

DRAWING UP THE ACADEMIC PROBLEM

As a result of the geopolitical changes there have been changes on a war footing too. Instead of the mass armies more modern ones with staff reduction have been set up. They are equipped with up-to-date tactical equipment. Since the political changes in 1989 the role of the Hungarian Army has been changed and the number of the participants has decreased.

It is going on now because the modernization of the technical equipment takes long time. Changing of the out of date devices depends on the budget which mainly covers only the maintaining costs.

The situation of the aviation engineering is critical in the case of Hungarian Army. Although the replacement and the changing of the tactical aircrafts suitable for anti-aircraft mission are in process. But it can solve only one part of this problem.

More and more problems will be cropped up in connection with the carrier and combat helicopters for carrying out supporting and protecting mission — it was called troop air force earlier. One of the problems is the low number of the carrier and combat helicopters. There are problems practically in case of flood preventions and controls, or when there is a critical snow-situation. More and more helicopters do not work because of the compulsory maintenance so there are not enough ones for searching and rescuing missions. Therefore it is not to be delayed to replace or to change helicopters, but it seems not to lay enough stress on modernization of the technical equipment.

In effective force of the aircraft corps apart from the delivered Gripens there are Soviet, Romanian, Czechoslovakian aeroplanes for Hungarian Army. In case of substitution of the equipment there is no need to work with only these countries — as it was done by the government in case of the purchasing tactical aircrafts. To cut our dependence, and to improve our NATO compatibility we have to study possibilities for purchasing helicopters from other nations.

The maintaining of our ability to defence, our obligations to NATO, responsibilities for different missions and economic situations of our country have influences on changing or upgrading aircrafts. Any purchasing or modernization can be averted by researching and analysing military, technical, economic and financial fields. I would like to contribute to this complex task — in one domain — with my researches on modernization of combat helicopters. I would like to make an academic well-founded analysis. I will put forward a proposal for the best way of the modernization.

Technical life of the combat helicopters flying at present is running down within few years, so it needs to provide for their replacements. It is true in spite of the fact that there are not any military conflicts. According to an ancient Roman saying "*If you want peace, prepare for war.*". Therefore, the maintenance of the military force is necessary in the 21st century because the threat of terrorism has appeared in our country, too. Almost all over the world there are preparations against terrorism. Most of the armies lay stress on combat helicopters as one of the most many-sided equipment against terrorism.

The other potential danger is organized crime including weapons, people and drugs at our eastern borders. Inventiveness of the people is inexhaustible because the contrabanding is running by using low flying planes or hang gliders. In these cases the most suitable devices are combat helicopters for checking as they have deterrent power with their onboard weapons. Beside all of these in the last two decades it came clear, that without modern airforce there are not any considental military operations in the local wars and conflicts.

Good examples for them are Gulf wars, where the airforce took the offensive against the Iraquian military objects not only with helping fighters but also with combat helicopters too. During the attacks it was proved that the combat helicopters can attack efficiently key position objects taken advantages the possibilities of the terrain configurations.

As I am an associate professor at the Department of Aircraft Onboard Systems of Aviation Training and Air Defense Institute of Bolyai János Military Technical Faculty of Miklós Zrínyi National Defence University I have been dealing with teaching of the application, operation and modernization of onboard weapon systems for years.

The motivation of choice of this theme was the significant pushing into the background of the combat helicopters. In professional circles they uncared – for, too however with regard to their onboard weapon system as complicated as fighters. So it has been a challenge for me to get to know them. The elaboration of the comparison method makes the objective rank list of combat helicopters.

AIMS OF MY RESEARCHES

I set as an aim in my dissertation:

- examination and comparison of the modernization possibilities of the combat helicopters regarding a view to onboard weapon systems;

- carrying out the comparison system which helps to compare combat helicopters in an objective, numerical way;
- to prove that combat helicopters can't be replaced with armament transporting or universal helicopters;
- to prove how the tactical and technical data of the controllable armour-piercing missiles influence striking capacity of the combat helicopters;
- to work out an evaluation which can help the judges to choose the appropriate version during the modernization of the combat helicopters;
- to provide help with purchasing or/and upgrading the available helicopters which are suitable for our NATO obligations;
- to support defensive our country.

