

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

<b>Verification type</b>	Methodology
<b>Database reference</b>	MET-2
<b>Topic / Application</b>	Methodology Numerical Error Sources Aerodynamics
<b>Physics</b>	Supersonic / Compressible flows
<b>Summary</b>	Paper compares the numerical errors from a RANS and a simpler multi-block inviscid “zonal” model of compressible flows.
<b>Description</b>	The paper compares the accuracy of simulations of supersonic flows from a RANS and from a simpler parameterised model. Grid sensitivity studies are also undertaken.  This paper is included in the methodology part of the database because of the focus on shock waves and compressible flows (relevant for hydrogen detonation) but also the practical procedures used in making the comparisons
<b>Case Title</b>	Accuracy Issues in the Prediction of Supersonic Inlet Flows
<b>Authors</b>	G. C. PAYNTER and E. TJONNELAND
<b>Year</b>	1992
<b>Online reference</b>	ASME Paper 92-GT-400
<b>Case image</b>	
<b>Governing equations</b>	
<b>Results</b>	The conclusion is that both approaches demonstrate similar levels of accuracy. It should be noted however that at the date of the paper the computational resources were limited and that as of 2015 given advances in computing resources a similar conclusion may not apply.