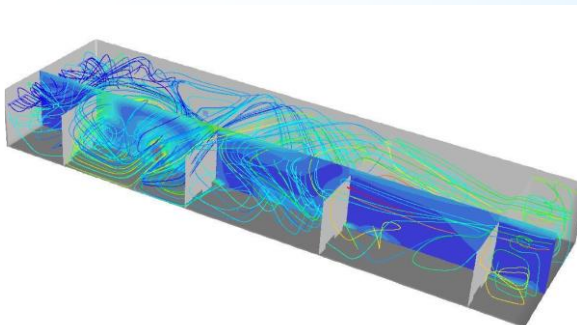# MOSEN

Capability in Computational Fluid Dynamics (CFD)

1 Introduction

Computational Fluid Dynamics (CFD) is a powerful numerical modelling technique used to simulate the flow of a gas or liquid through a physical geometry. The technique is highly versatile and can be used to study a wide variety of complex fluid flow phenomena, such as the spread of fire and smoke through a building, the wind loadings on a structure or the flow of air through a tunnel. CFD can also be used to study processes such mixing systems and chemical reactions, including combustion.

Typically, CFD may used in conjunction with other methods for the following tasks:

1. Verification and optimisation of design performance;
2. Investigations following accidents;
3. Development of understanding of particular flow processes.

**Flow pathlines in a water treatment works aeration tank**

2 Mosen's experience in CFD

Tunnel ventilation
Fire and smoke movement
Building heating, ventilation and cooling
Process plant performance
Multiphase flows
Free-surface flows
Turbomachinery
Dispersion in air and water
Wave loading
Fluid structure interaction, including:
      Floating structures in waves
      Vortex induced vibration in currents
Heat transfer
Explosions

3 CFD codes

Mosen has access to a variety of CFD codes, including OpenFoam, FDS, CFX and Fluent. Through these codes, we can model a wide range of flow physics, including chemical reaction and combustion; heat transfer; turbulence; and multi-phase physics. Using our powerful mesh generators, complex geometries can be created or imported from CAD data.

In order to model complex flow physics, Mosen's staff members have developed their own subroutines that can be interfaced to the standard CFD codes, thus providing unique capabilities.
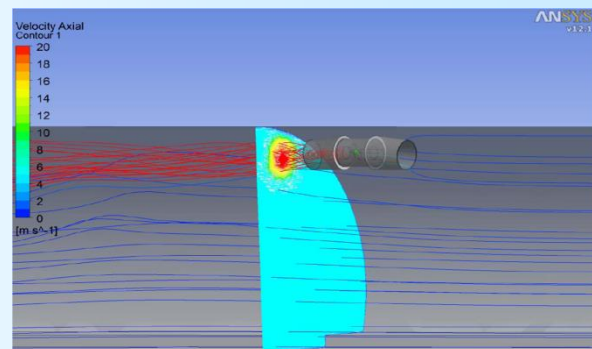
Simulation of MoJet® flow turning within a tunnel

4 Contact

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