

New Main Battle Tank for Poland - acquisition options

According to the arrangements formulated as part of the Strategic Defense Review, the Armed Forces of the Republic of Poland should acquire approximately 800 tanks over the next decades. This is due to the planned organizational structures - in the near future, the Armoured and Mechanized Forces (WPIZ) are to have 13 tank battalions, which transforms into 754 vehicles (currently the

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WPIZ has about 730 tanks capable of service and over a hundred incomplete vehicles) – the maintenance of which is the numerical potential may be too difficult for financial reasons (the formation of new units affects the pace of modernization of the older ones). The dominant (if not the only) type in this respect would be a vehicle known as the New Main Battle Tank codename Wolf (NMBT Wolf). It would be a completely new vehicle, which would replace the T-72 and PT-91 machines in the first place, and probably also the Leopard 2A5 and Leopard 2PL types in the future. There are many possibilities for Poland to acquire new MBTs, and the scale of the purchase requires a thorough analysis of how the program is to be implemented. The signing of the contract for the purchase of NMBT would take place before 2029, in accordance with the words of the then Deputy Minister of National Defense Tomasz Szatkowski, provided that the dates have not changed (undisclosed).

Tab. 1 Tanks of the Polish Army

Type	T-72	PT-91	Leopard 2
Country	USSR / Poland ¹	Poland ²	Germany
Year	1979	1995	2002
Generation	II	II+	III
Main versions	M, M1, M1D	PT-91, T-72M1Z	2A4, 2A5, 2PL ³
Number	>400 ⁴	232	247

Footnotes: 1. licensed production; 2. deep modernization of the T-72; 3. Leopard 2A4 and 2A5 obtained from Germany as used, 2PL are 2A4s modernized in Poland; 4. maximum of approx. 250 are fit for service.

Why Poland needs tanks?

Every few years, a thesis about the end of the tank era, which has been going on for more than a century, appears in the media, and even in expert circles, on a regular basis. The end was to bring them various new means of combat and phenomena, such as: own technical imperfection, nuclear weapons, anti-tank guided missiles, attack helicopters, and recently – circulating ammunition. Contrary to the claims of the supporters of the thesis about the end of the tank era (promoted by the producers of subsequent "tank-killers"), tanks remain an effective means of combat, and there are many projects in the world related to the modernization, development and production of tanks, including tanks of the future. It is no different in Poland, enough to mention the modernization program of the Leopard 2A4 tanks to the 2PL standard. The tank is still one of the key weapons of the land forces due to its traditional features: high firepower (a standard 120-125 mm cannon, capable of destroying other tanks and fighting light armoured, unarmoured and manpower vehicles), powerful armour (at least partially protecting against armour-piercing ammunition, supplemented by additional armour and active shields) and high mobility. The role of electronic systems has been growing for the past 2 decades: vehicle observation systems allow data to be collected and shared with other users of similar advanced communication systems (battlefield management systems) in real time. Thanks to these features, the tank is still a powerful fire support device, and the manoeuvrability allows it to be used in manoeuvring combat (offensive, in movement defense, etc.).

Requirements

The results of the analytical and conceptual work carried out by the Armament Inspectorate (IU) so far have not been disclosed and it is not known if and when this will happen. It is only known that the future Wolf is to be a "modern" construction, and now both future (the so-called 4th generation) and existing (3rd generation) designs are being considered. It certainly requires strong armament (120 mm or larger calibre cannons), sufficiently high survivability (presumably partially provided by the active vehicle protection system), high mobility (not lower than the Leopard 2; according to unofficial reports, vehicles weighing less than 60-65 tons) and relatively rich electronic equipment.

Why a Main Battle Tank?

In the past, the view that classic MBTs weighing around 55-65 tons (Western, Russian and Chinese – 45-55 tons) were to be replaced by light tanks (less than 40 tons) enjoyed a certain popularity in Poland and elsewhere – with similar firepower but higher strategic mobility (due to expeditionary wars) at the cost of much weaker armour (as in the case of IFVs – IFV – or weaker). The large losses suffered by formations armed with lighter armoured vehicles during the wars of the last two decades have shown that heavy armour is still necessary, while light tanks remain only a specialized

