



RUSSIAN UNMANNED GROUND VEHICLES (UGV) IN RUSSIA'S WAR AGAINST UKRAINE

- Technologies
- Manufacturers
- Practical Applications

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RUSSIAN UNMANNED GROUND VEHICLES (UGV) IN RUSSIA'S WAR AGAINST UKRAINE

Russia's war against Ukraine has significantly stimulated the development of new unmanned platforms¹ for reconnaissance, surveillance, engaging the enemy, and logistics operations. After substantial progress in unmanned aerial vehicles, the testing of **unmanned ground vehicles (UGVs) — platforms with autonomous or remote control** — eventually began. This process **received broad state support in Russia**, drawing in the volunteer movement and private capital.

Ground drones, or unmanned ground vehicles (UGVs), are widely used by units of the Russian Armed Forces, although they demonstrate varying effectiveness. UGVs are mainly used for strike and reconnaissance missions and to support assault groups. Improving logistics is regarded as the most promising direction of development.

Analysis of the industry shows a rapid **growth in the number of manufacturers** and production volumes, especially starting in 2023–2024. This growth is supported by a complex of state programmes, regional initiatives, and significant financial investment.

This report presents a comprehensive analysis of Russia's UGV industry, including its funding structure, pricing, and analysis of critical components. Particular attention is paid to sanctions policy, export-control measures, and their impact on the development of the industry in the context of the Russian market.

The primary sources of information are publications in Russian media, social media, and legal entity registries. In total, 32 UGV models were identified, of which the manufacturing legal entity could be identified for 29. Data on UGV manufacturers is current as of April 2026.

KEY FINDINGS

- 01.** The development of unmanned ground vehicles is increasingly transitioning from the exclusive domain of state-owned defence enterprises to private firms and public-private partnerships.
- 02.** Russian Armed Forces units are massively using UGVs in combat against Ukraine: at least 20 of the identified UGV types have been documented in combat use against Ukraine on its territory and in the Kursk region.
- 03.** Series production has already been established. The UGV models Kuryer (LLC NRTK Kaps), Varan (LLC Frobotics), and Impuls (LLC Gumich-RTK) are being actively supplied to the front in quantities ranging from several dozen to several hundred units.
- 04.** A key trend is modularity. Most modern UGVs are designed as base platforms that are then adapted to specific tasks (transport, reconnaissance, fire support, etc.). Exceptions are demining vehicles and kamikaze drones. Some UGVs incorporate AI elements.
- 05.** A transition to full-fledged robot warfare is not happening, due to the weak autonomy of these systems: modern UGVs remain remotely operated platforms.
- 06.** A significant role in the development of many UGVs is played by the pro-government volunteer organisations Kulibin Club and Narodny Front (the All-Russia People's Front), with financial support from the state Advanced Research Foundation (Fond Perspektivnykh Issledovaniy, FPI) — the Russian analogue of DARPA (the US military research agency).
- 07.** A number of state universities — both specialised military and civilian — are involved in the development of UGVs and their combat modules. Robotics laboratories have been established on their premises.
- 08.** Software solutions are being developed for training UGV operators in simulators and virtual trainers. Some of these contain AI elements.
- 09.** Sanctions cover only part of the manufacturers: only 10 out of 20 manufacturers are under US sanctions, and 3 are under EU sanctions. Most of the new people's manufacturers are currently unsanctioned.
- 10.** Russia has a significant dependence on Chinese components in UGV production. The most important ones are electric motors and lithium batteries, cameras and sensors, fibre-optic cable, MESH modems, and chips.

DEVELOPMENT OF RUSSIAN UNMANNED GROUND VEHICLES BEFORE FEBRUARY 2022

Before February 2022, the Russian defence industry had been working on a number of UGV projects covering such areas as demining, logistics, and combat operations of varying scale.

The use of UGVs by the military was implemented under several programmes of the Russian Ministry of Defence,² such as the Concept of the Use of Robotic Systems for Military Purposes, the comprehensive target programme Development of Advanced Military Robotics, and the Concept of the Robotisation of Ground and Naval Weapons of the Armed Forces of the Russian Federation.³

Between 2016 and 2021, several tests of remotely controlled UGVs took place.⁴ These included **Platforma-M, Nerekhta, Soratnik, Kungas, Skarabey, Sfera, Marker, Uran-6, 9, 14,**⁵ **Udar, Prokhod-1, Shturm.**

It is worth noting that in all these tests the operators were located relatively close, which undermines the goal of replacing soldiers. UGVs were also produced and tested in limited quantities.⁶ **The results of the tests were largely unsatisfactory.** For instance, the Uran-9 robot, which was tested in Syria, was deemed unable to perform combat missions on the battlefield. In particular, its gun fired with a delay and could not engage targets on the move, and during testing the unit lost contact with its operator 19 times.⁷

The UGVs mentioned were tested mostly in controlled conditions without the real threat of destruction. The doctrine for handling these machines in combat conditions also remained unclear: the Ministry of Defence never published clear approaches to loss management, protection of the machines during combat operations, or the procedure for their evacuation. The relatively short R&D period of these projects also did not allow UGVs to be fully integrated into Russian military units before the full-scale invasion.⁸ As a result, **before the invasion, the Russian Armed Forces had limited and rather demonstrative experience with UGVs.**



UGV Uran-9 at the Zapad-2021 strategic exercises

At the same time, despite these limitations, the Russian MoD and the defence industry demonstrated the ability to develop and experiment with UGVs.

CURRENT DEVELOPMENTS IN GROUND ROBOTICS AFTER 2022

Despite significant resources and time spent on creating robotic systems, **combat robots were not used at the start of the Russian invasion**. This is mainly explained by the low autonomy level of the machines and poor-quality designs. Most of the bureaus working on UGVs before 2022 were structural subdivisions of the Russian Ministry of Defence and Rostec.

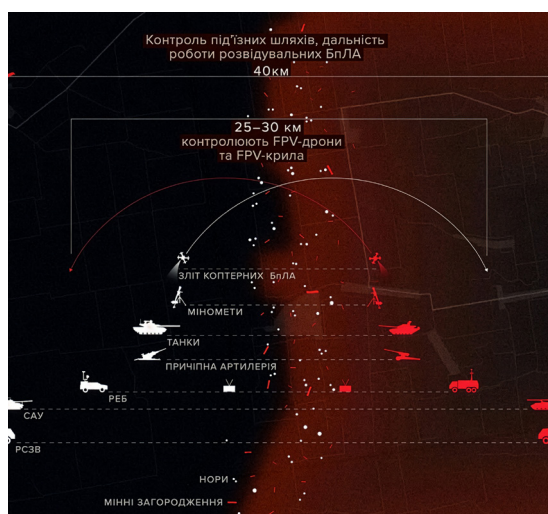
A considerable number of cases of potential misappropriation of funds and embezzlement in the execution of R&D contracts are known.^{9 10 11 12 13} Some of them were concerned with UGV developments.

For example, the developer of the Uran line of robots was suspected of embezzlement during development. Charges were brought against JSC Spetsialnoye Konstruktorskoye Byuro MO RF (until 2023 — OJSC 766 UPTK), as well as its contractors SET-1 and SPA Eshelon.¹⁴ As a result, of the entire line, only the demining robots have seen use — they are a copy of a Croatian design. The combat robotic complex Uran-9 has never been spotted at the front line.

A new stage in the development of ground drones was driven by the specifics of the Russo-Ukrainian war. Especially since 2023, it is characterised by a largely static front line and the formation of so-called kill zones — **tactical spaces 10–15 km from the line of contact** that are monitored by drones and within range of fire

from both sides. This is a dangerous environment for soldiers or vehicles, which forces both sides to seek applications for UGVs,¹⁵ primarily to ease logistics and evacuation.¹⁶

Russia currently devotes significant attention to UGVs, viewing them as a means of reducing personnel losses.¹⁷ Constant attacks by FPV drones and loitering munitions force the military to disperse, change movement schedules, and pull heavy equipment back from the line of contact.



Typical disposition of military assets and their range of action. The FPV-drone control zone is the kill zone. Visualisation: Texty.org.ua.

