SKILLS SUMMARY

M.Tech in Mechanical Engineering with Thermal and Fluid Specialization at IIT Bombay with an Overall 7+ Years of experience in CFD analysis for Building and infrastructures developments Services.

Contact Details:
Email: kumar0510iitb@gmail.com
Contact no: +971-544621540 (UAE)
+91-9769142587 (India)

Professional Competency

Well-versed in Computational Fluid Dynamics Tools, Ansys Family, Fluent, Spaceclaim, Design Modeler Ansys Meshing, FDS, Pyrosim,

Key Area Of Expertise

CFD Analysis for
Fire and Smoke Analysis for Car Park, Atrium, High Rise Building, Staircase Ventilation
Thermal Comfort Analysis for Outdoor and Indoor Cooling.
Pedestrian Comfort Analysis
Pollutant Dispersion Modelling
Chiller/Cooling Tower Simulation
Data Center Design Analysis
Tunnel Ventilation
CO Ventilation in Car Parks

Conference & Papers Publications

4th International ASHRAE Conference on EFFICIENT BUILDING DESIGN, held in Beirut Lebanon, 2020. Author of Conference paper " Optmized Design of Indoor Cooling System for Auditorium In Hot Climate Using CFD".

Employment History

Lead Simulation Engineer,
Design confidence, Dubai,
Dec, 2021 – Present

CFD Specialist, Mechanical Engineer (P3),
Dar Al Handasah, Shair & Partners,
July 2019 – Dec 2022

CFD Specialist, Mechanical Engineer (P2),
Dar Al Handasah, Shair & Partners,
June 2016 – July 2019

Mechanical Engineer (P1),
Dar Al Handasah, Shair & Partners,
Aug 2015 – June 2016

NAME
Kumar Bhushan

POSITION
Lead Simulation Engineer

LOCATION
Dubai, UAE.

QUALIFICATIONS
- Post Graduate in Mechanical Engineering (Specialisation in Thermal & Fluid Engineering)
- B.Tech in Mechanical Engineering

COUNTRY EXPERIENCE
- UAE / India

EXPERTISE
Kumar is a Post Graduate Engineer from IIT Bombay, Mumbai, India. He gained his degree in Mechanical Engineering with a specialization in Thermal & Fluid Engineering in the year 2015. He graduated with a Mechanical Engineering degree from AVIT, Chennai, India in the year 2012.

Kumar has previously worked with Dar Al Handasah, Shair & Partners, Pune, and has been involved in several different projects in Computation Fluid Dynamics Analysis. He has experience in CFD Analysis of Fire & Smoke Behaviour, Outdoor and Indoor Thermal Comfort, Tunnel Ventilation, Pollutant Dispersion Modelling, Staircase Pressurization, and Cooling analysis of Data Centers for a range of Commercial, Retail, Residential, Industrial, Warehouses, Airports, Islands, and Mall buildings. Kumar has about 7.5 years of experience in the field of CFD Analysis in Building and Design Services. Further, he has in-depth knowledge and understanding of Fire and Life Safety Design, HVAC Design for the buildings

PROJECT EXAMPLES

Gewan Island, Doha, Qatar
Role: Climate Control Analysis | CFD Specialist
Gewan Island is situated next to The Pearl Island, spanning 411,602 sqm. The Island will accommodate 3,500 residents and a similar number of daily visitors. Gewan Island is home to 586 apartments, 21 beachfront villas with private beach, 26 waterfront villas that are equipped with private pontoons for private boats, and six independent island mansions, in addition to 11,000 sqm of retail spaces and 15 multi-use buildings. Gewan Island will also feature a golf course with the five-star 'Corinthia Gewan Island Qatar' hotel and connected beach club, an air-conditioned outdoor 'Crystal Walkway, a seaside Promenade, parks, and green areas. The Island will also be home to entertainment facilities, a clubhouse, and a mosque.

Kumar was involved in CFD analysis of the outdoor cooling design of Gewan Island, which includes but is not limited to the pedestrian thermal comfort of central Spine areas, and promenade areas. He was responsible for predicting local conditions such as flow field, temperature, Standard effective temperature (SET), Beaufort numbers, and relative humidity distribution. He was directly involved with the design team in optimizing key design parameters such as distribution, discharge angles, the flow of diffusers, and the size of air outlets/ inlets to ensure thermal comfort conditions are maintained even in peak summer conditions.

A similar analysis was conducted for the below-mentioned Projects:

- Mina District Port, Doha, Qatar
- Dubai City Walk, Dubai, UAE
- Jeddah Central District Redevelopment, Jeddah, KSA.
- Aramco Innovation Center, KSA
- Khalifa International Stadium, Doha, Qatar
- KATARA Hotel, Lusail Marina District, Qatar

CFD Analysis of Smoke in Critical Fire Scenario
Role: CFD Specialist
Kumar was responsible for studying fire development and smoke mitigation in addition to the design, assessment, and performance optimization of the smoke management systems to ensure safe egress.

