

DECEMBER JOINT TECHNICAL WEBINAR

ANALYSIS OF AIRFLOW PATTERNS AND FLOW PATH OF AIRBORNE CONTAMINANTS

SPEAKER: DR. KISHOR KHANKARI, PH.D.

We welcome you to join us for the December joint technical webinar with the Golden Gate chapter and Redwood Empire section. Network with members in our region and learn how we can use CFD to analyze airflow and how contaminants spread throughout a building.

| Date: | December 17, 2020 |
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| <u>Time:</u> | 12:00 PM |
| Location: | Virtual |
| | Log in information will be provided prior to the meeting |
| <u>Cost</u> : | \$20 Member/\$25 Non-Member |
| | To be donated to ASHRAE RP |
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RSVP: https://ggashrae.org/

Speaker: DR. KISHOR KHANKARI, PH.D. President, AnSight, LLC

Dr. Kishor Khankari, Ph.D. provides engineering solutions and insights through Physics based simulations and CFD analysis. Kishor has several years of experience in providing optimized HVAC solutions to a wide variety of applications involving external wind engineering, plume dispersion, smoke exhaust, displacement ventilation, natural ventilation, radiant heating and cooling, and indoor air quality and thermal comfort optimization for office spaces, patient rooms, operating rooms, cleanrooms, justice facilities,



data centers, and warehouses. Dr. Khankari has developed a patented technology of a wind band design of exhaust fan assembly systems. He has developed several easy-to-use analytical software tools which are regularly used by design engineers in a variety companies including those in HVAC industry, critical facilities, and automotive industries.

A noted expert in his field, he has a Ph.D. from the University of Minnesota and has been regularly published in several technical journals and trade magazines. Dr. Khankari has delivered close to 100 DL presentations worldwide on topics related to design and optimization of HVAC systems and made several presentations at various technical conferences and professional meetings.

Dr. Kishor Khankari is a Fellow member of ASHRAE. He is a recipient of ASHRAE Exceptional and Distinguished Service Awards. He is the past President of Detroit ASHRAE Chapter, past Chair of ASHRAE Technical Committee TC9.11 Clean Spaces, and past Chair of Research Administration Committee (RAC). He is the member of ASHRAE Environmental Health Committee and currently leading a new Multi Task Group (MTG) on Air Change Rates.

Presentation Summary

Recent COVID-10 pandemic necessitates an increased need for understanding the room airflow patterns and its role in containing and spreading of airborne contaminants. With air being the primary carrier of heat, moisture, and airborne contaminants, the flow path of supply air plays an important role in determining the flow path of airborne contaminants in indoor facilities. This course covers the basics of airflow and particle dynamics and demonstrates how the supply air flow paths, induced air flow paths, and exhaust grille placement can work collaboratively to establish protective and effective contaminant control in a typical patient room. Several studies indicate that the design of a ventilation system and the resulting airflow patterns play a more important role in controlling the flow path of airborne contaminants than just the supply airflow rate or air changes per hour (ACH) alone. This case study evaluates the impact of supply and return locations on the airflow patterns and temperature distribution along with the resulting thermal comfort of occupants. Probable flow path of airborne particulates in a typical patient room using Computational Fluid Dynamics (CFD) simulations are demonstrated. Insightful airflow animations will show the movement of airborne particles for various applications displaying the importance of HVAC design including the locations of supply and exhaust grilles. The course provides valuable insights to HVAC design engineers, facility managers, infection prevention personnel, and building owners regarding the role of airflow patterns and resulting flow path of airborne contaminants.