The first mentions and prospects of using Russian UGVs in the war against Ukraine appeared in 2023. These were rather isolated, experimental uses, far from being widely deployed on the battlefield. In February–March 2023, Russian state media covered the upcoming tests of the Marker UGV¹⁸ in Donbas; notably, these tests were conducted not by formal servicemen but by a volunteer organisation connected with the military.¹⁹ Most likely, at this stage, UGVs encountered a number of difficulties. For instance, in December 2024, Dmitry Rogozin, who handled PR for the system, reported that the military customer had lost interest at the demonstration stage.²⁰

Subsequent stages of Russia's war against Ukraine reflect a clear trend **from expensive autonomous combat platforms to the mass deployment of cheaper, expendable drones.**

One example is the Kuryer platform, which, according to reports, was first used during the Avdiivka operation (late 2023 – early 2024). At first, the robots were used in single units and as elements of logistics or distraction. In April 2024, information appeared about the first combat use. By the end of 2024, reports already mentioned at least 50 such machines in the combat zone,²¹ and total production exceeded hundreds of units. The Kuryer is currently the most widely deployed Russian UGV at the front.

Russian Defence Minister Belousov confirmed in April 2025 that in 2024 the troops had received several hundred UGVs, and a significantly larger order was scheduled for delivery in 2025. Within each group of forces, in-house production of ground robots was going to be established.²² As of early 2026, the Impuls model alone had been delivered in hundreds of units.²³



UGV Kuryer equipped with a machine gun

MAIN TYPES OF UGVs

LOGISTICS AND EVACUATION

One of the most promising areas, which has been developing increasingly in recent years, is the creation of robotic platforms for the evacuation of the wounded, since missions involving people are, as a rule, dangerous and put an entire team at risk of being hit.

Multifunctional tracked platforms are mostly used for these tasks; they can perform the tasks of evacuating and delivering supplies, sometimes within a single mission²⁴. UGVs of this type include [KURYER](#), [VARAN](#), [OMICH](#), [BRATISHKA](#), [SEM-350 \(VETERAN\)](#), and others.

ASSAULT UGVs

Their main purpose is to support assault units: engaging the enemy with fire, conducting reconnaissance, and breaching fortified positions. They are usually equipped with machine guns, grenade launchers, or even multiple-launch rocket systems. Among those capable of such missions are the platforms [VARAN](#), [MALVINA](#), [KURYER](#), [OMICH-SHMEL](#).

KAMIKAZE DRONES

These are single-use platforms whose main task is to transport explosives to a designated sector and detonate them. They are mainly used to destroy dugouts and fortifications. Such machines included small tracked drones [LYAGUSHKA \(THE FROG\)](#) and [SKORPION-M \(SCORPION-M\)](#).



Ground-based kamikaze drone "Scorpion-M", manufacturer not yet identified

AIR DEFENCE UGVs

This is a type of UGV intended for the detection, tracking, and neutralisation of drones. To date, only one such experimental model is known — the Impuls-PVO (Impuls-Anti-aircraft warfare (AAW))²⁵ based on the Impuls-M platform from the Gumich-RTK company. It is equipped with Yolka (The Fir Tree) interceptor drones and has its own radar.

FPV LAUNCH PLATFORMS

The main purpose of these machines is to transport FPV drones to a more optimal launch location. They perform the function of a so-called portable airfield. Such UGVs have been produced in several modifications in small batches to gather feedback from the units. The developer of the Argus and Muravey models is SPA Kaysant.



FPV launch platform Argus by SPA Kaysant



Air Defence UGV Impuls-M by Gumich-RTK

FUNDING AND PRECONDITIONS FOR THE INDUSTRY'S DEVELOPMENT

National robotisation has become a top priority for the Russian government, signalled by the 2024 launch of the Machine-Tool Building and Robotics national project, which is backed by a 300-billion-ruble budget through 2030.²⁶ This project (under the auspices of the Ministry of Industry and Trade and Rostec) is intended to ensure import substitution for complex machine tools and the production of modern robots. Although formally these funds are directed at civilian industrial robotics, they create a component base, qualified personnel, and dual-use technologies for military development.

At the Ministry of Defence board meeting in December 2024, Belousov named robotic complexes one of the **main priorities** of the state armaments programme alongside UAVs and artificial intelligence.²⁷

Advanced Research Foundation (Fond Perspektivnykh Issledovaniy) — the Russian analogue of DARPA — is the central investor in the key UGVs. In particular, the Foundation financed the development of the Nerekhta²⁸ and Marker²⁹ platforms, and also established the Ground Robotics Laboratory in Magnitogorsk.³⁰

An important factor in the development and validation of ideas was the **Kulibin Club**, created by the **Narodny Front (the All-Russia People's Front)** association to bring together small design bureaus and inventors. At the end of 2024, the FPI agreed to fund Kulibin Club projects: up to 100 million rubles for legal entities and up to 10 million rubles for individuals, with a delivery period of 1–6 months.³¹ It was through this system that the key UGVs Kuryer³² and Omich³³ received their funding.

The actual volume of funding for combat robots is not officially disclosed. In parallel, **Russian universities are actively involved**. The Omsk Tank-Automotive Engineering Institute is directly involved in UGV development. In July 2025, a light flame-thrower module for a UGV was created on the institute's premises.³⁴ In March 2026, the Moscow Higher Combined Arms Command School patented a UGV with a neural-network control system capable of automatically returning to base when the signal is lost.³⁵



Advanced Engineering School at Tula State University

The state corporation Rostec also finances so-called Advanced Engineering Schools, each with a specific focus. For example, the Intellectual Defence Systems school, established on the basis of Tula State University jointly with SPA Vysokotochnye Kompleksy (High

Precision Systems Group), is working on the creation of a series of autonomous robotic complexes using artificial intelligence technologies and advanced composite materials.³⁶

At the same time, there is a noticeable shift from products of state MIC plants to private companies or public-private partnerships. As of September 2025, 563 service-robotics companies were registered in Russia — a 21.5% increase over the year and a doubling compared with 2021.³⁷ According to the Ministry of Industry and Trade, the volume of the domestic robotics market grew by a third in 2024 and stood at 10.3 billion rubles. However, that figure also includes industrial robots

and manipulators. Some market research estimates the unmanned ground vehicle market in Russia in 2023 at \$80.5 million,³⁸ but such estimates are often extrapolated and do not take into account data on military procurement.

A legal framework for the new market is being actively created. In July 2023, the State Duma adopted Federal Law No. 323987-8, which expanded the powers of Rosgvardia (National Guard of Russia), the Interior Ministry, the FSB (Russian Federal Security Service), and other security agencies to counter all types of unmanned systems — including ground systems.³⁹

In February 2026, State Duma deputy Morozov presented the first comprehensive draft law On Robotics and Autonomous Unmanned Systems, which is planned to be adopted by summer 2026.⁴⁰

CHINESE COMPONENT EXPORTS

The supply of components for Russian UGVs is **essentially a subset of the supply chain for UAVs**. A significant share of the components is common to both types of drones — electric motors, batteries, controllers, cameras, communication modules, and so on. In addition, some companies are manufacturers of both UAVs and ground drones.

Ground drones, however, require specific parts for their running gear: transmissions, tracks, and reinforced chassis. Because of obstacles on the ground, they need more powerful communication systems and additional sensors, such as LIDARs, to bypass obstacles.

Tracking supplies to the UGV industry is problematic for several reasons. A significant share of manufacturers belongs to large defence holdings that mostly do not carry out procurement themselves but receive goods from supplier companies. UGVs also currently have substantially lower production volumes compared with UAVs (hundreds per year versus tens of thousands of aerial drones). Components are often impossible to distinguish in customs data — the same HS codes cover both drone and ground motors. In addition, **some components may be disguised by entering incorrect data in customs declarations** or shipped through third countries. For instance, engines for strike drones were marked through customs as industrial refrigeration equipment.⁴¹

Russian UGVs are critically dependent on imported components (mostly produced in the PRC). The main problems are in the areas of power supply, communications, and combat survivability.

It is known that 90% of Russia's electronics is sourced from China⁴², which directly affects the UGV industry. Manufacturers themselves openly acknowledge direct dependence on Chinese components, and only plan to enter serial production of electric motors.⁴³

Available data on imports of components by UGV manufacturers show that electrical relays, batteries, microcontrollers and electric motors are the most frequently ordered items. Thus, LLC NRTK Kaps (TIN 7723185204) imported 2,200 W direct-current motors from the Chinese manufacturer HD LED Technology; LLC Gumich-RTK (TIN 9726005407) — ball-screw drives from Qingdao Tsingleader (China); LLC RENG (TIN 5501132688) — relays, gearboxes, and running-gear parts from AHI Enterprise (China); LLC Group Avanti (TIN 9703144010) — lithium batteries from Gaoneng Battery and EVE Energy, iFlight XING electric motors, and Arduino microcontrollers — all from China. Some of LLC Group Avanti's shipments are declared as spare parts for quadcopters and equipment for forming plastic products.

