Basic principles applied at creation of the Su-35 aircraft:

Aerodynamic cleanness, application of the integral aerodynamic layout with a lift fuselage

Multifunctionality and combat effectiveness: high-performance solution of a wide range of “air-to-air”, “air-to-surface” tasks and reconnaissance

High agile capabilities supporting supermaneuverability implemented by a new-generation power plant with thrust-vector control and new flight control system

Reduced radar observability due to application of radar-absorbing materials and coating

Combat survivability - two spaced engines, onboard systems redundancy, fuel tanks explosion protection, sophisticated electronic attack systems

Target data distribution system (Air Force, Army and Navy network coordination)

Highly integrated onboard equipment with a centralized control from an open architecture information-management system providing pilot intelligent support, using a “dark cockpit” concept

Passive and active detection system with high range of action, monitoring of aerial, ground and surface space at a long distance from the main air base

Effective penetration of area and point air defense systems by implementation of modern electronic countermeasures and weapons systems

New approaches to the aircraft operation and maintenance system - auxiliary powerplant, onboard oxygen generator, built-in systems operability test facilities

Training aids including full mission simulator, special trainers, and PC-based training system
Multifunctional super-maneuverable fighter

The Sukhoi-35 is designed on the base of the engineering solutions applied for creation of the fifth-generation aircraft taking into account the experience of operation of the Su-30MK2 (Su-27 SM) multipurpose aircraft family.

The Su-35 combines both characteristics necessary for a modern fighter, such as: supermaneuverability, sophisticated active and passive sensor systems, high supersonic flight speed, high flight range, possibility to arrange aircraft interaction; and characteristics of a good combat aircraft, namely: high combat load, wide range of the “air-to-surface” missiles, sophisticated multichannel electronic warfare system, reduced radar observability, air-defense break capability at a low level flight.

Take-off weight, kg:
- normal (2 x RVV-AE + 2 x R-73E) 25,300
- maximal 34,500

By-pass turbojet engine:
- number, pcs 2
- thrust, kg 14,500

Maximal fuel load in internal fuel tanks, kg 11,500

Maximal combat load, kg 8,000

Ceiling, km 18

Range with maximal fuel load, km
- H=0, M=0.7 1,580
- Hcr, Mcr 3,600

Ferry range
- with 2 x PTB-2000 external tanks, km 4,500

Acceleration time at H=1,000 m and fuel bingo 50% of the standard capacity, sec:
- from 600 km/h to 1,100 km/h 13.8
- from 1,100 km/h to 1,300 km/h 8.0

Maximal rate of climb (H=1,000 m), m/sec ≥280

Maximal airspeed:
- H=200 m, km/h 1,400
- H=11,000 m , M 2.25

Maximal g-load, g 9

Take-off run in “full afterburning” mode with standard take-off weight, m 400-450

Landing roll on concrete runway in braking mode with brake parachute and wheel brakes use, with standard landing weight, m 650

Length, m 21.9
Height, m 5.9
Wing span, m 15.3
Aircraft main features

Power plant

- Two powerful bypass turbojet engines
- All-axis thrust vector control
- Power plant fly-by-wire control (FADEC type)

Cockpit

- Two big color displays with full information backup, wide-angle head-up display, multifunctional control panel
- The pilot’s full dataware using a “dark cockpit” concept to reduce a man’s mental workload
- Application of Advisory system in case of clutch (crucial situations)
- Moving field
- Helmet-mounted targeting system
- Ejection system
- Pilot performance control system

Integrated control system

- Stick control
- Hands-off control
- Stabilization and sensitivity
- Automatic trimming
- TVC nozzle control
- Supermaneuverability mode support
- Aircraft taxiing control system
- Wheel braking control
- Definition of aerodynamic characteristics
- Stall warning/stick pusher
- Quadruple redundancy
**Weapon**
- 12 hard points with 2-station racks available
- High combat load
- High-efficiency "air-to-air" and "air-to-surface" weapons including long-range ones
- Built-in 30-mm gun

**Radar system**
- Electronic scanning
- High detection and attack ranges of aerial, ground and sea targets
- Targets' tracking with simultaneously air surveillance
- Ground moving targets' selection
- Terrain following flight support

**Optical location system**
- Aerial and ground targets detection and tracking through their thermal radiation
- Laser range measurement
- Targets laser illumination
Aircraft main features

**Navigation/sighting system**

- Strapdown inertial/satellite navigation system
- Radio navigation systems
- Digital map system
- Optical-electronic sighting pod
- Fiber and digital multiplex data communication

**Fuel system**

- Internal fuel tanks’ capacity provides for flight range of 3,600 km.
- 2 external fuel tanks of 2,000 l capacity
- In-flight refueling system
- Tanker function (with external fuelling unit)

