KV INDUSTRIAL DETONATION CHAMBERS
FOR AMMUNITION DISPOSAL

KV-series industrial detonation chambers have been used in the former Eastern Block countries for industrial applications of explosion energy for more than 40 years. The chambers are automated machinery designed to withstand repeated detonations as a part of a continuous manufacturing process, with an overall service life exceeding 100,000 detonations. Within the KV-series, there are 6 chamber types of a different design and a maximum charge weight ranging from 0.2 kg to 16 kg TNT equivalent per a shot. The chambers are made of heavy steel body parts connected together by a circular bayonet lock. Movements of the steel parts exposing a working table inside and of the bayonet lock are carried out by hydraulic cylinders. Post-explosion gases are removed from the chamber by pressurized air and/or ventilating fans through an exhaust pipeline. The chambers are automatically operated by a control panel ensuring proper sequence of operations and allowing to fire the charge only when the system is ready.

Within the Czech Republic there is an experience with successful application of these chambers for safe and environmentally friendly disposal of ammunition. The chambers have been equipped with type-specific off-gas treatment units according to a portfolio of ammunition and local environmental regulations. For example, ammunition initiators containing toxic heavy metals are destroyed in a KVE-2 (2 kg TNT) chamber equipped with a 4-step gas cleaning unit. Up to 5,000 detonators or primers or 100 artillery fuzes can be destroyed in a single operation repeated each 15 – 30 minutes. Trapping effectiveness of the off-gas treatment for heavy metals is more than 99.99 %.

Application of detonation chambers for destruction of non-recyclable ammunition elements along with recycling of demilitarized high explosives and propellants into commercial blasting agents have proven to be more cost effective solution than investment into a large scale ammunition incinerator.