TECHNICAL LIMITATIONS OF CURRENT UGVs

One of the key trends in robotics has been the shift to producing cheaper, simpler, and more mainstream platforms in place of the complex pre-war systems. Pre-war machines such as the Uran-9 cost millions of dollars, whereas the chassis for the Kuryer UGV costs about 1 million rubles (\$11,000). The Varan robot and the Atom ground drone cost roughly the same in their basic configurations. However, additional modules and equipment significantly increase the cost of the units. The main pricing factors are: type of chassis (tracked one is more expensive than wheeled), weapon modules, communication systems, level of autonomy, and armour protection.

For example, the somewhat larger and more powerful Impuls robot, fully kitted out (AGL, machine gun, MANPADS, EW means), will cost 25 million rubles. The use of AI also significantly raises the cost of the final product, as it requires more complex — and therefore more expensive — microelectronics, a larger number of cameras and sensors, and higher energy consumption. At the same time, the device's life in combat conditions may amount to only a few sorties.⁴⁴

Because they mostly use electric motors, UGVs are harder to detect and to spot in a thermal imager. At the same time, in order to increase speed and the maximum cargo mass, more powerful motors are needed, which raises the cost

of the device. Also, most UGVs have no armour to keep the platform light, and as a result are easy targets for FPV drones. Instead of armour, manufacturers are experimenting with active protection systems and smoke screens.

Internal Russian army documents confirm that the most popular models of Russian ground drones have a number of advantages and disadvantages on the battlefield. Russian military personnel note that the machines have decent cross-country ability thanks to their tracked chassis, stable connectivity and control via the Starlink satellite channel, and good daytime cameras and electric motors.

On the other hand, the weak points of UGVs are rapid fouling and breakage of tracked platforms, short range due to small-capacity batteries, and very low-quality thermal imaging cameras. In addition, component failures are common, resulting in the ground robots being effectively idle.

However, the most critical vulnerability remains **the control channel, since standard radio channels are easily suppressed by EW assets**. This forces developers to seek alternative and additional means of communication. Examples include fibre-optic lines or the deployment of relay stations. So far, all the UGVs mentioned above are controlled remotely, and the operator must be relatively close to the machine. At the same time, Russian state media have announced the potential use of artificial intelligence to increase the autonomy of ground drones. Similar developments are being carried out by specialised military institutions.^{45 46}

Although the number of logistical robots has significantly increased, their contribution to logistics operations remains small (about 0.2% of the total).⁴⁷ That said, this is last-mile transport, and their efficiency indicator may vary on individual sectors of the front. In particular, about 90% of all supplies for the Pokrovsk front line on the Ukrainian side are delivered by unmanned vehicles.⁴⁸

MANUFACTURERS

This section presents an overview of unmanned ground vehicle (UGV) manufacturers for which information was gathered regarding operational activity and the combat use of their products. The data is current as of April 2026.

In total, **29 UGVs from at least 20 manufacturers** have been identified. The products are divided into the following categories by purpose: logistics and transport, evacuation of the wounded, fire support, demining, reconnaissance, strike (explosive) use, and launch platforms for FPV drones.

LLC NRTK Kaps (TIN 7723185204, not under sanctions) — manufacturer of the Kuryer unmanned ground vehicle.

The first mentions of the development appear in early 2024. At that time, engineers from Buryatia were working on the system with the support of Russian military bloggers Boris Rozhin and Chingis Dambiev⁴⁹. Later, the project was supported by the Narodny Front as part of the Kulibin Club programme for the development of Russian engineering work. At the same time, Nurzhan Rakimzhanov — a doctoral candidate at the Military Logistics Academy (Omsk)⁵⁰ and head of the development group at the Omsk Tank-Automotive Engineering Institute⁵¹ — is listed among the patent holders for the invention.

Production of LLC NRTK Kaps is based in Troitsk near Moscow⁵². The owner of the company is Zorikto Gombozhapov, who is also the director of LLC Eychdi (EHD), which specialises in outdoor LED advertising. The latter, among other things, designed a Museum of Heroism dedicated to Russian forces.⁵³ The owner of the Kuryer trademark is LLC KAPS (abbreviation Konfigurirovanie Apparatno-Programmnykh Sredstv — Hardware and Software Configuration).⁵⁴ The founders of the company are Bulat Gombozhapov and Irina Zonova.

PRODUCTS

➤ **UGV Kuryer** — multi-purpose remotely controlled tracked platform with modular architecture.



UGV Kuryer

Specifications:

- * speed up to 35 km/h,
- * two electric motors with a combined power of ~8.8 kW,
- * battery life 12–72 hours, depending on terrain and load; control range 3–10 km,
- * payload up to 200 kg,
- * control: radio channel with video transmission from two cameras (including a thermal imager); control via satellite channel or fibre-optic cable is also possible.

Weapon and equipment options:

- * AGL-17 automatic grenade launcher;
- * NSVT (12.7 mm) and PKTM (7.62 mm) machine guns;
- * Shmel reactive flamethrower (mini-TOS version);
- * remote-mining dispenser (TM-62 mines);
- * manipulator arm for casualty evacuation;
- * generator for autonomous power supply;
- * Ignis mine-neutralisation module.

02

LLC FROBOTICS

LLC Frobotics (TIN 6155021766, not under sanctions) — manufacturer of the Varan UGV. According to Russian MOD reports from January 2026, the Varan has already entered service with units and has completed range trials.⁵⁵ The company is also a manufacturer of a number of UAVs, including the cargo drones Svarog, Gruzovichok, Ilya Muromets, Alyosha Popovich, and Dobrynya Nikitich.

PRODUCTS

- **UGV Varan** — a tracked platform for logistics, evacuation of wounded, mine-laying, and strike missions. Price — from 1 million rubles. The complex is capable of: delivering cargo to the line of contact; transporting severely wounded soldiers and “cargo 200” (KIA); laying minefields; and demining using a special trawl. Control range — 4 km, operating time — up to 6 hours.

LLC Gumich-RTK (TIN 9726005407, under EU, Swiss, and Monaco sanctions) — a company founded in 2022. Developer and manufacturer of multifunctional Impuls UGVs.⁵⁶ Cooperates with Rostec⁵⁷ and the Kulibin Club of People's Front.⁵⁸

PRODUCTS

- **UGV Impuls-M** — heavy tracked platform with torsion-bar suspension. Speed — up to 15 km/h. Payload — up to 500 kg on the platform with up to a 25-degree incline, up to 1,500 kg as a trailer or tow. It is controlled by a radio channel using MESH technology or by fibre optics. The navigation system enables it to return to base independently if the connection is lost. It can be equipped with: an AGL grenade launcher; a Kord large-calibre machine gun; a Kornet ATGM launcher; and EW and radar-detection equipment.
- **Impuls-PVO** — air-defence version based on the Impuls-M with eight interceptor drones weighing 1.35 kg each. The interceptors reach speeds of up to 200 km/h and destroy targets through kinetic impact. They are capable of intercepting craft moving at up to 60 km/h.



UGV Varan with the Kornet anti-tank missile system

LLC RENG (TIN 5501132688, not under sanctions) — a UGV manufacturer also closely linked to the Omsk Tank-Automotive Engineering Institute (OTAEI). The Omich complex was developed at the Institute with support from the Kulibin Club of People's Front and regional authorities. The company was registered in Omsk but later changed its registration to Moscow. It holds a number of patents on UGV operation. According to 2025 reports, the Omich is actively used by units of the Southern Group of Forces.

Among the company's owners are the Omsk businessman Vyacheslav Vasilyev and Oleg Zarembo, a former deputy governor of Omsk Region⁵⁹ and current adviser to the governor, who coordinates relations with the Russian Ministry of Defence and the military-industrial complex.⁶⁰

PRODUCTS

➤ **UGV Omich** — a multifunctional tracked platform⁶¹ for logistics, evacuation of the wounded, and fire support. Developed with direct feedback from troops at the front. Can carry a light flamethrower system.⁶²

➤ **UGV Omich-2** — an improved version of the Omich, presented at the Army-2024 forum and refined in 2025. The ground drone underwent combat testing with units of the Russian Airborne Forces directly in the combat zone.⁶³ Dimensions — 2.04 × 1.4 m, range — over 30 km, payload — over 500 kg on the platform plus over 1 tonne on a trailer. It is configured as a small-form-factor tracked robot with a flat onboard platform that can carry up to 4 paratroopers. In the front section, there is a mast-mounted unit with an antenna and an optical camera for remote control.

