

Innovation

Third Joint Winner

- **Project Title:**
Making resistant the A.P.C's hull against 7.62-30 mm AP Bullet
- **Initiator:**
Ministry of Defense, DIO, Armor Industries Group, Vehicle Institute of science and Technology
- **Representative:**
Morteza Karbalaei Jafar (Eng.)
- **Contributors:**
University of Science and Industry of Iran Research Institute of Paint, Polytechnic University
- **Colleagues:**
Ali Sadeghi, Amirhossein Saeidi, Hossein Arbabifar, Nader Naseri, Meghdad Karbalaei Jafar, Dr. Alireza Mirhabibi, Dr. Seied Hashem ziayee

Abstract:

Armor protection of available A.P.C'S in the world in normal situation are against 12.7 caliber's. This means that these A.P.C'S are just resistant against 16000 joule bullets energy, while with installation of ceramic-composite panels resistant of their hull increases to 300000 joule. This result have been obtained by adding a 60 kg weight. While if it was to add steel to their hulls, it should be added 600 mm steel with a weight of 480 kg/m². While nowadays most of the A.P.C'S in the world are equipped with 30 mm weapons and for creating survivability in the battle field it is necessary to increase the protection level of the A.P.C'S hull up to an acceptable limit.

Considering the strong existing backing in adopting composite-ceramic armors, these armors also have been designed and manufactured for the A.P.C'S. In armor structure of an A.P.C, the ceramic panels are used as a primary impact surface and the A.P.C'S hull as a backing layer. In designing the A.P.C'S panels, the thickness of the hull in different points recognized and threat level for each point determined and then suitable ceramic panel after the fulfillment of numerous ballistic tests was selected. For the front wall of the BMP A.P.C with 30° angle, 30 mm threat and for the side wall of the above A.P.C with 0° angle, 14.5 threat and for the A.P.C'S roof with 30° angle, 14.5 threat have been considered.

This project has been evaluated and confirmed after multi-stage field tests in the presence of armed forces experts and the results obtained show 100% success. The result is using the mentioned panels and the obtained technology for armor protection of different types of aircraft, helicopters, armor vehicles, strategic buildings and installations and With obtaining this technology after other countries such as U.S, France and ..., Iran will be the fourth country who has this technology and with fulfillment of this project we have saved Euro 16,000,000 for the country.