Su-35

MULTIFUNCTIONAL SUPER-MANEUVERABLE FIGHTER

SUKHOI

KNAAPO

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, M cr	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

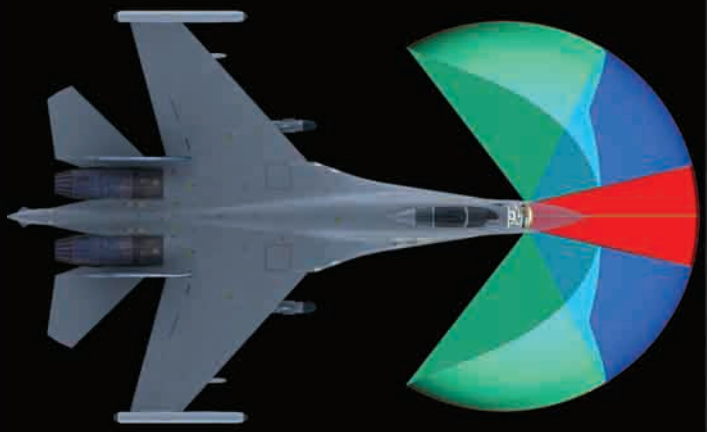
Aircraft main features

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

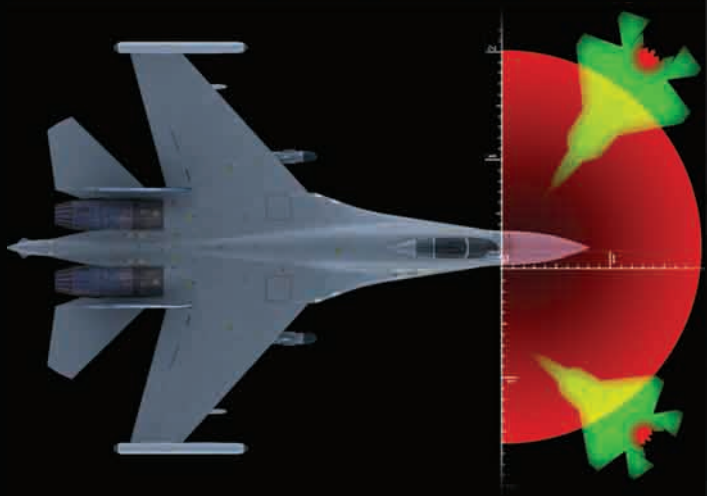
Radar system

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

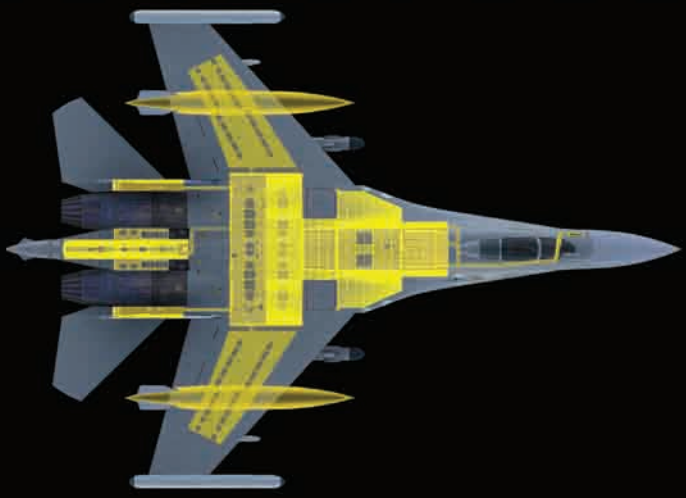
Aerial and ground targets detection and tracking through their thermal radiation
Laser range measurement
Targets laser illumination



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)