Weapon options (for both platforms): Kornet ATGM, AGL-17, heavy machine gun, MLRS module based on the RPO-A Shmel infantry rocket flamethrower.



UGV Omich-2 during exercise

LLC MobiDik (TIN 4501114013, not under sanctions) — developer and manufacturer of the Chelnok UGV, a specialised robotic demining system with a detonating hose.⁶⁴

PRODUCTS

➤ **UGV Chelnok (the Shuttle)** — a demining complex of the EBUR (Explosive Blade Unmanned Robot) type. The key feature is an explosive hose containing 725 kg of explosives, which makes it possible to simultaneously neutralise large minefields. It can be used against anti-personnel and anti-tank mines. The customer is the Engineering Troops of the Russian Armed Forces. An improved version of the complex is currently under development. A version without the demining equipment is also used as a logistics platform.



UGV Chelnok (the Shuttle)

JSC Spetsialnoye Konstruktorskoye Byuro MO RF (Special Design Bureau of the Russian MoD, TIN 5024076350, under US, Ukrainian, Swiss, and Japanese sanctions) — a key state manufacturer of UGVs for the Russian MOD.

PRODUCTS

- **UGV Uran-6** — self-propelled radio-controlled demining complex. First used in Syria for the demining of Palmyra. Entered service with individual engineer-sapper regiments and brigades in 2020. Specifications: YaMZ diesel engine of 240 hp; working speed — 2 km/h (maximum — 5 km/h); demining pass width — 1.7 m; endurance — 5 hours of continuous operation. Withstands the detonation of munitions of up to 60 kg in TNT equivalent. Equipped with 5 interchangeable tools: impact, roller and milling trawls, a bulldozer blade, and a mechanical grabber (up to 1 t). Used in the war in Ukraine: in the demining of Mariupol (2022), in the Kursk Region (2024).
- **UGV Uran-9** — a combat multipurpose tracked complex for reconnaissance and fire support. Armament: 2A72 30-mm automatic cannon, coaxial 7.62-mm machine gun, Ataka ATGM, Shmel-M rocket flame-throwers. Control range is up to 3 km (in direct line of sight; the real range is up to 500 metres). Tests in Syria revealed significant problems with control and movement. After refinement they were partially solved. The production cost of one unit is around 30 million rubles. Not used in the war in Ukraine.
- **UGV Soratnik** — a remotely controlled combat vehicle. Weight — 7 tonnes, speed — 40 km/h. It has a remotely controlled combat module with gyroscopic stabilisation on which 7.62-mm and 12.7-mm machine guns, 30-mm AG-17A grenade launchers, or 8 Kornet-EM ATGMs can be mounted. It is equipped with a system for interaction with UAVs. Range is up to 10 km. Production as of early 2025 is not confirmed.

LLC DST-Ural (TIN 7453251929, under US sanctions) — a Chelyabinsk-based company, manufacturer of the Stalker UGV, a robotic sapper.

PRODUCTS

➤ **UGV Stalker** — a heavy tracked sapper robot for use in field conditions. Capable of clearing various types of terrain, including fields with heavy soil. Used in the Russian border areas for demining after the withdrawal of Ukrainian forces during the Kursk operation.⁶⁵



Robotic demining complex Stalker

JSC VNII Signal (All-Russian Research Institute "Signal") (TIN 3305708964, under Ukrainian, US, Swiss, Canadian, and Australian sanctions) — a state scientific research institute. Most of the institute's output is used in missile systems, military ships, and helicopters, while its navigation equipment is used in ground combat vehicles.

PRODUCTS

➤ **UGV Prokhod-1** — a heavy remotely controlled demining vehicle on a T-90 or T-72 chassis with engineering equipment. It is used against Ukraine.

SPA Androidnaya Tekhnika (Scientific and Production Association Android technique, TIN 7723738378, under US and Ukrainian sanctions).

PRODUCTS

➤ **UGV Marker** — a modular tracked platform with the capability of autonomous movement and execution of combat missions. It can be equipped with an anti-tank module based on the Kornet ATGM, machine guns, and other weapons. Series production with a Kornet ATGM combat module is planned.

JSC Zavod imeni V. A. Degtyareva ("V. A. Degtyaryov Plant", TIN 3305004083, under US, EU, Ukrainian, Canadian, Japanese, and Swiss sanctions) — one of the oldest enterprises of the small arms and artillery sector in Russia, founded in 1916. The development of the Nerekhta UGV was carried out jointly with VNII Signal.

PRODUCTS

➤ **UGV Nerekhta** — a multifunctional armoured tracked platform with modular architecture. Platform length — 2.5 m, width — 1.6 m, height without equipment — 0.9 m. Its combat weight is about 1 tonne. The complex exists in three modifications: combat platform, artillery reconnaissance vehicle, and transport variant. Despite long development (since 2013) and successful tests, as of the time of writing of this report, the Nerekhta remains a research platform for technology demonstration. Combat use against Ukraine has not been recorded.

11

LLC KB SPEKTR-INZHINIRING

LLC KB Spektr-Inzhiniring (TIN 5445029645, under US and Ukrainian sanctions) — developer and manufacturer of unmanned ground, aerial, and underwater systems.

PRODUCTS

➤ **UGV Yezhik-R** — a ground assault complex, intended for destroying enemy personnel in fortifications and destroying armoured vehicles. Payload weight is up to 5 kg. The range is up to 5 km. It is equipped with lighting devices, video cameras with a 360-degree view, and mines. It has been documented in combat use against Ukraine.

12

LLC SPA TSVBP

LLC SPA TsVBP (TIN 9703158566, under US and Ukrainian sanctions).

PRODUCTS

➤ **SEM-350 / Veteran** — a robotic tracked platform for the evacuation of the wounded. It was developed directly for the needs of the war against Ukraine and launched into series production in 2024. In 2024, the name was changed from SEM-350 to Veteran.



UGV SEM-350

LLC SPA Kaysant (TIN 7733393203, under Ukrainian and US sanctions) — manufacturer of specialised ground platforms for the launch of FPV drones — Argus and Muravey. The company is focused on creating mobile ground airfields for FPV drones.

PRODUCTS

- **UGV Argus** — a ground launch platform for FPV drones. Allows the drones to be delivered to the target and launched from a location safe for the operator.
- **UGV Muravey (The Ant)** — a tracked ground platform for transporting and launching FPV drones. It has been documented in combat use against Ukraine.

LLC Group Avanti (TIN 9703144010, not under sanctions) — manufacturer of the tracked Bogomol UGV for logistics. The complex is used to deliver supplies to the forward positions using tunnels in conditions of enemy EW countermeasures. It has been documented in combat use against Ukraine.

PRODUCTS

- **UGV Bogomol (the Mantis)** — a tracked, remotely controlled platform with electric drive. It is produced as a family of modifications for various combat tasks. At the Army-2024 forum, LLC Group Avanti presented three variants: Bogomol B3 — base logistics platform; Bogomol V5 — multifunctional version for logistics, evacuation of the wounded, and fire support when combat modules are mounted; Bogomol V5TR3 — combat version with mounted weapons for engaging ground vehicles and enemy personnel. Its payload is up to 150–200 kg; the platform can also carry stretchers for the wounded or a cargo container instead of a combat turret. Detailed technical specifications (speed, range, control range) are not verified in open sources.

15

FGANU TSNII ROBOTOTEKHNIKI I TEKHNICHESKOY KIBERNETIKI (TSNII RTK)

FGANU TsNII Robototekhniki i Tekhnicheskoy Kibernetiki (Central Research Institute of Robotics and Technical Cybernetics, TIN 7804023410, under US sanctions) — a Federal State Autonomous Scientific Institution, founded as the design bureau of Technical Cybernetics at Leningrad Polytechnic Institute.

PRODUCTS

➤ **UGV Argo** — a wheeled combat robotic complex intended for fire support of units, reconnaissance, and patrolling. Combat use is documented in Syria. Combat use against Ukraine has not been recorded.

16

JSC NITI PROGRESS

JSC NITI Progress (Research Technological Institute "Progress") (TIN 1831020840, under Ukrainian sanctions) — a scientific research and technological institute, founded in 1959, located in Izhevsk.