tool (e.g. airmobile troops in the US or Russia). Light Tanks are not judged to be fully capable of replacing the Main Battle Tanks for the roles they are used for. The only advantage would be the lower cost of operation (but not necessarily the purchase: the most expensive components, such as electronic systems or main weapons must be similar or identical), but effectively offset by lower suitability on the battlefield. A tank as the core of the system In line with the currently developing trend, the tank becomes the core of a larger system that it is to co-create with other vehicles. Until now, the only companions of the tank were armoured personnel carriers and IFV (and support vehicles: technical support vehicles, engineering vehicles, etc.), in the future they will be more and more unmanned vehicles of various classes: reconnaissance, missile, artillery, etc. Many concepts of the future tank (but also APCs) indicates the possibility of using tethered UAVs, responsible for broadening situational awareness and data transcription. Among the requirements for the future tank for the Polish Army, it is worth remembering to take this trend into account. Even if for some reason these requirements cannot be met in the short term, it should be possible to supplement these capabilities in the long term.

Purchase options

Most studies indicate three options for purchasing MBTs under the codenamed Wilk: importing tanks (new or used), producing a tank under license and building a new tank as part of research and development. Officially, potential purchase directions appear in the media from time to time. In one of the interviews, Deputy Minister of State Assets Zbigniew Gryglas mentioned the possible purchase of the tank in Turkey (BMC Altay), the USA (GDLS M1 Abrams), the Republic of Korea (Hyundai Rotem K2 / K2PL / K3) and Italy (the second "European tank"). In turn, IU informed about talks with the following entities: Ośrodek Badawczo-Rozwojowe Urządzeń Mechanicznych "OBRUM" Sp. z o.o., Krauss-Maffei Wegmann GmbH & Co. KG, Rheinmetall Defense, Hyundai Rotem Co., US Army, BAE Systems Hägglunds AB and GDLS. The following options seem to be the most likely:

1. USA - the most probable is the purchase of M1A1 tanks from surplus US Army or USMC (this formation completely gave up tanks) and their subsequent modernization to the M1A2 standard or higher. From the US point of view, it would be most desirable to carry out as much work as possible in GDLS plants. Overall, Americans are reluctant to share technology, or even contract execution; – the only country that produces M1A1 outside the US is Egypt, which carries out just 19% of the work. For this reason, obtaining a license for the production of the modernized Abrams would probably be impossible, and the majority of funds allocated for the implementation of the program would be spent outside Poland. Moreover, technological differences would be a problem. The advantages would be a likely short delivery time and partial interchangeability of equipment with

the US Army. The Abrams are tanks of the 3rd generation. You probably cannot expect to join the US Next Generation Tank Program (Optionally Manned Tank – OMT).

2. Germany – it is possible to purchase brand new Leopard 2A7 tanks, although their delivery would be possible no earlier than 2023. These would be tanks similar to those already used by Polish Armed Forces Leopards 2A4 / A5 / PL, so their implementation would be relatively easy. We would have to wait a little longer for the newer Leopard 2A8s (beyond 2025), which are likely to receive a new turret with a 130mm gun and an autoloader. It would probably be possible to license these tanks in Poland, although it would be 100 percent doubtful. Leopards are 3rd generation tanks. In the past, it was possible to build a new generation Polish-German tank (the so-called Atlas), but the project was abandoned.

3. MGCS – it is currently the only European program of building a new generation tank. In the past, Poland was invited to the program by Germany (although one of the latest studies does not include Poland on the list of potential partners), and a year ago also by the French President Macron. The interest in the program was also expressed by the head of the Ministry of National Defense, Mariusz Błaszczak, but so far it has not been translated into any agreement. The tank developed under the MGCS program will certainly be a very powerful weapon, but also an expensive one. Probably, Poland's share in the production and servicing of MGCS would be quite limited due to the decidedly dominant role of the leading countries: France and Germany (Great Britain has observer status). The benefits of joining the program would be rather political.

4. Republic of Korea – the option most often mentioned in the media. The Republic of Korea and the Hyundai Rotem Company offer the K2M tank under the local name of K2PL. It would be a deeply modernized K2 tank (larger turret, longer chassis and stronger armour), largely produced in Poland (the manufacturer declares up to 100% of production, but this applies to Polish elements and those for which the manufacturer or Korean companies have full rights). The tank could enter service at the end of the decade and it would be a 3rd generation tank. The advantages include the possibility of participation of the authorities of the Republic of Korea in the development of the car (including credit) and a large scope of production “polonisation” or the possibility of jointly building a new generation car. The disadvantages are the conservatism of the currently offered car and the uncertainty of intellectual rights to some elements.

