

CONVENTIONAL AIR BLAST LOADING IN TUNNELS AND STRUCTURES: COMPARISON OF ANALYTICAL, NUMERICAL AND EXPERIMENTAL RESULTS

Bernard Anet, Eduard Binggeli
LABOR SPIEZ CH-3700 Spiez, Switzerland

In the practical design of protective structures against the effects of non-nuclear weapons the assessment of air blast loading resulting from the detonation of HE-charges is a difficult and demanding task!

Generally speaking three methods of investigation might be used to perform this job: First, the quick and easy to use design manual or engineering code option; second, the more ambitious solution of a numerical simulation with hydrocodes and finally the option of an experimental investigation in full or model scale.

This paper deals with the comparison of the results obtained with these three methods, each of them having been applied to determine air blast loading characteristics in four typical tunnel and structure configurations. For the analytical approach, the chapter 9 of the Swiss design manual LS-2000 dealing with conventional air blast in tunnels was used. Twodimensional numerical simulations were performed with the AUTODYN hydrocode and free field HE-model test series provided the experimental data.

In this paper the results of these investigations are presented, compared and discussed.