PRODUCTS

➤ **UGV Platforma-M** — a universal tracked remotely controlled robotic platform with differentiated class-3 armour protection. It was developed under contract from the Russian MoD; initial development began in 2009, state trials were completed in 2010, and serial deliveries began in 2014–2015. Payload — up to 300 kg. Weapon options: up to 4 Kornet ATGMs, AGL-30, a PKT machine gun, and two grenade launchers. Range — about 10 hours of continuous movement on full fuel tanks. According to several media reports, Platforma-M was used by Russia during the military operation in Syria. Combat use against Ukraine has not been publicly confirmed.



UGV Platforma-M



UGV Bratishka during field testing. Since 2025, it has been supplied to Russian soldiers

LLC Arkodim-Pro (TIN 1658146106, not under sanctions) — a Kazan-based company that produces the tracked Bratishka UGV for logistics and evacuation. Its founder, Artyom Barakhtin, also has a number of other companies with similar names, some of which are involved in robotics development.

PRODUCTS

➤ **UGV Bratishka (the Bro)** — a light tracked unmanned vehicle for logistics and evacuation at the front line. The complex was developed with the support of regional authorities in Tatarstan and Narodny Front, taking into account the real needs of fighters. It is used by the Alga unit. In parallel with the Bratishka, another version is being developed — the Mladshiy Bratishka (Little Brother).

JSC SPA Vysokotochnye Kompleksy (Group of companies High-Precision Systems, TIN 7704721192, under US, EU, Ukrainian, Japanese, Canadian, and Swiss sanctions).

PRODUCTS

➤ **UGV Depesha (the Dispatch)** — a remotely controlled multifunctional platform developed by KBP, produced in two chassis variants. The tracked version offers improved cross-country ability, reaches a speed of up to 15 km/h, and is capable of carrying a load of up to 100 kg. The wheeled version has a greater payload — up to 200 kg — and reaches a speed of up to 30 km/h. Control is via radio or fibre optics. The modular design allows the installation of combat modules, a cargo container or stretchers, and remote mining. It has been documented in combat use against Ukraine.

➤ In parallel, All-Russian Research Institute "Signal" (the same holding) has developed a wheeled version called **Buggy** with a payload of up to 250 kg and a speed of up to 30 km/h.

- **UGV Karakal (the Caracal)** — a tracked robotic platform developed by Kurgan Machine-Building Plant (part of the High Precision Systems structure). The platform's payload is 500 kg; speed — up to 15 km/h. The Karakal is equipped with a video surveillance system with TV and thermal-imaging cameras. The design allows the installation of various modules depending on the task, as well as use as a transport vehicle for cargo delivery or evacuation of the wounded. The status of combat use is unknown.
- **MGR-4 Shmel (the Bumblebee)** — a remotely controlled humanitarian demining machine. It is built on the basis of the serial ANT-1000 mini-loader. Its control signal range is up to 1,000 metres. It has been designed for clearing territories of anti-personnel mines. Speed in demining mode — 1 km/h. There is no cabin or manual control. Use is confirmed in the new regions of Russia and in the occupied territories of Ukraine.

19

LLC KPK NOVYY RUBEZH

LLC KPK Novyy Rubezh (New Frontier, TIN 0100005027, not under sanctions) — a design and manufacturing company, developer of the Krot family of UGVs and the multifunctional Veles platform. Also develops UAVs. As of 2025, 80 UGVs have been delivered to the combat zone.

PRODUCTS

- **UGV Krot (the Mole)** — a base multifunctional remotely controlled wheeled platform, developed in 2024. Capable of carrying up to 30 kg of payload. Used mainly as a kamikaze drone. Combat use against Ukraine was confirmed in November 2024.
- **UGV Krot-2, UGV Krot-3 (The Mole-2, The Mole-3)** — modified versions of the Krot drone. Combat use against Ukraine is confirmed. Detailed technical specifications are unknown.
- **UGV Veles** — a multifunctional platform for logistics, fire support, and reconnaissance. Payload is up to 400 kg. Other technical specifications are not verified in open sources.

LLC Gagaring (TIN 2312321660, not under sanctions) — a Krasnodar-based company registered on 4 September 2023. The company brands itself as “Gagaring. Electronics Laboratory” and produces electronic components for the front, including the Yurka drone detectors and the Kuznechik (The Grasshopper) communications system.

PRODUCTS

➤ **UGV Atom** — a ground logistics platform. Price — 946–1,171 thousand rubles. Payload — 250 kg on the platform and up to 600 kg on a tow on level ground. Average speed — 20 km/h; continuous operating time — 240 minutes (4 hours). Control is on the 150–400 MHz frequency; control range from the remote without a relay (direct line of sight) — up to 3,000 m. The design allows for the mounting of a combat module of up to 250 kg. The status of combat use against Ukraine is not currently confirmed.



UGV Atom

SUMMARY TABLE OF UGVs

UGV NAME	MANUFACTURER	PURPOSE	PRODUCTION	SANCTIONS
KURYER	LLC NRTK Kaps	Logistics, reconnaissance, fire support, evacuation	Serial (100+)	Not sanctioned
VARAN	LLC Frobotics	Logistics, evacuation, fire support, strike	Serial	Not sanctioned
IMPULS / IMPULS-M	LLC Gumich-RTK	Logistics, fire support, air defence	Serial (100+)	EU, Switzerland, Monaco
OMICH	LLC RENG / Omsk Tank-Automotive Engineering Institute	Logistics, evacuation, fire support	Serial	Not sanctioned
OMICH-2	LLC RENG / Omsk Tank-Automotive Engineering Institute	Logistics, evacuation, fire support	Serial	Not sanctioned
CHELNOK	LLC MobiDik	Demining	Small-batch	Not sanctioned
URAN-6	JSC SKB MO RF	Demining	Small-batch	US, Ukraine, Japan, Switzerland
URAN-9	JSC SKB MO RF	Fire support, reconnaissance	Small-batch	US, Ukraine, Japan, Switzerland
SORATNIK	JSC SKB MO RF / Kalashnikov	Fire support, reconnaissance	Research	US, Ukraine, Japan, Switzerland
STALKER	LLC DST-Ural	Demining	Serial	US
PROKHOD-1	VNII Signal	Demining (heavy)	Small-batch	US, Ukraine, Switzerland
MARKER	SPA Androidnaya Tekhnika	Fire support, logistics, reconnaissance	Research	US, Ukraine
YEZHNIK-R	LLC KB Spektr-Inzhiniring	Strike (explosive)	Serial	US, Ukraine
ARGUS / MURAVEY	LLC SPA Kaysant	FPV launch platform	Serial	US, Ukraine
SEM-350 / VETERAN	SPA TsVBP	Evacuation of the wounded	Serial	US, Ukraine
BOGOMOL	LLC Group Avanti	Logistics	Serial	Not sanctioned
BRATISHKA	LLC Arkodim-Pro	Logistics	Serial	Not sanctioned
NEREKHTA	Zavod im. V. A. Degtyareva	Fire support, logistics, reconnaissance	Research	US, EU, Ukraine
MGR-4 SHMEL	SPA Vysokotochnye Kompleksy	Demining	Research	US, EU, Canada, Japan

