case 2, the source is located directly on the roof of the building and the pollutant gas is released with low momentum ratio into the rooftop separation bubble. Validation of the CFD simulations is performed by comparing the numerical results with the wind-tunnel concentration measurements presented in , . For case 1, concentration profiles ...

CFD simulation of pollutant dispersion around isolated ...
In this research project, Computational Fluid Dynamics (CFD) simulations of pollutant dispersion from the roof of a low-rise building in downtown Montreal are performed. The simulation results are compared with full-scale on-site and reduced-scale wind tunnel measurements performed by Stathopoulos et al. (2004).

CFD SIMULATION OF POLLUTANT GAS DISPERSION IN DOWNTOWN ...
Computational Fluid Dynamics (CFD) is increasingly used to predict wind flow and pollutant dispersion around buildings. The two most frequently used approaches are solving the Reynolds- averaged Navier-Stokes (RANS) equations and Large-Eddy Simulation (LES).

CFD simulation of pollutant dispersion around isolated ...
Flow and pollutant dispersion in a densely built-up area of Seoul, Korea, are numerically examined using a computational fluid dynamics (CFD) model coupled to a mesoscale model [fifth-generation Pennsylvania State University–National Center for Atmospheric Research Mesoscale Model (MM5)].

Urban Flow and Dispersion Simulation Using a CFD Model ...
Even the best conceivable field measurement study will have very few data relative to the detailed structure of air flow and pollutant dispersion within the complex built urban environments. Therefore application of CFD simulations is critical to being able to understand pollutant transport and dispersion within urban building environments, and consequently critical in support of homeland security.

APPLICATIONS OF CFD SIMULATIONS OF POLLUTANT TRANSPORT AND ...
processes Article Dust Suppression Analysis of a New Spiral Hopper Using CFD-DEM Simulations and Experiments Jianming Yuan 1, Chenglong Jin 1, Fangping Ye 2,*, Zhihui Hu 1 and Huozhi Chen 1 1 School of Logistics Engineering, Wuhan University of Technology, Wuhan 430063, China; whtu_yjm@163.com (J.Y.); jin_cl@whut.edu.cn (C.J.); 13407101635@163.com or huzhihui@whut.edu.cn (Z.H.);

Using CFD-DEM Simulations and Experiments
; it is also assumed that there is a 5 K temperature difference between the CO 2 and external fluids in the gas cooler and evaporator, at the cold end of the heat exchangers. The flow chart of the CFD simulation and thermodynamic analysis of the heat pump cycle is illustrated in Fig. 6. Download : Download high-res image (167KB)

CFD modelling and exergy analysis of a heat pump cycle ...
Computational fluid dynamics (CFD) is a branch of fluid mechanics that uses numerical analysis and data structures to analyze and solve problems that involve fluid flows.Computers are used to perform the calculations required to simulate the free-stream flow of the fluid, and the interaction of the fluid (liquids and gases) with surfaces defined by boundary conditions.

Computational fluid dynamics - Wikipedia
The CFD simulations are validated by detailed wind-tunnel experiments performed earlier by Stathopoulos et al. (2004), in which sulfur-hexafluoride (SF6) tracer gas was released from a stack on the roof of a three-storey building and concentrations were measured at several locations on this roof and on the facade of a neighboring high-rise building.

CFD simulation of near-field pollutant dispersion on a ...
ESTIMATION OF POLLUTANT DISPERSION FROM A STACK BY CFD ANALYSIS Dispersive transport takes place as a dispersed phase moves into a continuous phase available in its surroundings. The dispersion of pollutants from a flue gas stack is one such phenomena. Pollutant dispersion studies are mandatory for regulatory requirements.

Estimation of Pollutant Dispersion from A Stack by CFD ...
Many previous studies have indicated that CFD simulations based on the steady Reynolds-Averaged Navier-Stokes (RANS) equations are deficient in reproducing the wind-flow patterns (e.g. Murakami et al., 1992) and near-field pollutant dispersion concentrations around buildings (e.g. Leitl et al., 1997; Meroney et al., 1999;

CFD simulation of near-field pollutant dispersion on a ...
DOI: 10.1016/j.atmosenv.2013.07.028 Corpus ID: 7316382. CFD simulation of near-field pollutant dispersion in the urban environment: A review of current modeling techniques @article{Tominaga2013CFDSO, title={CFD simulation of near-field pollutant dispersion in the urban environment: A review of current modeling techniques}, author={Yoshihide Tominaga and Theodore Stathopoulos}, journal ...

Figure 1 from CFD simulation of near-field pollutant ...
The purpose of this thesis is to perform Computational Fluid Dynamics (CFD) simulations for modelling an industrial gas turbine combustor in order to match the experimental pollutant emissions with the obtained results.

CFD SIMULATION OF A HEAVY DUTY GAS TURBINE COMBUSTOR ...
The computational fluid dynamics (CFD) model is the most popular model because it can well describe the influence of complex terrain and obstacles on gas flow and diffusion, although it consumes more computation time (Scargiali et al., 2005, Tauseef et al., 2011, Liu et al., 2016). The rapid development of computer hardware and numerical algorithms has enabled the CFD model to be used extensively in indoor pollutant dispersion studies.

Simulation of heavy gas dispersion in a large indoor space ...
In the past two decades, micro-scale Computational Fluid Dynamics (CFD) simulation has been widely used as an emerging analysis method for pollutant dispersion around buildings and in urban areas, sometimes in lieu of wind tunnel testing.

CFD simulation of near-field pollutant dispersion in the ...
A numerical investigation of pollutant emissions of a novel dry low-emissions burner for heavy-duty gas turbine applications is presented. The objective of this work is to develop

Numerical Investigations of Pollutant Emissions From Novel ...
Previous studies regarding pollutant dispersion were limited to either an isolated building or purely outdoor environments. This thesis provides a systematic investigation of pollutant dispersion with natural ventilation in the urban environment with both scaled outdoor experiment and CFD simulations.

PolyU Electronic Theses: A study of pollutant dispersion ...
CFD is one of the most important technologies in the field of Fluid mechanics in the 21st century. The numerical simulation of NDDCT with flue gas injection is a very complex flow problem, involving atmospheric boundary layer, heat transfer, buoyancy drive, separation, pollution diffusion, and many other problems.