

Tunable Charges

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1. Introduction

Parallel to the development of new non-lethal weapon systems, also investigations covering the modification of conventional systems have to be taken into account. The concept of tunable charges allows the conversion of standard warheads from lethal to different types of non-lethal applications by varying and controlling the performance regarding deflagration / detonation behavior, fragmentation behavior and fragment sheltering. The advantages of these modified systems lie in adjusting the reaction power accounting for various situations. If such developments are successful, no more complementary non-lethal equipment is necessary in peace keeping operations. Various technical approaches are possible to control the detonation behavior of the explosive charge, to modify the fragmentation casing or to activate fragment shelters.

2. Technical Concepts of Tunable Charges

Figure 1 shows the idea on tunable warheads in form of a sketch. This type of warhead can be applied against military targets like a conventional warhead with the deployment of its full performance capacity. If required, this performance can be adjusted as desired to a value between 0% and 100% (therefore, tunable charge). Besides this, the performance can be applied focussed in azimuth angle, i.e. as indicated in Figure 1, with the full performance capacity against a military target and at the same time with low or no performance capacity against the „non-lethal target“ or the „collateral target“.