ANALYTICAL COMPUTATIONS OF BLAST WAVE EFFECTS ON CONCRETE STRUCTURES USING THE NARCISSE AND KASDAL CODES

M. ADAMCZEWSKI-CAURET, A. ROUQUAND, P. DELCOR
DGA, DCE, Centre d'etudes de Gramat, 46500 Gramat, France

The 'Centre d'Etudes de Gramat' has developed a numerical chain including two analytical, semi-empirical codes, Narcisse and Kasdal, to compute the response of structures exposed to high explosive detonations. The work presented describes for each module: capabilities, methods used and examples. The future works will lead on the chain validation and on the development of new capabilities.

INTRODUCTION

In order to study structures vulnerability against conventional weapons, the 'Centre d'Etudes de Gramat' has developed an efficient tool using simplified methods. This tool includes two analytical, semi-empirical codes, Narcisse, that calculates the dynamic pressure loading of structures submitted to the blast wave of a detonation, and Kasdal, that calculates the structural response of reinforced concrete slabs submitted to the pressure loading. A specific interface has been developed to link the two codes.

For each module we present its capabilities, the calculations methods and use examples. The results obtained are compared to the corresponding one from experiments and from numerical simulations using reference hydrocodes and structure codes.