COMPUTATIONAL FLUID DYNAMICS (CFD)

Delivering high quality assets in Vietnam with CFD.

Executive Summary

Indochine provides CFD services for smoke, thermal comfort and wind comfort analysis.

Benefits to Projects

Key benefits to the project include.

- Validates design efficiency
- Saves time and cost
- Provides reliable results
- Foresees flow behaviour
- Offers detailed information
- Predicts performance
- Improves design
- Detects failure mode

Process

Computational Fluid Dynamics is a widely used tool to solve any flow system. It has the potential to predict extremely complicated flows.

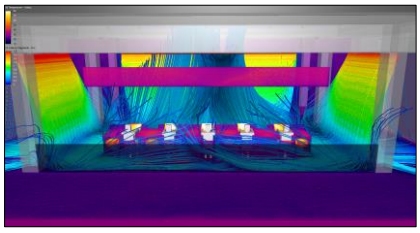
In building engineering industry, CFD is used to:

- analyse external airflow
- predict indoor thermal response
- quantify indoor air quality
- investigate HVAC system strategies
- ensure occupant's comfort/safety

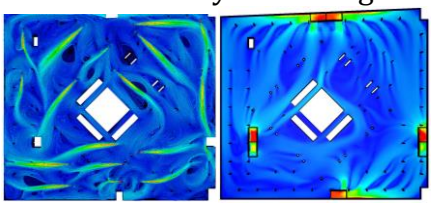
Any geometry can be built, any physics equation can be solved, any design answer can be found.

Yangon Landmark Shopping Mall

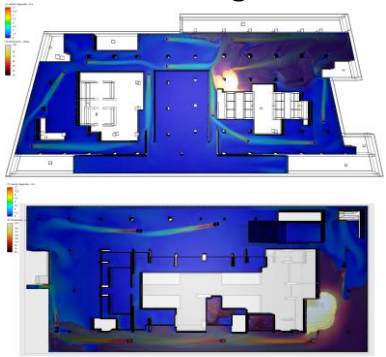
Los Angeles Cultural Center



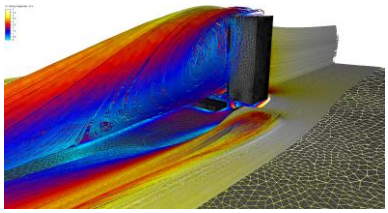
Ventilation system design



Smoke management



Wind comfort



Recommendations

Fluid flow and heat transfer influence both how comfortable or safe a building is to live in.

Some unique design requires an engineered solution where traditional regulation is not readily applicable.

CFD has practical use within complex or large structures such as:

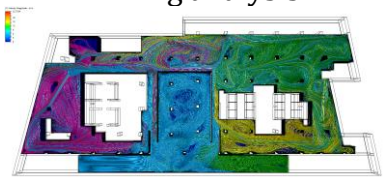
- Shopping malls
- Atrium hotels
- Leisure complexes
- Parking garages
- High-rise/low-rise systems
- General offices
- Data centers, clean rooms
- Stadium, theatres

Conclusions

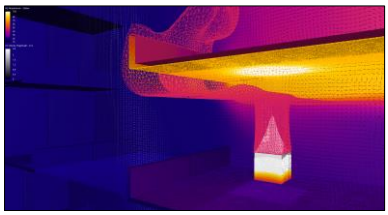
Indochine Engineering provides fluid solutions that enable buildings to achieve greater performance with simpler, more cost-effective designs.

Solar radiation

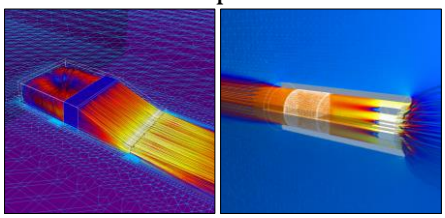
Mixing analysis



Fire simulation



Mechanical performance



Supporting information

Software implemented

- Autodesk Simulation CFD
- Nist Fds-Smv
- Revit, Fusion 360

Key considerations

Mechanical ventilation analyses simulate how efficient the airflow is in spaces that are controlled with air conditioning or ventilation systems.

Transient analyses allow to compute sensible time-varying flow and thermal components.

Solar heating analyses play a key role to determine the energy performance of occupied spaces.

Smoke analyses compute the distance a lighted sign can be seen from within a smoke-filled environment.

Thermal comfort analyses predict the satisfaction of occupants with their thermal environment.

Wind analyses simulate structural loading and reverse turbulent eddies.

Natural ventilation analyses solve buoyancy-driven flows caused by temperature variations.