



# The Role of the S-350 Vityaz in Russian Air Defense

**OE Watch Commentary:** In terms of organization, The Russian Federation's air defense system is primarily split between the Ground Forces and the Aerospace Defense Forces (VKS). The air defense systems of the Ground Forces are generally designed to provide air defense for the footprints of the echelons to which they are assigned or attached. At the brigade/division level, these may include systems such as the 9K310 Igla (SA-18 Grouse), ZSU-23-4M4 Shilka, 9K35 Strela-10 (SA-13 Gopher), 2K22 Tunguska (SA-19 Grison), 9K33 Osa (SA-8 Gecko), 9K330 Tor (SA-15 Gauntlet). At the Combined Arms Army/Tank Army/Army Corps-level, air defense is provided by systems such as the 9K37 Buk (SA-11 Gadfly). At the Military District/Joint Strategic Command-level, there are S-300V4 (SA-23 Gladiator\Giant) units that are taskable air defense assets that provide primarily ballistic missile defense for a given area or Combined Arms Army/Tank Army/Army Corps.



50P6E TEL for S-350 Vityaz system.

Source: Vitaly Kuzmin, <https://www.vitalykuzmin.net/Military/ARMY-2019-Static-part-3/i-9SZqhr3/A>, CC BY-NC-ND-4.0

The Aerospace Defense Forces (VKS) are responsible for national air defense, the first line of which is fighter aviation (Su-27s, Su-30s, Su-35s, Mig-29s, etc.), and then wide area air defense systems such as the S-300PM/PM2 Favorit (SA-10d/e), S-400 Triumf (SA-21 Growler), and the forthcoming S-500 Prometey. The VKS also operate point defense systems, such as the Pantsir-S1 (SA-22 Greyhound), to defend the aforementioned wide area air defense systems, and other strategically valuable targets. In addition, the VKS have a few Ground Forces systems including the 9K37 Buk (SA-11 Gadfly), and S-300V4 (SA-23 Gladiator\Giant). Whether in the Ground Forces or VKS, newer and older variants of these systems may be encountered as the Russian modernization process does not require the upgrade of all systems to a given standard, so it is not uncommon to see several variants of a given weapon system in the Russian inventory at any given time.

In terms of range, Russian air defense systems are classified as 'close range (up to 10 km),' 'short range (up to 30 km),' 'medium range (up to 100 km),' and 'long range (over 100 km).' Close range systems include those such as the 9K310 Igla (SA-18 Grouse), ZSU-23-4M4 Shilka, 9K35 Strela-10 (SA-13 Gopher). Short range systems include the 2K22 Tunguska (SA-19 Grison), 9K33 Osa (SA-8 Gecko), and 9K330 Tor (SA-15 Gauntlet). Medium range systems include the 9K37 Buk (SA-11 Gadfly), and long range systems include the S-300V4 (SA-23 Gladiator\Giant), S-300PM/PM2 Favorit (SA-10d/e), S-400 Triumf (SA-21 Growler), and the forthcoming S-500 Prometey. (Although the S-400 and S-500 have advertised ranges of up to 400km, it is likely that a hit at this range would require ideal conditions.)

The accompanying excerpted article from *TASS* explains that the new S-350 Vityaz air defense system will be fully integrated with the S-400 and air defense network as a whole. And since the S-350 fires three types of missiles (9M96E2 (120km), 9M96E (60km), and 9M100 (10km)), it will provide good coverage of the close, short, and medium ranges, filling the niche of several other air defense systems in the inventory, and at a reportedly very reasonable price. As the article notes, "the [S-350 "Vityaz" Air Defense Missile System] mobile launcher with 12 missiles is capable of easily shooting down an unmanned aerial vehicle, an aircraft, a helicopter, or a cruise missile. The "Vityaz" systems will become a deterrent factor in the region." **End OE Watch Commentary (Bartles)**

***“It is also important that one can deploy our “Triumf”, “Buk”, “Tor”, “Pantsir”, “Vityaz”, and “Derivatsiya” systems not only on various chassis but also on ships. In the process, all of these systems become interbranch while adding additional equipment. Furthermore, they can operate in a single combat command and control system.”***



