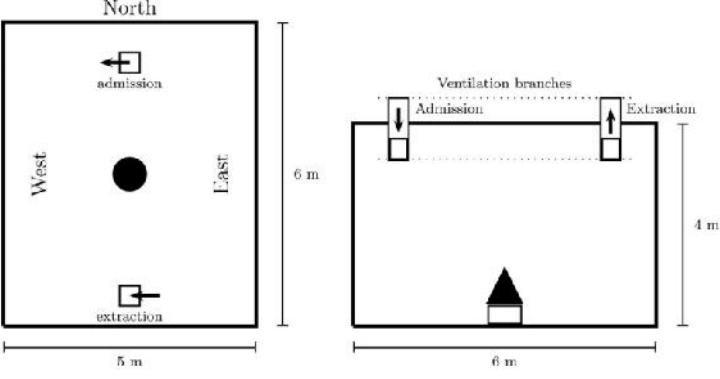


Verification type	Analytical Solutions
Database reference	ANA-4
Topic / Application	Analytical Solutions Manufactured Solutions Numerical Solutions Validation
Physics	Compartment Fires Taylor Green Vortices Beltrami Flows Laminar Flow around circular obstacle
Summary	This paper contains a comprehensive set of references for analytical solutions to flowfields of relevance to fires and internal flows. MMS and Numerical solutions are also used on more complex flows.
Description	<p>The paper outlines verification (and validation) processes on a fire field model developed by the authors. The terminology and methodology given in the reference literature are fully respected in that verification deals with mathematics and validation with physics. The verification process compares numerical results with highly accurate solutions given by analytical, manufactured or published benchmark solutions.</p> <p>The paper collates a very useful set of references for analytical solutions to flow cases</p> <p>In contrast, the validation phases of the code use a building-block approach to divide a complex system into simpler validation cases through three intermediate tiers: the unit problems, the benchmark cases and finally, the subsystem cases.</p>
Case Title	Verification and validation of a CFD model for simulations of large-scale compartment fires
Authors	S. Suarda, C. Lapuertaa,b, F. Babika, L. Rigollet
Year	2011
Online reference	Nuclear Engineering and Design 241 (2011) 3645–3657

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<p>Case image</p>	 <p>The diagram shows two views of a fire in a room. The left view is a top view of a 5 m wide room with a 6 m high ceiling. A fire is located in the center. There are two ventilation openings: 'admission' at the top (North) and 'extraction' at the bottom (South). The right view is a side view of a 6 m wide room with a 4 m high ceiling. A fire is located at the bottom center. There are two ventilation openings at the top: 'Admission' on the left and 'Extraction' on the right. 'Ventilation branches' are shown above the openings. Dimensions are indicated: 5 m width for the top view, 6 m height for the top view, 6 m width for the side view, and 4 m height for the side view.</p> <p>Top view (left) and side view (right) of the fire.</p>
<p>Governing equations</p>	
<p>Results</p>	