He was involved in optimizing the position of escape routes and smoke curtains and improving key design parameters such as distribution, discharge angles, and flow of supply outlets, Exhaust outlets, Jet fans, louvers, and size of air outlets/ inlets.

He has performed the CFD simulations for Smoke analysis on various complex buildings, atriums, airports, malls, car parks, auditoriums, stadiums, tunnels, etc. Some of his key projects are listed below.

- Haram Mataf Expansion | Al-Shamiyah Haram Expansion, Makkah KSA
- King Abdul Aziz Internation Airport, Jeddah, KSA
- Central Business District, Cairo, Egypt
- Marsai Al Bahrain Mall, Bahrain
- Coca-Cola Arena, Dubai, UAE

- Aircraft Hanger Simulator, Qatar
- Basement Car Parks of Lusail City, Qatar
- Dubai International Airport, Dubai, UAE | Souq Al Saghier Tunnel, KSA

Pollutant Dispersion Modelling
Role: CFD Specialist
Kumar was working as a CFD specialist Engineer and was responsible for studying the effect of wind in relation to building envelope pressure levels, natural ventilation, and infiltration/exfiltration in order to visualize the dispersion of pollutants with the incoming wind. He studied and researched exhaust fume hoods and their characteristics for the internal dilution of pollutants. He was also involved in optimizing the key designs of exhaust fume ducts, and the location of fresh air intakes for research laboratories to achieve the desired dilution target of pollutants. For this purpose, he has mainly worked on the below projects

- EXPEC Advanced Research Center Laboratory Buildings, KSA
- Kuwait International Petroleum Research Center (KIPRC), Kuwait.

Thermal Comfort Analysis
Role: CFD Specialist
As a CFD specialist, Kumar was responsible for studying the thermal comfort analysis for various Indoor and outdoor buildings. He is responsible for predicting local conditions such as flow field, temperature, and relative humidity distribution within a space. He is also responsible to study the Predicted Mean Vote (PMV) and Percentage of People Dissatisfied (PPD) values for internal spaces such as Indoor stadiums, Malls, Stations, Airports, Auditoriums, Theatres, etc. He was also responsible for optimizing key design parameters such as distribution, discharge angles, the flow of diffusers, and the size of air Outlets/ Inlets to ensure thermal comfort conditions are maintained, for the following key projects

- King Abdul Aziz International Airport, Jeddah, KSA
- Coca-Cola Arena, Dubai, UAE
- Dubai Global Connect (DGC), Dubai, UAE
- Kick-off Building, Auditorium, Dubai, UAE
- Hamad International Airport, Doha, Qatar
- Saudi Entertainment Ventures (SEVEN), KSA
- Haram Mataf Expansion, Makkah, KSA

Cooling Tower Simulation | Generator Room Simulation
Role: CFD Specialist
Kumar is Responsible for modeling cooling towers hot and humid discharges to assess their impact on surrounding buildings and establish the outdoor conditions at cooling towers intakes. His work also includes optimization of the layout of cooling towers to minimize re-entrainment at the intakes to ensure that no loss of cooling capacity will be incurred, for the following projects:

- The pearl Integrated District Cooling Plants, Doha, Qatar
- Dubai International Airport. Dubai, UAE

CFD Analysis of DATA Center

Role: CFD Specialist

Kumar is responsible for locating areas of uneven cooling, flow recirculation, and thermal hotspots. His work involves determining the optimal location of diffusers for the best performance. He was involved in examining possibilities, considering the causes and effects of hotspots in data centers, and making decisions of changing the physical location and distribution of server racks, through simulations. He also assisted the design team in helping with the selection of the HVAC Design such as Cold Aisle, Hot Aisle. or a combination of both for data center using CFD simulations, for the following projects:

- Al Maktoum International Airport, Dubai, UAE
- Dubai International Airport, Dubai, UAE

Staircase Pressurization

Role: CFD Specialist

Kumar is involved in studying the staircase pressurization for the high-rise buildings where the fire exit staircase is recommended to be maintained at a recommended pressure range. His work includes maintaining adequate positive pressure such that smoke should not enter the staircase and at the same time, pressure should not be large enough to prevent the occupant from opening the door. His work includes optimizing the Staircase design for the location of the pressure sensor, pressurization grill, and pressure relief damper size.

Projects handled :

- National Bank of Kuwait, Kuwait
- IU Academic Health Center, USA
- BJC Healthcare New Cancer Center, Washington, USA