

Iran's watchful eyes

Homegrown techs that fortify Iran's air defense

NATIONAL DESK ANALYSIS

Air defense steps in when all else fails. Tirelessly keeping an eye out for aerial threats, even in times of peace, anti-air forces are most likely a country's last line of defense against attackers. If they successfully nullify or reduce the effectiveness of hostile air action on sensitive military equipment and facilities, then the country would have a chance to go on the offensive and deter further attacks. If they fail, however, the nation would be at the mercy of their attackers.

As a country situated in a turbulent region, Iran has multiple enemies who never stop making military threats. Naturally, after the Iraqi-imposed war (1980-1988), Iran decided that it has to go from a weapons importer to a producer and even exporter of weapons, which it achieved marvelously, to be able to reliably defend itself. As discussed above, domestic development of surface-based and air-based target tracking systems sounded like the first logical step.

When we take into account the fact that for many decades Iran's development of its defensive capabilities was beset by sanctions, then the significance of the technological and military achievements of our brave men in designing, producing, and enhancing these equipment and weapons is doubled. At a vulnerable time when even Iran's allies refrained from providing us with fighter aircraft and high-quality defense and radar systems in fear of US retribution, we looked inward and no further than our own scientists to make us self-sufficient, and they did not disappoint us.

Enemies like Israel, who are constantly threatening us, cannot be held back by diplomatic means alone. Foes and competitors alike must understand that while we have skilled negotiators, we enter the field of battle with maximum strength and courage. We have learned not to rely on Western or Eastern weapons as they might not deliver the required efficiency at times of need. We essentially domesticized some weapons and military equipment, and that is one of the significant things that sets us apart from regional competitors.

Let's learn more about Iran's anti-air arsenal, the hawk-eyed guardians of its skies.



A domestically developed Karrar jet-powered target drone is launched during a military exercise in Iran.
● TASNIM

Karrar drone

The Karrar drone is a multipurpose unmanned aerial vehicle (UAV) manufactured by Iran Aircraft Manufacturing Industries Corporation (HESA). With a length of 3.75 meters and a wingspan of 3.1 meters, it has a maximum speed of 900 km/h and a range of 1,000 kilometers. What sets the Karrar drone apart is its innovative combination of drone and missile technologies, giving it enhanced air defense capabilities. It can carry a substantial payload of up to 250 kg, including a 226-kilogram warhead in its suicide version. Powered by a turbojet engine, this drone is designed to be effective in air defense roles, adding a new dimension to Iran's military strategy.

S-300 air defense system

Iran's S-300 air defense system, acquired from Russia, is a formidable long-range surface-to-air missile system. With a range of approximately 200 kilometers and a reaction time of around five minutes, it provides a robust defensive capability. The S-300 can simultaneously track 100 targets and engage up to 12 of them. In certain scenarios, it can even be utilized as an offensive weapon. This system significantly bolsters Iran's ability to protect its airspace and critical assets.



This file picture shows a Russian S-300 anti-aircraft missile system on display in an undisclosed location in Russia.
● AP



The picture shows Iranian-made air defense missile system Bavar-373 during a ceremony in Tehran on August 22, 2019.
● IRNA

Bavar-373 air defense system

The Bavar-373 is an indigenous long-range mobile air defense system developed by Iran's Ministry of Defense. With a range of over 300 kilometers and an engagement altitude of approximately 32 km, it is a key component of Iran's air defense network. The system can intercept various aerial threats, including fighter jets, drones, cruise missiles, and even stealth fifth-generation aircraft. Bavar-373 is a highly capable system, with only a handful of countries possessing similar technology. It boasts a detection range of over 450 km and can simultaneously track 300 targets, ensuring Iran's armed forces have a robust long-range defense capability.

Sayyad-4 missile

The Sayyad-4 is a surface-to-air defense missile designed by Iran's Ministry of Defense. With a range of over 200 kilometers and an engagement altitude of up to 32 km, it is a formidable weapon. One of its standout features is the ability to engage small targets, such as drones, at altitudes as high as 43,000 feet. The Sayyad-4 is equipped with a vertical launch mechanism, making it a versatile and rapid-response asset in Iran's air defense arsenal.



Sayyad-4B missile is formally unveiled during a ceremony attended by former Iranian president Hassan Rouhani on August 22, 2019.
● IRNA

Shahid Arman air defense system

Shahid Arman is a medium-range, high-altitude air defense system, also developed by Iran's Ministry of Defense. With a system range of 120 kilometers and a radar detection range of 200 km, it provides robust protection. Shahid Arman can engage targets at an altitude of 27 kilometers using the Sayyad-3F vertically launched missile. Its Joshan passive phased array radar and Najm-804 active phased array radar enable it to simultaneously engage six targets with a reaction time of less than 20 seconds. This versatile system can counter a wide range of threats, including ballistic missiles, anti-radar missiles, cruise missiles, guided bombs, helicopters, and drones.



Iran's homegrown Shahid Arman anti-ballistic missile (ABM) defense system, also known as Tactical Sayyad.
● FARS

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