

*SUpport to SAfety ANalysis of Hydrogen and Fuel Cell Technologies*

<b>Verification type</b>	Methodology
<b>Database reference</b>	MET-3
<b>Topic / Application</b>	Methodology Analytical Solution
<b>Physics</b>	1-D wave equation Boundary layer flows RANS
<b>Summary</b>	A comprehensive approach to verification and validation methodology and procedures for CFD simulations from an already developed CFD code applied without requiring availability of the source code for specified objectives, geometry, conditions, and available benchmark information.
<b>Description</b>	A comprehensive approach to verification and validation methodology and procedures for CFD simulations from an already developed CFD code applied without requiring availability of the source code for specified objectives, geometry, conditions, and available benchmark information. Concepts, definitions, and equations derived for simulation errors and uncertainties provide the overall mathematical framework. A 2-part paper, part 2 provides an example for RANS simulations for a cargo/container ship where issues with regard to practical application of the methodology and procedures and interpretation of verification and validation results are discussed.
<b>Case Title</b>	Comprehensive Approach to Verification and Validation of CFD Simulations—Part 1: Methodology and Procedures
<b>Authors</b>	Fred Stern et al
<b>Year</b>	2001
<b>Online reference</b>	ASME Journal of Fluids Engineering DECEMBER 2001, Vol. 123 793
<b>Case image</b>	
<b>Governing equations</b>	
<b>Results</b>	