**Low radar observability**

- Electroconductive canopy coating
- Radar absorbent coating
Aircraft main features

Communication system
- 2 UHF/VHF radios
- Data exchange terminal of Link-16 type
- Automatic data exchange on radio links
- Data and voice encryption systems

Electronic countermeasure system
- Self / mutual protection active jammer
- Group-Protection active jammer
- Guidance system for antiradiation missiles
- Radar and laser warning systems
- Missile attack warning system
- Chaff and flare dispenser

Enhanced maintainability
- Increased life time and service life of airframe
- Increased engine life time
- Onboard oxygen generator
- Auxiliary power plant
- Checkability and maintainability
Cockpit management system

It is intended for display all information, required for the aircraft control and weapon application, on the HUD and multifunctional display (MD), and also for transformation and transfer the pilot's control actions to the avionics systems.

Wide-angle head-up display with a control panel (30°x20° field of view);
Multifunctional display with built-in processor;
Multifunctional control panel with display;
Short-travel control stick;
Strain-gauge engine throttles;
Pedals of course control;
Helmet-mounted targeting system
Radar system

The Su-35 is equipped with multimode radar with phased-array antenna set on 2-axis hydraulic actuator provided to increase radar coverage.

Radar Coverage Areas

- **Searching area (Max target acquisition and tracking angels)**
- **Search and acquisition area in dogfights based on HMS targeting**
- **Search and acquisition area in “Vertical” dogfight**
- **Search and acquisition area in dogfight “HUD” mode**

Combat Potential

**Air-to-air mode**
- 30 targets tracking
- 8 targets simultaneous attack

**Air-to-surface mode**
- 4 targets tracking
- 2 targets simultaneous attack
The Su-35 has sophisticated onboard equipment that makes it able to fly and fulfill the combat tasks at day and night in all weather conditions.

The Su-35 sighting system and weapon allows to detect and destroy long-range aerial, ground and sea targets by guided and unguided missiles at day and night and in all weather conditions.

Penetration of air defense and air-to-air missile protection is provided by the onboard electronic countermeasure system composed of electronic reconnaissance system, active jamming system, passive jamming dispenser, and by possibility to destroy radars by Kh-31P high-performance supersonic missiles.

The additional protection from air defense destruction is possible due to terrain following flight mode.
It is intended for searching and tracking of aerial and ground targets through their thermal radiation, and also for a target range measuring and laser illumination to home guided missiles with laser seekers.

**Performance**

- Detection range of an aerial target (head-on/pursuit detection range), km: 50/90
- Measurement range to a ground target, km: 30
- Measurement range to an aerial target, km: 20
- Number of aerial targets simultaneously followed in IR-range: 4
The Su-35 power plant includes two 117C type bypass afterburning turbojet engines with the multi-axis thrust vector control, auxiliary turbine engine, fuel system, fire-extinguishing system, and auxiliary gearbox.

Performance

<table>
<thead>
<tr>
<th>Thrust, kilogram-force:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>special mode</td>
<td>14,500</td>
</tr>
<tr>
<td>combat mode</td>
<td></td>
</tr>
<tr>
<td>&quot;full afterburning&quot;</td>
<td>14,000</td>
</tr>
<tr>
<td>&quot;maximal&quot;</td>
<td>8,800</td>
</tr>
</tbody>
</table>

The engine lifetime is determined on the operational condition with the possibility of units’ replacement at the operation site. The TVC nozzle’s lifetime corresponds to the engine lifetime.
External stores loading capacity

Guided weapons
- Long-range missiles
- R-27ER1(R1) - 5
- R-27ET(T1) - 8
- R-27EP(P1) - 4
- RVV-AE - 12
- R-73E - 6
- Long-range air-to-surface missile
- Kh-59MK - 5
- Kh-31P(A) - 6
- Kh-29TE(L) - 6
- Air-to-ship missile
- LGB-250 - 8
- KAB-500KR(OD) - 8
- KAB-1500KR(LG) - 3
- Long-range anti-radar missile
- G-25LD - 4
- Bombs of 500-kg caliber - 10
- Bombs of 250-kg caliber - 32

Unguided weapons
- Bombs of 500-kg caliber
- Bombs of 250-kg caliber
- B-8M-1 - 6
- B-8L - 6
- S-25OFM-PU - 6
High efficiency of the Su-35 aircraft combat application is achieved due to the following:

Combat individual and group operations, and interaction with other forces during net operations controlled by aerial, ground and shipborne command posts

Introduction of the Integrated Digital Aircraft Control System providing for smart support of the pilot and man-machine interface

Possibility of medium- and long-range stealthy attack of aerial radiating targets

Possibility to attack ground and sea targets by stand-off high-precision guided missiles

High-stable tracking of the locked target

Simultaneously operation in air-to-air and air-to-surface modes