Hatch Mott MacDonald

Engineering Consulting

United States of America
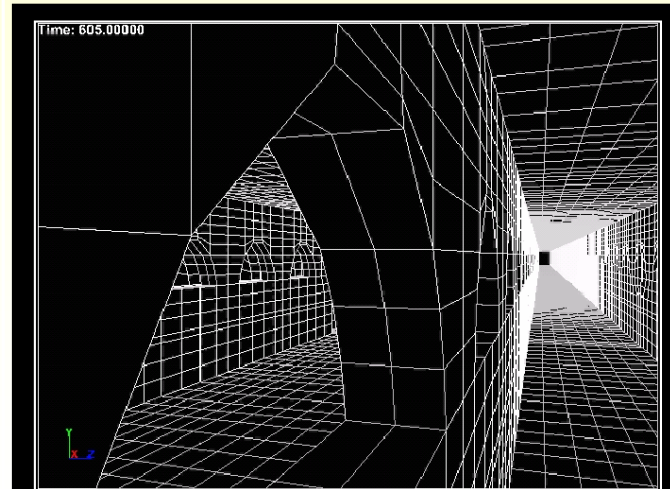
www.hatchmott.com

Hatch Mott MacDonald

ANSYS

ANSYS® CFX®

Overview

Hatch Mott MacDonald (HMM) is a leading North American consulting engineering firm with a century of worldwide experience. At the forefront of subway ventilation since the 1920s, HMM's leading-edge skills successfully address the various issues associated with the design of underground ventilation systems. Our experience has been gained through design, construction and maintenance projects worldwide, developing leading edge skills in ventilation, aerodynamics and cooling; smoke modeling, prediction and removal; fire safety and evacuation and emergency response planning.

Prediction of fire and smoke movement is one of our specialist areas. Using ANSYS CFX software, our specialists develop and apply three-dimensional simulation models to predict air movement due to normal ventilation conditions and smoke/chemical behavior in emergency scenarios. This modeling yields an understanding of such dynamic situations which leads to the design of optimal operation and safety systems for underground infrastructure and facilities.

Testimonial

"We have used ANSYS CFX software for the design of the most complex ventilation systems and have invariably been able to demonstrate to our clients the realism and accuracy of predictions. This has enabled us to propose innovative solutions with the confidence that they will work in practice."

Norman Rhodes
Vice-President

Challenge

HMM undertakes comprehensive modeling and design analyses for existing tunnels and transportation facilities from a fire/life safety and ventilation perspective. The objectives are to provide good environmental conditions for users during normal operation and safe conditions for evacuation in emergency modes. Fire and smoke modeling requires a consideration of turbulent, buoyant, chemically reacting flows and a need to assess tenability conditions, based on visibility, temperature and toxicity.

Solution

Physical measurements in such large structures rarely lead to an understanding of the subtle thermal mechanisms that control the environment – only CFD modeling can put the pieces together and yield an understanding that provides a basis for design.

Comparison with detailed fire experiments and selected measurements in operational facilities have confirmed the predictive capability of ANSYS CFX.

Benefits

ANSYS CFX provides an ideal platform for the development of fire and smoke models, and enables assessment of design changes that lead to higher levels of safety and improved conditions for normal operation.

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