

Scope of the project "Analysis of building vulnerability in relation to terrorist attacks with explosives and related countermeasures" named ABVERC is to analyse the primary aspects of terrorist attacks with explosives to civil buildings and their vulnerability: the effects of an explosion on structures and people and the preventive measures that could be implemented in the design phase of new constructions in order to mitigate blast effects and maximize their security and robustness.

Following attacks or serious accidents involving explosives, several studies have been done in many countries in the world, but never in Italy in order to understand the behaviour of the structures under these abnormal impulsive loads never considered at today in the design phase of civil buildings.

It is important to analyse what has been done in other countries in order to identify methodologies and results of these studies to be implemented in a national and European prevention programme.

To mitigate blast effects and increase safety it is necessary to consider all effects related to an explosion with a multi disciplinary approach by studying all the different aspects of a construction from structural and non-structural elements, internal and external layout, material used to all mechanical and electrical plants.

It is therefore needed the simultaneous and coordinated effort of a number of highly specialized subjects such as engineers, and explosive experts to study the risk and countermeasures needed for structures as well as experts to evaluate the correlated NBC risk.

As in general the probability of an attack remains low it is important to understand the result needed in order to maximize the level of protection without building 100% bomb-proof buildings as all these countermeasures should not interfere with the daily activities and usability of a building, while considering also other aspects as construction cost, fire and earthquake protection, health and safety regulations, accessibility, aesthetics, etc.

Following all these considerations this project will identify all risks related to an explosion and provide a number of practical measures to be implemented in existing building or implemented in the design phase to maximize the level of protection for people.