5. Italy – Italy offered Poland to jointly develop a new generation tank (together with Spain). The vehicle would enter service in 2032-3035. Little is known about the technical requirements so far, as is the case with financing. Probably the research and development works, as well as the financing of the project and the subsequent production of the tank (and accompanying vehicles) would be divided between 2-3 countries participating in the project, which reduces the percentage of the value of production of vehicles for Poland, but in return Polish industry would participate in the

production of vehicles for other partners and for export. The advantages include the possibility of partial financing of the program from European funds or potential political gains (including the expansion of Polish-Italian cooperation). The greatest risk is the relatively little experience of the partners in building tanks on their own.

6. Stand-alone construction – this variant is also analysed from time to time. It seems that while it is technically possible to build a tank largely based on imported and licensed components (such as the tracked APC codenamed Borsuk), due to the limited experience of PPO in the implementation of such projects, the program would be too risky, and even in the event of technical success could be unprofitable.

Tab. 2 Selected 3rd generation tanks (M1A2C, K2PL, Leopard 2A7, T-90M)

Type	M1A2C ¹	K2PL ²	Leopard 2A7V ¹	T-90M ³
Country	USA	Rep. of Korea/RP ⁴	Germany	Russian Fed.
Year	2017	2025-2030 ⁵	2019	2019
Main armament	120 mm	120 mm	120 mm	125 mm
Armour ⁶	Heavy	Heavy	Heavy	Heavy
Engine	1500 KM	1500 KM	1500 KM	1130 KM
Speed max.	>65 km/h	>65 km/h	>65 km/h	70 km/h
Range max.	<450 km	400-500 km	450-500 km	<550 km
Weight	66,8 tons ⁷	60 tons ⁸	~65 tons	~50 tons
Crew	4 people	3 people	4 people	3 people

Footnotes: 1. modernisation of older tanks; 2. data based on the tenderer's folder (the tank does not exist yet and is only one of the proposed variants); 3. modernisation of older tanks; 4. Should a contract get signed; 5. indicative date for the start of serial production; 6. the armour partially protects against heavy armour-piercing ammunition; 7. fully equipped wagons weigh 5t more; 8. rather, in fact, around 65t (estimate based on the display model);

"Phase I", "Phase II"

The above analysis shows that the Wilk program can be broken down into two phases. Phase I would include the purchase of the current generation, most likely M1A1 (with modernization), Leopard 2A7 or K2. A similar possibility was mentioned by Deputy Minister Szatkowski – Poland

would have to buy 2-4 battalions of 3rd generation tanks before the actual Wilk program (then understood only as a new generation car). It seems that the most advantageous option would be to buy the Leopard 2A7 or K2. The first type would be the easiest to implement into service, while the second, if it was a classic K2 after "polonisation" (and not the new K2M / PL tank), it could probably be produced in Poland to a greater extent. In both cases, as part of partial production, it could be considered to combine this purchase with the purchase of accompanying vehicles: technical support vehicles (Cayman program), engineering vehicles, assault bridges (Douglas Fir) etc. next-generation tank. If you buy a Leopard 2, it would probably be a European tank (MGCS or a Polish-Italian-Spanish tank); if K2 was chosen, the natural tank of the 4th generation would be the K3. The decision to select a partner for Phase II should be carried out in parallel with the decision to select a structure purchased under Phase I.

Tab. 3 Selected 4th generation tanks (T-14, OMT, K3, FRCV)

Type	OMT ¹	K3	FRCV	T-14
Country	USA	Rep. of Korea	India	Russian Fed.
Year ²	2035+	2040+	2025+ ³	2022
Main armament	120+ mm/non-conventional ⁴	130 mm	120/125 mm	125 mm
Armor ⁵	Heavy/Light	Light ⁶	Heavy or heavy/light	Heavy/Light
Engine	Hybrid/? KM	Hybrid/? KM	N.A.	1500 KM
Speed max.	N.A	80 km/h	High	80 km/h
Range max.	N.A	500 km	Large	>500 km
Weight	59,87 tons	30-40 tons	45-50 tons	52 tons
Crew	3	2-3	3	3
Artificial Intelligence	Yes	Yes	N.A	No

Footnotes: 1. variant no. 2 (3 out of 4 are known); 2. estimated date of entry into service of serial vehicles; 3. delays are certain; 4. 120-140 mm classic cannon or ETC or railgun type; 5. heavy armor protects the hull / light turret; 6. only roughly (very early stage of work).