Choosing this theme I considered that there is not any other work concerning this topic, moreover the operating time of the combat helicopters will be over soon.

METHODS OF RESEARCH

I used the following methods to achieve the aims of my research:

- I made up a study plan which was adjusted to achieving the aim of my research and it is accordance with the requirements of the PhD Institute in Military Technology of Miklós Zrínyi National Defence University;
- I studied specialised literature related to my theme. I carried out researches at the libraries, on the Internet and at air troops;
- I systematized acquisitioned knowledge;
- I participated in scientific conferences, took lectures, published articles, gained experiences;
- I consulted experts on this theme;
- I completed out comparison analyses;
- I evaluated the results of the analyses.

STRUCTURE OF MY THESIS

My thesis consists of an introduction, four chapters, a summary of the results of the researches and there are four appendices.

In the introduction of my thesis I write about the up-to-dateness of my choice of the theme. I write about the aims and the methods of the researches.

In the first chapter I present the appearance of the helicopters and combat helicopters as well and the effects on World War II and the local wars on the development of them. The developing of the civilian and the military helicopters

could not be separated at the beginning. When the first combat helicopters appeared in the '60s these two fields were separated. From these times during the developing of the helicopters the planning was problem-orientated. In next chapter of my thesis, I deal with only combat helicopters and onboard weapon systems.

In the second chapter I systematize the requirements related to the modernization of the combat helicopters and I present shortly the combat helicopters and their weapons that are worth purchasing.

In the third chapter I create the theoretical basis of the comparison method. I present the striking, the cumulative and fragmentation effects of the projectile. I work out a comparison method, about the piercing capability of the onboard guns. I prove that carrier helicopters provided with arms are not suitable for performing certain tasks (e.g. invading enemy territory, attacking anti-aircraft devices, fight an air fight against combat helicopters) the surviving capacity of the carrier helicopters is beaten by the surviving capacity of the combat helicopters. I set forth shortly the unguided missile that can be applied onboard of the combat helicopters, I present the methods of guiding of the guided missiles and the onboard piercing missile and air-to-air missiles.

In the fourth chapter I work out the parameterize a comparison method about the weapon systems of the combat helicopters on the basis of the data collected earlier. Having analysed the results I suggest the type or types of helicopters to purchase with a weapon technical view.

In the summary I summarize my scientific work and I present the new scientific results.

NEW SCIENTIFIC RESULTS

The scientific results of my researching are presented in my work I can summarize in the following thesis:

Thesis 1

From the theoretical reckoning of the strike capability of the projectile I worked out a calculating method which can help with comparing the onboard guns of the helicopters.

1.1. I collected and systematized the tactical and technical data of the helicopter onboard gun, and compared them.

Thesis 2

I proved that combat helicopters cannot be replaced with armed carrier helicopters.

2.1. I drew up the general criterion of the efficiency helicopters and from there criterions I analysed the strike capability.

2.2. During the studying of the armour-piercing capability of onboard gun I proved that helicopters without armour protection defence cannot or can on a restricted way supply tactical tasks.

Thesis 3

I proved that the tactical and technical data of the applied onboard gun have an effect on strike capability combat helicopters.

3.1. During the comparing I completed calculations with several different types of guided armour piercing missile, too.

Thesis 4

I worked out a comparison system which in optimal situation if all the required data are known makes possible calculate numerical, comparable, tactical efficiency.

4.1. On behalf of comparison I collected and systematized the tactical and technical data of the most modern combat helicopters.

4.2. On behalf of comparison I collected the tactical and technical data of combat helicopter onboard weapon systems.

4.3. I completed the required calculations related to the efficiency of combat helicopters.

4.4. Analysing the results in terms of weapon-technics I set up a ranking list of the combat helicopters.

THE USABILITY OF MY THESIS

The whole PhD thesis or only the parts of it can be used by operator engineers and applied to training of the staff participating in the operation work and to special training for BSc and MSc at MZDU.

The result of the comparison method presented in my thesis can be used as a basis of purchasing a combat helicopter to set up a ranking list of the devices participating in a tender in a view of weapons.

These comparison method, after some transformations, can be used for comparison of other military technical devices.