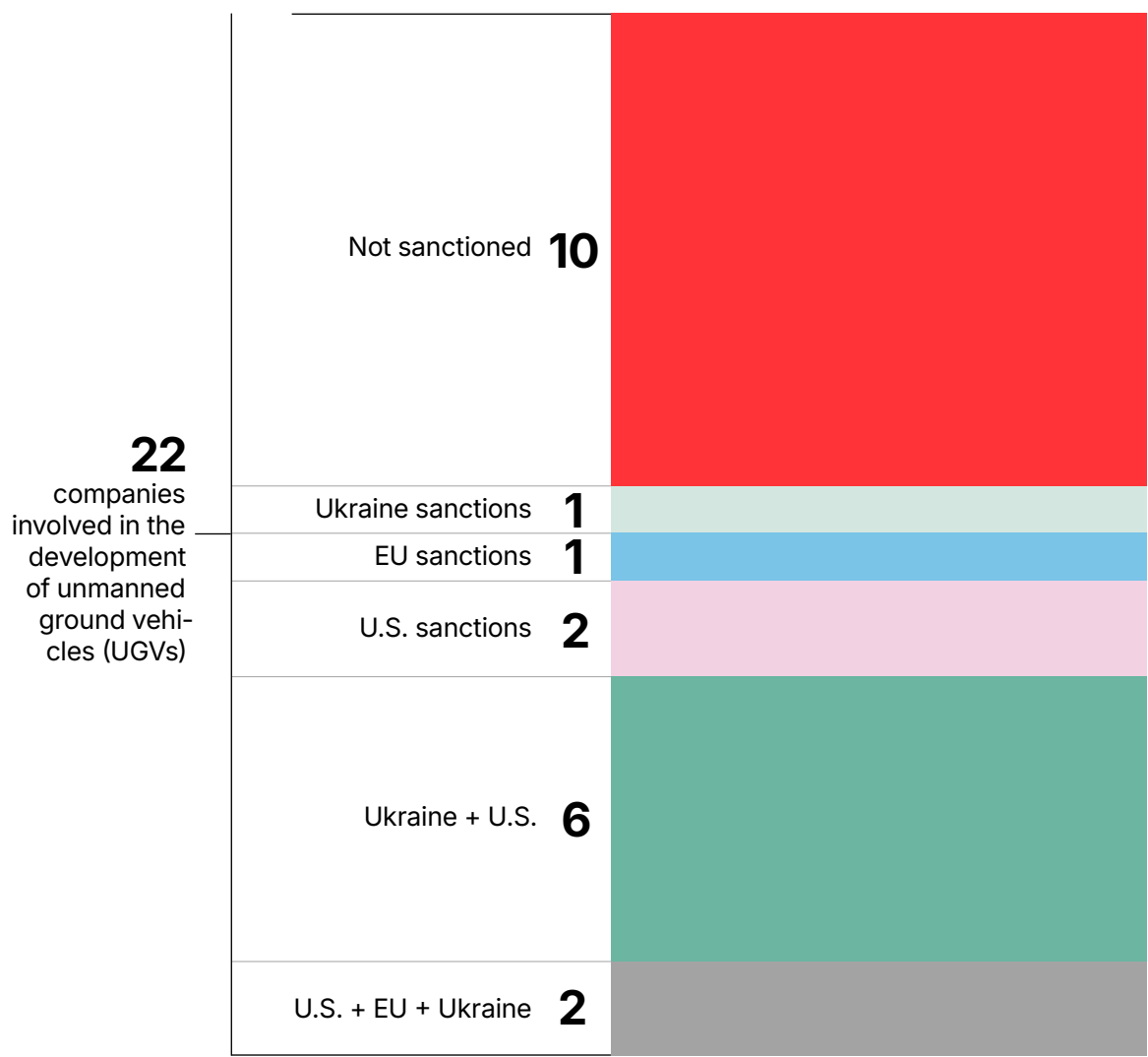
UGV NAME	MANUFACTURER	PURPOSE	PRODUCTION	SANCTIONS
DEPESHA	SPA Vysokotochnye Kompleksy	Logistics	Unknown	US, EU, Canada, Japan
ARGO	TsNII RTK	Reconnaissance, fire support	Research	US
LYAGUSHKA	Unknown	Strike (explosive)	Unknown	Unknown
MALVINA	Unknown	Fire support	Prototype	Unknown
PLATFORMA-M	JSC NITI Progress	Combat	Research	Ukraine
PROMETEI	Unknown	Logistics	Small-batch	Unknown
KROT-2	LLC KPK Novyy Rubezh	Strike (explosive)	Serial	Not sanctioned
KROT-3	LLC KPK Novyy Rubezh	Strike (explosive)	Serial	Not sanctioned
VELES	LLC KPK Novyy Rubezh	Logistics	Unknown	Not sanctioned
ATOM	LLC Gagaring	Logistics	Unknown	Not sanctioned
SKORPION-M	Unknown	Strike (explosive)	Unknown	Unknown
KARAKAL	SPA Vysokotochnye Kompleksy	Logistics	Unknown	US, EU, Japan, Ukraine, Canada, Switzerland

SANCTIONS POLICY

As of March 2026, **10 UGV manufacturers are under US sanctions, 9 manufacturers are under Ukrainian sanctions, and 3 manufacturers are under EU sanctions.** **Only 2 companies fall under consolidated sanctions in the US, EU, Canada, Switzerland, and Ukraine.**

At the same time, **sanctions targets have predominantly been the old MIC plants of Russia**, which produce large quantities of weapons and military equipment, but are rather ineffective in the UGV context. By contrast, **none of the largest serial producers of new UGVs is under sanctions in any jurisdiction** — despite the documented combat use of their products against Ukraine (LLC NRTK Kaps, LLC Frobotics, LLC RENG, LLC Arkodim-Pro, LLC Group Avanti, and others).

DISTRIBUTION OF SANCTIONS AMONG COUNTRIES



CONSOLIDATED SANCTIONS OF THE US, EU, AND UKRAINE HAVE BEEN IMPOSED

- **SPA Vysokotochnye Kompleksy** (Rostec holding) (TIN 7704721192) — manufacturer of UGVs Depesha, Buggy, MGR-4 Shmel, Karakal. Also under sanctions of Japan, Canada, and Switzerland.
- **Zavod imeni V. A. Degtyareva** (TIN 3305004083) — manufacturer of UGV Nerekhta. Also under sanctions of Canada, Japan, and Switzerland.

US AND UKRAINIAN SANCTIONS HAVE BEEN IMPOSED

- **JSC Spetsialnoye Konstruktorskoye Byuro MORF** (TIN 5024076350) — manufacturer of: Uran-6, Uran-9, Uran-3, Soratnik. Also under sanctions of Switzerland and Japan.
- **VNII Signal** (TIN 3305708964) — manufacturer of Prokhod-1. Also under sanctions of Canada, Switzerland, and Australia.
- **SPA Androidnaya Tekhnika** (TIN 7723738378) — manufacturer of UGV Marker.
- **LLC SPA Kaysant** (TIN 7733393203) — manufacturer of UGVs Argus, Muravey.
- **LLC KB Spektr-Inzhiniring** (TIN 5445029645) — manufacturer of UGV Yezhik-R.
- **SPA TsVBP** (TIN 9703158566) — manufacturer of UGV SEM-350 / Veteran.

US SANCTIONS HAVE BEEN IMPOSED

- **DST-Ural** (TIN 7453251929) — manufacturer of UGV Stalker.
- **TsNII Robototekhniki i Tekhnicheskoy Kibernetiki** (TIN 7804023410) — manufacturer of UGV Argo.

EU SANCTIONS HAVE BEEN IMPOSED

- **LLC Gumich-RTK** (TIN 9726005407) — manufacturer of: Impuls, Impuls-M, Impuls-PVO. Also under sanctions of Switzerland and Monaco.

UKRAINIAN SANCTIONS HAVE BEEN IMPOSED

- **JSC NITI Progress** (TIN 1831020840) — manufacturer of Platforma-M. Not under sanctions of the US or the EU.

NOT UNDER SANCTIONS IN ANY JURISDICTION

- **LLC NRTK Kaps** (TIN 7723185204) — manufacturer of UGV Kuryer.
- **LLC Kaps** (TIN 7728809921) — owner of the trademark and patents for UGV Kuryer, founder of LLC NRTK Kaps.
- **LLC Frobotics** (TIN 6155021766) — manufacturer of UGV Varan.
- **LLC RENG** (TIN 5501132688) — manufacturer of Omich, Omich-2.
- **Branch Omsk Tank-Automotive Engineering Institute** (TIN 7801046232) — developer of UGVs Kuryer and Omich.
- **LLC Group Avanti** (TIN 9703144010) — manufacturer of UGV Bogomol.
- **LLC Arkodim-Pro** (TIN 1658146106) — manufacturer of UGV Bratishka and Mladshiy Bratishka.
- **LLC MobiDik** (TIN 4501114013) — manufacturer of UGV Chelnok.
- **LLC KPK Novyy Rubezh** (TIN 0100005027) — manufacturer of UGVs Krot, Krot-2, and Veles.
- **LLC Gagaring** (TIN 2312321660) — manufacturer of UGV Atom.

RECOMMENDATIONS ON SANCTIONS POLICY FOR COUNTRIES OF THE SANCTIONS COALITION

Given the rapid growth in production and combat use of Russian unmanned ground vehicles (UGVs) in the war against Ukraine, as well as the critical gaps in existing sanctions regimes that allow key manufacturers to freely procure components abroad, it is necessary to urgently expand sanctions pressure on this sector.