Tab. 4 NMBT Wilk Phase I: tanks and specialized vehicles

Type ¹	MBT	CTM	MID	Bridges	Balance
Production ²	Assembly	Assembly + Production	Assembly + Production	Assembly + Production	-
Number ³	116-232	65	26	22-26	229-347

Footnotes: 1. vehicle category; 2. assembly of tanks and assembly of special vehicle chassis, together with the development and production of working tools; 3. for specialized vehicles, minimum quantities (without the needs of self-propelled artillery squadrons, independent engineering units, TDF, etc. - the actual needs are greater).

Ad hoc steps

It seems reasonable to reconsider the modernization of the T-72 tanks and the slightly more modern PT-91. Without carrying out deeper work on the T-72, these tanks will remain without combat value, while without their maintenance in service, maintaining the numerical potential of the WPiZ will probably be impossible¹.

Conclusions and recommendations

1. Maintaining the quantitative potential of the WPiZ without a significant increase in the budget of the Ministry of Defense (especially funds allocated to the Technical Modernization Plan) may not be possible (ultimately 8 tank battalions in line and 4 in reserve). However, the modernization, maintenance and development of the WPiZ potential cannot take place at the expense of other Types of Forces or Types of Armed Forces (Borsuk, Narew, Miecznik programs, etc.)
2. It is temporarily advisable to modernize the T-72 and PT-91 in order to obtain armaments that can be used on the current battlefield, and in the future as reserve equipment. It is advisable to upgrade the Leopard 2 to the 2PL standard and (in the future) higher, similarly the modernization of the Leopard 2A5 is justified (the tanks represent the mid-90s standard).
3. For financial reasons, it will probably not be possible to obtain the new generation tanks, conventionally called the fourth, in the number of 800 required units.
4. Timing of the NMBT Wilk in two phases (I and II) seems to be justified.
5. The most rational purchase of target tanks (Wolf Phase II) together with Italy (and probably Spain) or the Republic of Korea.
6. When purchasing NMBT Wilk Phase II, as part of international European cooperation (Poland, Italy, Spain), European funds should be used as widely as possible for research and development,

industrial modernization, etc.; it seems rational to purchase a certain number of Leopard 2s (2-4 battalions, Phase I) in modern variants with production with a limited share of PPO (assembly, delivery of some components, such as BMS, KLV-1, etc.).

7. When purchasing NMBT Wilk Phase II in the Republic of Korea, it is necessary to purchase solutions necessary for the construction of a new tank (supplementing the deficiencies with research and development works carried out in Poland and from other sources) and, with the help of the Korean industry, to develop a new generation tank (different from the currently offered K2PL - a more prospective 4th generation vehicle)); K2 manufactured with a limited participation of Polish industry (assembly, KLV-1 etc.) should be adopted as a temporary solution.

8. The target tank (NMBT Wilk Phase II) could also be carried out in two stages: quick construction of the "best possible" tank at a given moment (also in terms of cost / effect balance: "good enough" rather than "the best of") with assumption of future modernization (supplementing the missing capabilities by installing new elements: artificial intelligence module, UAV chamber, additional ASOP effectors, etc.). After the implementation of the NMBT Wilk Phase II tanks obtained during Phase I should either be moved to the reserve (reduction of tanks in active service to approx. 500 new-generation vehicles, reserve up to 250), or consider rebuilding them into accompanying vehicles (additional technical support vehicles, assault bridges, etc.) or unmanned tanks ("unmanned wing aircraft)

9. Scale of the NMBT Wilk (PLN 30-50bn in 10-20 years plus the cost of life of the product - LCC - in the next 30-40 years) justifies allocating as much of the expenditure as possible to the Polish defense industry. A leading role in the implementation of the NMBT Wilk should be played by centres traditionally involved in the production and service of WPiZ tanks and research centres.

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¹ The issue has already been initially discussed in a separate report: <https://pulaski.pl/raport-modernizacja-t-72-i-pt-91-ocena-zasadnosci-i-potencjalnych-kierunkow/> and will be the subject of further analyzes.

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