Evolutionary path of Iran's missile systems

Tactical Sayyad

A major advancement in Iran's air defense capabilities

The development of Tactical Sayyad (Hunter) air defense missile system marks a significant achievement in Iran's defense industry. This system stands as the first indigenous defense system capable of simultaneously deploying multiple missiles from its launcher.

The air defense system was featured alongside a range of indigenous military systems and weaponry at the International Military Forum ARMY-2023 held in Russia in August. It was for the first time that the Iranian Defense Ministry showcased a replica of its Tactical Sayyad air defense system in a foreign exhibition, indicating its successful testing and operational readiness.

Iran categorizes its missile systems by speed classes: Subsonic, supersonic (with speeds ranging from 1.2 to 5 Mach), and hypersonic (exceeding 5 Mach), with maneuverability during the terminal phase being crucial for effectiveness.

The Tactical Sayyad system can intercept aerial targets at distances exceeding a hundred kilometers and offers unique advantages over other similar systems. It also has short-range self-protection capabilities compared to Khordad-3 and Khordad-15 systems.

Over the past decade, the country has made substantial improvements in the precision and accuracy of its missile systems, including the Sayyad, making the Armed Forces self-sufficient. Iranian officials have made clear that the country will not hesitate to strengthen its military capabilities, including its missile power, which are entirely meant for defense.

The Tactical Sayyad system, developed in collaboration with the Iranian Defense Ministry and the Air Defense Force of the Iranian Army, introduces several new features that position it as a primary choice for Iran's air defense needs. The air defense system is part of a broader effort to modernize and enhance the country's indigenous missile systems.

The report has covered the specifications and features of the Tactical Sayyad system, as well as the evolutionary process of the defense systems.

Indigenous missile batteries at a glance

Iran's history of indigenous air defense systems dates back several decades, including the development of short-range and medium-range missile systems like Shahab-e Saqeb, Sayyad-1, and later, the Sayyad-2, which saw continuous upgrades and enhancements. In 2000s, the country produced short-range "Shahab-e Saqeb" and medium-range "Sayyad-1" missiles. Notably, the Sayyad-1 missile was entirely Iranian-made, while other components were sourced externally. Measuring approximately 11 meters in length, with a weight exceeding 2,300 kilograms, a speed of about four times the speed of sound (Mach 4), a range of 34 kilometers, and a flight altitude of 24 kilometers, it was launched singly from a fixed launcher.

In 2000s, recognizing that a significant portion of aerial threats falls within the medium-range category, Iran intensified efforts to develop the American medium-range surface-to-air Hawk missile system. Prior to that, various initiatives aimed at repairing and mobilizing the Hawk system within the self-sufficiency defense organization enhanced their understanding of this system.

In April 2009, the Shahin missile was introduced as a native version of the Hawk missile system, but equipped with advanced electronic systems and radar seekers.

In September 2010, Mersad defense system was unveiled as an indigenous version of the Hawk system, featuring radar for detection, tracking, and low-altitude search. It employed the "Shahin" missile.

In September 2011, the Shalamcheh missile, with modifications compared to the Shahin, was produced. These missiles were compatible with the Hawk system as well. Shahin and Shalamcheh missiles had ranges between 40 to 45 kilometers, target altitudes of 14 to 18 kilometers, body lengths of approximately 5 meters, a weight of around 637 kilograms, and a speed of less than 3 Mach.

In recent years, Iran has focused on improving and modernizing these systems, leading to the development of systems like "Mersad-2," "Mersad-21," and "Mersad-16," which utilize advanced radar and missile technology.

The Mersad-16, in particular, is noteworthy for its mobility and the ability to launch missiles from canisters, enhancing its versatility. The missile system utilizes the "Shalamcheh-2" missiles, which have a different wing design. It can also integrate advanced radar systems like "Hafez" and "Najm-804" for improved performance.

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