Recommendations for US sanctions:

- ✎ **LLC NRTK Kaps** (TIN 7723185204)
- ✎ **LLC Kaps** (TIN 7728809921)
- ✎ **LLC Frobotics** (TIN 6155021766)
- ✎ **LLC Gumich-RTK** (TIN 9726005407)
- ✎ **LLC RENG** (TIN 5501132688)
- ✎ **LLC MobiDik** (TIN 4501114013)
- ✎ **LLC Group Avanti** (TIN 9703144010)
- ✎ **JSC NITI Progress** (TIN 1831020840)
- ✎ **LLC Arkodim-Pro** (TIN 1658146106)
- ✎ **All-Russian Public Movement Narodny Front "Za Rossiyu"** (TIN 7729452054)
- ✎ **LLC KPK Novyy Rubezh** (TIN 0100005027)
- ✎ **LLC Gagaring** (TIN 2312321660)

Recommendations for EU sanctions and other jurisdictions:

- ✎ **LLC NRTK Kaps** (TIN 7723185204)
- ✎ **LLC Kaps** (TIN 7728809921)
- ✎ **LLC Frobotics** (TIN 6155021766)
- ✎ **LLC RENG** (TIN 5501132688)
- ✎ **LLC MobiDik** (TIN 4501114013)
- ✎ **JSC Spetsialnoye Konstruktorskoye Byuro MO RF** (TIN 5024076350)
- ✎ **LLC DST-Ural** (TIN 7453251929)

- ✧ JSC VNII Signal (TIN 3305708964)
- ✧ SPA Androidnaya Tekhnika (TIN 7723738378)
- ✧ LLC Kaysant (TIN 7733393203)
- ✧ LLC KB Spektr-Inzhiniring (TIN 5445029645)
- ✧ TsNII Robototekhniki i Tekhnicheskoy Kibernetiki (TIN 7804023410)
- ✧ LLC SPA TsVBP (TIN 9703158566)
- ✧ LLC Group Avanti (TIN 9703144010)
- ✧ JSC NITI Progress (TIN 1831020840)
- ✧ LLC Arkodim-Pro (TIN 1658146106)
- ✧ LLC KPK Novyy Rubezh (TIN 0100005027)
- ✧ LLC Gagaring (TIN 2312321660)

Sectoral restrictions

Sectoral restrictions on the export of strategic goods that can be used for UGV production from countries of the sanctions coalition to Russia are an important component of international pressure.

Recommended:

- ✧ **Expand the Common High Priority Items list** with consideration of UGV specifics. It is necessary to consider restrictions on exports to Russia, as well as to recommend that third countries prohibit the export and re-export to Russia of the following groups of goods used in unmanned ground vehicles:
 - * **DC electric motors (85013100 / 85013200 / 85013300 / 85013400),**
 - * **Lithium-ion batteries (85076000),**
 - * **Programmable controllers and distribution panels for voltages up to 1,000 V (85371000),**
 - * **Video transmission equipment and digital night cameras (85258300),**
 - * **Remote control equipment (85269200),**
 - * **Remotely controlled or autonomous unmanned ground platforms (wheeled and tracked) with a payload of more than 5 kg (84798900).**

- **Closing gaps in individual sanctions lists** is one of the important aspects of the careful formation of sanctions lists. The lists should include persons with a direct connection to the production and supply of unmanned ground vehicles for the Russian Armed Forces. In particular, the ultimate beneficial owners of the aforementioned companies, directors, chief engineers, and so on.
- **Strengthen coordination between the sanctions bodies of different countries regarding UGVs.** As the UGV industry is at an early stage of development (hundreds of units per year, not thousands as with UAVs), the timely introduction of sanctions now will have a significantly greater effect than belated action after production has scaled up. Joint enforcement of sanctions and regular consultations between countries will help identify new sanctions-evasion schemes.
- **Strengthen secondary sanctions mechanisms.** One important aspect is the strengthening of secondary sanctions mechanisms, which make it possible to impose sanctions on companies or countries that provide Russia with goods or services that can be used to create ground drones. It is important to have a clear policy on the application of secondary sanctions to combat sanctions evasion through third countries.

SOURCES

1. Maksymiv, S., Kuzmina, D., & Holishevskaya, A. (2025, March 4). Drones that change the rules of the game: who manufactures Russian FPV drones. Trap Aggressor / StateWatch. <https://trap.org.ua/publications/drony-shcho-zminiuiut-pravyla-hry-khto-vyhotovliaie-rosiyski-fpv-bezpilotnyky/>
2. Government of the Russian Federation. Meeting of the Military-Industrial Commission (news No. 14804). <http://government.ru/news/14804/>
3. TechInsider. Russian combat robots 'Platforma-M' and 'Uran-9': test-drive. <https://www.techinsider.ru/weapon/242132-rossiyskie-boevye-roboty-platforma-m-i-uran-9-test-drayv/>
4. Bendett, S., et al. (2021, May). Artificial intelligence and autonomy in Russia. Center for Naval Analyses (CNA). <https://www.cna.org/reports/2021/05/Artificial-Intelligence-and-Autonomy-in-Russia.pdf>
5. Defence-UA. The Russians rather comically lost their 'Uran-6' sapper robot. https://defence-ua.com/news/rashisti_dovoli_komichno_vtratili_svogo_robota_saperwas_being_testeda_uran_6-9105.html
6. RIA Novosti. (2016, February 9). [Report on combat robot tests]. <https://ria.ru/20160209/1371988520.html>
7. Defence-UA. (2021). Russian 'Uran-9' robots, which failed in Syria, took part in the 'Zapad-2021' exercises. https://defence-ua.com/news/rosiyski_roboti_uran_9_jaki_provalilisja_v_sirii_vzjali_uchast_u_navchannjah_zapad_2021-4761.html
8. Militär Aktuell. (2024). Russia is working on ground drones again. <https://militaeraktuell.at/en/russia-is-working-on-ground-drones-again/>
9. RAPSI. (2022, May 20). [Report on court ruling in case of embezzlement during R&D development]. https://rapsinews.ru/judicial_news/20220520/307962333.html
10. Vedomosti. (2024, February 29). 'Kommersant': security agencies identified 80 'dead souls' in audits of R&D for the Ministry of Defence. <https://www.vedomosti.ru/society/news/2024/02/29/1023128-mertvih-dush-okr>
11. Versiya (Neva). The head of the St. Petersburg defence enterprise 'Zaslon' turned out to be a major corrupt official. <https://neva.versia.ru/glava-peterburgskogo-oboronnogo-predpriyatiya-zaslon-okazalsya-krupnym-korruptsiionerom>
12. Komarovskiy, D. (2018, October 15). They renounced the drone: what happened to the 'Altair' project. Izvestia. <https://iz.ru/799816/denis-komarovskii/otrekli-ot-drona-chto-sluchilos-s-proektom-altair>
13. Rubnikovich, O., & Safronov, I. (2018, November 20). The Syria peacemaker was accused 'on a hunch': a Ministry of Defence general is charged with fraud as the face of the General Staff Academy. Kommersant. <https://www.kommersant.ru/doc/3805715>
14. Senatorov, Yu. (2020, April 10). Every robot has its skeleton in the closet: the Investigative Committee uncovered embezzlement in the development of military robotics. Kommersant. <https://www.kommersant.ru/doc/4317989>
15. Kushchenko, O. (2025, December). 'You have to be like a mummy: sit and watch'. Why the army loves ground robots. Texty.org.ua. <https://texty.org.ua/articles/116484/ treba-buty-yak-mumiya-sydyty-i-dyvlyatsya-chomu-v-armiyi-lyublyat-nazemnyx-robotiv/>
16. Deutsche Welle (Ukraine). Fibre optics, the kill zone and ground robots: how the front has changed over four years of war. <https://www.dw.com/uk/optovolokno-kilzona-ta-nazemni-roboti-ak-zminivsa-front-za-cotiri-roki-vijni/a-76024551>