## Continued: The Role of the S-350 Vityaz in Russian Air Defense

***“[The] S-400 complex can not only use “foreign” commands for the guidance of its missiles but is itself capable of commanding and controlling a network of S-300s, “Pantsirs”, “Tors”, and other air defense missile systems, having merged under its foundation dozens of launchers with hundreds of missiles. All of this makes our complexes not simply launchers with missiles but “blocks” in a single global airspace monitoring system, of which foreign developers essentially cannot boast for the time being”***

**Source:** Dmitry Litovkin, “‘Витязи’ воздушной обороны: Чем не могут похвастаться зарубежные разработчики системы ПВО (The ‘Vityazi’ of Air Defense: What Foreign Air Defense System Developers Can’t Boast),” TASS Online, 23 January 2020. <https://tass.ru/opinions/7588391>

*The ‘Vityazi’ of Air Defense: What Foreign Air Defense System Developers Can’t Boast*

The S-350 “Vityaz” Air Defense Missile System (ZRS) is going on combat alert in the Leningrad Oblast. The mobile launcher with 12 missiles is capable of easily shooting down an unmanned aerial vehicle, an aircraft, a helicopter, or a cruise missile. The “Vityaz” systems will become a deterrent factor in the region – now not a single aircraft will be able to remain unnoticed for the Russian Air Defense (PVO) forces. Furthermore, one can assume that the coverage of the “Iskander-M” operational-tactical missile complexes will become the air defense missile system’s duty...

The S-400 Triumf can combat such difficult targets as the AWACS early radar warning aircraft and the E-8 JSTARS ground forces command and control and surveillance aircraft. The latter provides not only reconnaissance but also the guidance of precision-guided weapon systems. Therefore, it is considered to be one of the main targets for the PVO systems.

In comparison with the “Triumf”, the S-350 is, of course, a “small” system. They developed it as the replacement for the S-300PS air defense missile complexes, which were accepted into the inventory at the beginning of the 1980s and they had completely exhausted their potential by 2010. The development of this complex was caused by the analysis of the experience of the combat employment of the Air Defense Missile Troops in Vietnam and in the Middle East, where their mobility and capability to move out from under a strike “right under the enemy’s nose”, and to rapidly prepare for combat at a new launch position facilitated their survival to a significant extent.

In this background, the S-300PS’s “successor” is the absolute hero: First of all, the “Vityaz” has a smaller size and, second, carries 12 versus four missiles at the same time, and is set up for combat and is torn down in a total of five minutes. In the process, the new items permit them to combat at ranges and distances practically within the entire range of airborne targets, just like their even older comrades. Aerospace Forces Air Defense Missile Troops Deputy Chief Colonel Yuriy Muravkin in a Krasnaya Zvezda Newspaper interview reported that the VKS border and coastal air defense regiments will be the first to obtain the S-350. From which one can arrive at the conclusion that the “Vityaz” will become an operational system of coverage on possible axes of a strike already prior to when the “Triumf” will become involved in this mission.

It is also important that one can deploy our “Triumf”, “Buk”, “Tor”, “Pantsir”, “Vityaz”, and “Derivatsiya” systems not only on various chassis but also on ships. In the process, all of these systems become interbranch while adding additional equipment. Furthermore, they can operate in a single combat command and control system. In the designers’ words, the S-400 can be used as a target designator not only using its own radar but also while receiving information from without: from the Air Defense and Missile Defense command and control posts, for example, such as satellites and early radar warning aircraft of the latest “Rezonans-N” radars.

The technical capabilities of this radar permit the detection and issuance of target designations on aerodynamic airborne targets at ranges of up to 600 kilometers, and against ballistic targets – up to 1,200 kilometers. Ministry of Defense spokesmen point out that in conditions of electronic countermeasures and natural interference, it can detect ballistic objects of any complexity, and also cruise missiles, hypersonic targets and aircraft, which were developed based on “Stealth” technology. In so doing, any S-400 complex can not only use “foreign” commands for the guidance of its missiles but is itself capable of commanding and controlling a network of S-300s, “Pantsirs”, “Tors”, and other air defense missile systems, having merged under its foundation dozens of launchers with hundreds of missiles. All of this makes our complexes not simply launchers with missiles but “blocks” in a single global airspace monitoring system, of which foreign developers essentially cannot boast for the time being.