17. RT in Russian. UGVs save lives and change combat tactics [Video No. 1594994].
<https://russian.rt.com/ussr/video/1594994-nrtk-spasayut-zhizni-i-menyayut-taktiku-boya>
18. TASS. (2023). [Report on tests of UGV 'Marker' in Donbas, No. 16945913]. <https://tass.ru/obschestvo/16945913>
19. Geworld.ge. Dmitry Rogozin on how the combat robot... [Interview]. <https://shorturl.at/8DVlt>
20. Rogozin, D. (2024, December). [Telegram post No. 6537]. https://t.me/rogozin_dg/6537
21. TASS. (2024). [Report on the use of UGV 'Kuryer' in the combat zone, No. 22257529]. <https://tass.ru/ekonomika/22257529>
22. RIA Novosti. (2025, April 8). Russian MOD on deliveries of unmanned ground vehicles to the troops. <https://ria.ru/20250408/roboty-2010051755.html>
23. TASS. (2026). [Report on deliveries of UGV 'Impuls', No. 26192443]. <https://tass.ru/obschestvo/26192443>
24. Tsargrad. The military showed the evacuation of a soldier near Kostiantynivka using a UGV.
https://tsargrad.tv/novost/voennye-pokazali-jevakuaciju-soldata-pod-konstantinovkoj-s-pomoshhu-nrtk_1593752
25. Za Rulem. Robots against drones. <https://www.zr.ru/content/articles/974833-roboty-protiv-dronov/>
26. Vedomosti. (2024, June 11). National project on robotics: 300 billion rubles by 2030.
<https://www.vedomosti.ru/technology/articles/2024/06/11/1043378-natsproekt-robototekhnike-300>
27. VPK.name. Between mines and under kamikaze drones: how courier robots take part in the special operation. https://vpk.name/news/1083856_mezhdu_minami_i_pod_dronami-kamikadze-kak_roboty-kurery_uchastvuyut_v_specoperacii.html
28. RIA Novosti. (2017, October 15). [Report on the 'Nerekhta' robotic platform]. <https://ria.ru/20171015/1506649786.html>
29. SPA 'Androidnaya Tekhnika'. Marker. <https://marker.npo-at.com/>
30. SPA 'Androidnaya Tekhnika'. About the company. <https://npo-at.com/company/>
31. Rabochy Put. (2024). The 'Narodny Front' Club will be able to receive funding for the development of new defence systems. <https://www.rabochy-put.ru/news/195571-klub-narodnogo-fronta-smozhet-poluchit-finansirovanie-na-razrabotku-novykh-oboronnykh-sistem.html>
32. Colonel Cassad. [Entry on UGV 'Kuryer', LiveJournal No. 10049693]. <https://colonelcassad.livejournal.com/10049693.html>
33. All-Russian Popular Front. Omsk inventors, with the support of the 'Kulibin Club' of Narodny Front, presented the ground robotic complex 'Omich'. <https://onf.ru/news/omskie-izobretateli-pri-podderzhke-kulibin-kluba-narodnogo-fronta-predstavili-nazemnyj-robototekhnicheskij-kompleks-omich>
34. Lenta.ru. (2025, July 22). A flamethrower for the 'Omich' was developed in Russia. <https://lenta.ru/news/2025/07/22/v-rossii-razrabotali-ognemet-dlya-omicha/>
35. Ridus.ru. (2026, March). MVOKU specialists have designed a UGV with neural-network-based control. <https://www.ridus.ru/specialisty-mvoku-sproektirovali-nrtk-s-upravleniem-na-osnove-nejroseti-810986.html>
36. Rostec. (2025). 'Rostec' is investing more than 1 billion rubles in advanced engineering schools in 2025. <https://rostec.ru/media/news/rostekh-investiruet-v-pish-bolee-1-mld-rublej-v-2025-godu/>

37. Vedomosti. (2025, September 19). Service robotics companies. <https://www.vedomosti.ru/technology/news/2025/09/19/1140488-kompanii-servisnoi-robototekhniki>
38. NextMSC. Russia Unmanned Ground Vehicle Market. <https://www.nextmsc.com/report/russia-unmanned-ground-vehicle-market>
39. Interfax. (2023, July). [Report on Federal Law No. 323987-8 on countering unmanned systems]. <https://www.interfax.ru/russia/912474>
40. Sostav.ru. (2026, February). The State Duma has prepared the first comprehensive law on robotics and unmanned systems. <https://www.sostav.ru/publication/v-gosdume-podgotovili-pervyj-kompleksnyj-zakon-o-robototekhnike-i-bespilotnikakh-81517.html>
41. Reuters. (2025, July 23). Chinese engines shipped as cooling units to power Russian drones used in Ukraine. <https://www.reuters.com/business/aerospace-defense/chinese-engines-shipped-cooling-units-power-russian-drones-used-ukraine-2025-07-2>
42. Sibir.Realii. China has sharply increased microelectronics deliveries to Russia. <https://www.sibreal.org/a/kitay-rezko-udelichil-postavki-mikroelektroniki-v-rossiyu/32903656.html>
43. RIA Novosti. (2023, September 18). [Interview with Dudorov on dependence on Chinese components]. <https://ria.ru/20230918/dudorov-1896546714.html>
44. Radio Svoboda. UGV battalion commander, 93rd Separate Mechanized Brigade, callsign 'Elektryk': interview. <https://www.radiosvoboda.org/a/kombat-nrk-93ombr-ekektryk/33582912.html>
45. Myseldon. [News item on the use of AI for controlling UGVs, No. 343203806]. <https://myseldon.com/ru/news/index/343203806>
46. KiberLeninka. Method for assessing the compliance of indicators and characteristics of ground-based robotic complexes for military purposes. <https://cyberleninka.ru/article/n/metod-otsenki-sootvetstviya-pokazateley-i-harakteristik-nazemnyh-robototekhnicheskikh-kompleksov-voennogo-naznacheniya-putem/viewer>
47. European Security & Defence. (2026, March). The emerging role of UGVs. <https://euro-sd.com/2026/03/articles/armed-forces/49643/the-emerging-role-of-ugvsin/>
48. BBC News. [Material on logistics on the Pokrovsk axis and unmanned ground vehicles]. <https://www.bbc.com/news/articles/cvgkg4zr33lo>
49. Dambiev, Ch. (2024). [Telegram post on UGV 'Kuryer', No. 29037]. <https://t.me/ChDambiev/29037>
50. Trampin. [Material on Nurzhan Rakimzhanov and the Omsk Tank-Automotive Engineering Institute, No. 4210]. <https://trampin.media/news/5/4210>
51. DFNC. (2025, February). From words to deeds: who invents what and how in Russia. Journal archive, No. 2025-02-91. <https://dfnc.ru/arhiv-zhurnalov/2025-02-91/ot-slov-k-delu-kto-cto-i-kak-izobretaet-v-rossii/>
52. JobLab.ru. [Vacancy No. 13466175, LLC 'NRTK Kaps', Troitsk]. <https://joblab.ru/vacancy/13466175>
53. HD LED Technology. Museum of Heroism [Portfolio]. <https://hdledtech.com/portfoltheio/muzej-geroizma/>
54. Federal Service for Intellectual Property (Rospatent). Trademark register, No. 2024756450. https://www.fips.ru/registers-doc-view/fips_servlet?DB=RUTMAP&DocNumber=2024756450&TypeFile=html
55. VPK.name. (2026, January). Ministry of Defence showed the latest UGVs for the evacuation of servicemen. https://vpk.name/news/1096790_minoborony_pokazalo_noveishie_nrtk_dlya_evakucii_voennosluzhashih.html
56. LLC 'Gumich-RTK'. Official website. <https://gumich-rtk.ru/>

57. Rostec. A universal rocket robot for the battlefield has been created with the participation of 'Rostec'. <https://rostec.ru/media/news/pri-uchastii-rostekha-sozdan-universalnyy-raketnyy-robot-polya-boya/>
58. All-Russian Popular Front. Russian developers, with the support of Narodny Front, presented the UGV 'Impuls'. <https://onf.ru/news/rossijskie-razrabotchiki-pri-podderzhke-narodnogo-fronta-predstaa-vili-nrtk-impuls>
59. OmskInform. [Material on Oleg Zarembo, No. 198774]. <https://omskinform.ru/news/198774>
60. VOmske. Zarembo was replaced by Gorbatenko from the DPR, No. 29702. <https://vomske.ru/news/29702-zarembu-zamenili-na-gorbatenko-iz-dnr/>
61. TASS. (2025). [Report on the use of UGV 'Omich', Army and Defence Industry, No. 24573557]. <https://tass.ru/armiya-i-opk/24573557>
62. Military. Russians have shown the flamethrower-equipped unmanned platform 'Omich-Shmel'. <https://military.com/uk/news/rosiyany-pokazaly-vognemetnu-bezekipazhnu-platformu-omich-shmel/>
63. Dambiev, Ch. (2025). [Telegram post on UGV 'Omich-2', No. 39650]. <https://t.me/ChDambiev/39650>
64. Building-Tech. Craftsmen from the Russian 'backwoods' have shown a remotely controlled 'Chelnok' platform for the deployment of UR-83P demining charges. <https://shorturl.at/tczfq>
65. Argumenty i Fakty. Successful hunt of the 'Stalker': the robot clears mines from fields in the Kursk border area. <https://aif.ru/politics/russia/udachnaya-ohota-stalkera-robot-chistit-ot-min-polya-v-kurskom-prigraniche>

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