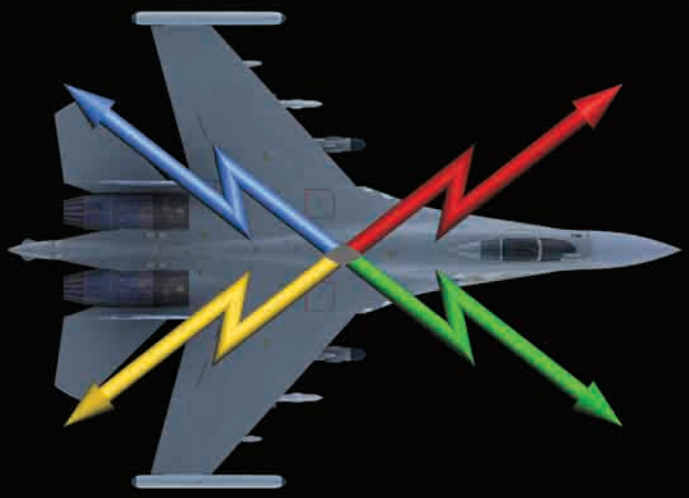
Low radar observability

Electroconductive canopy coating
Radar absorbent coating

Aircraft main features

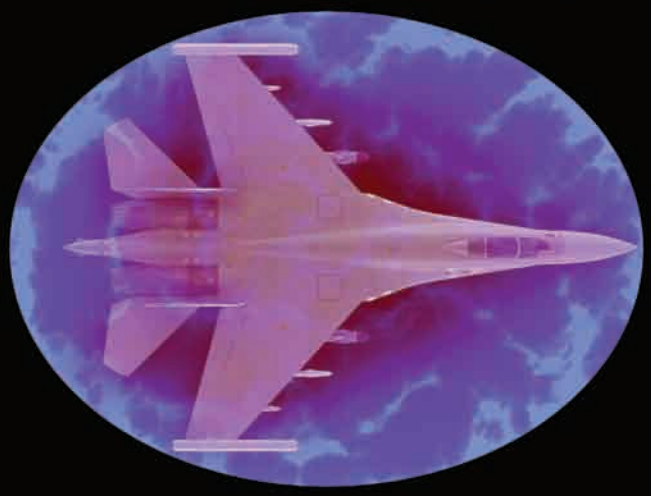
Communication system

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



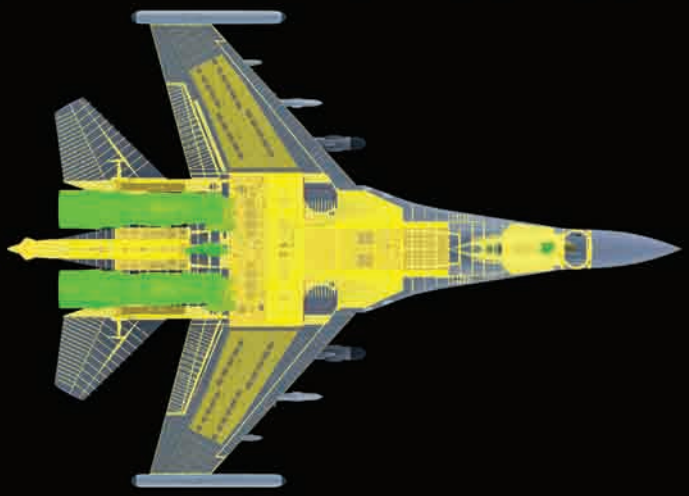
Electronic countermeasure system

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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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

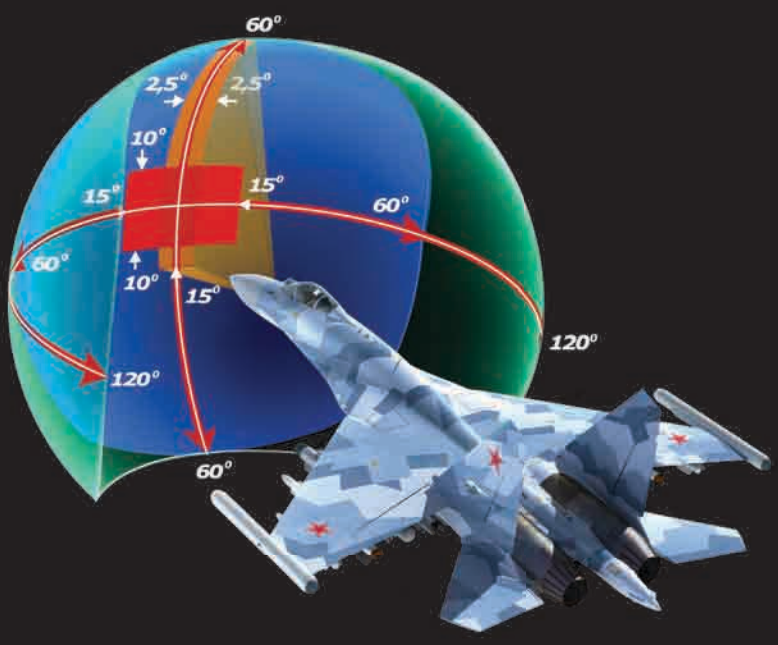
Radar Coverage Areas

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

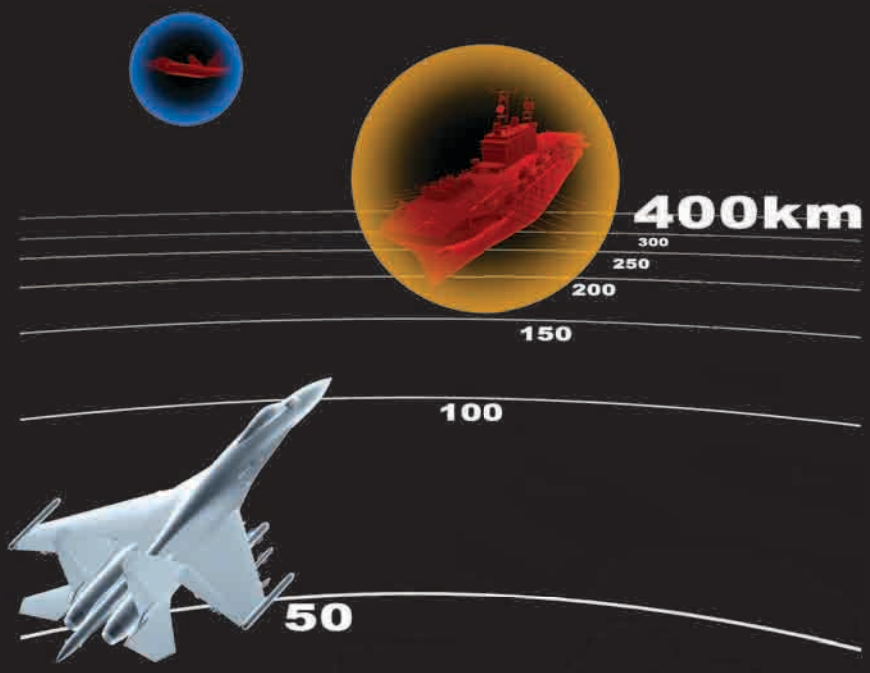
Air-to-surface mode

4 targets tracking
2 targets simultaneous attack

Targets detection range

RCS=3 m²

RCS=50,000 m²



Attack range

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

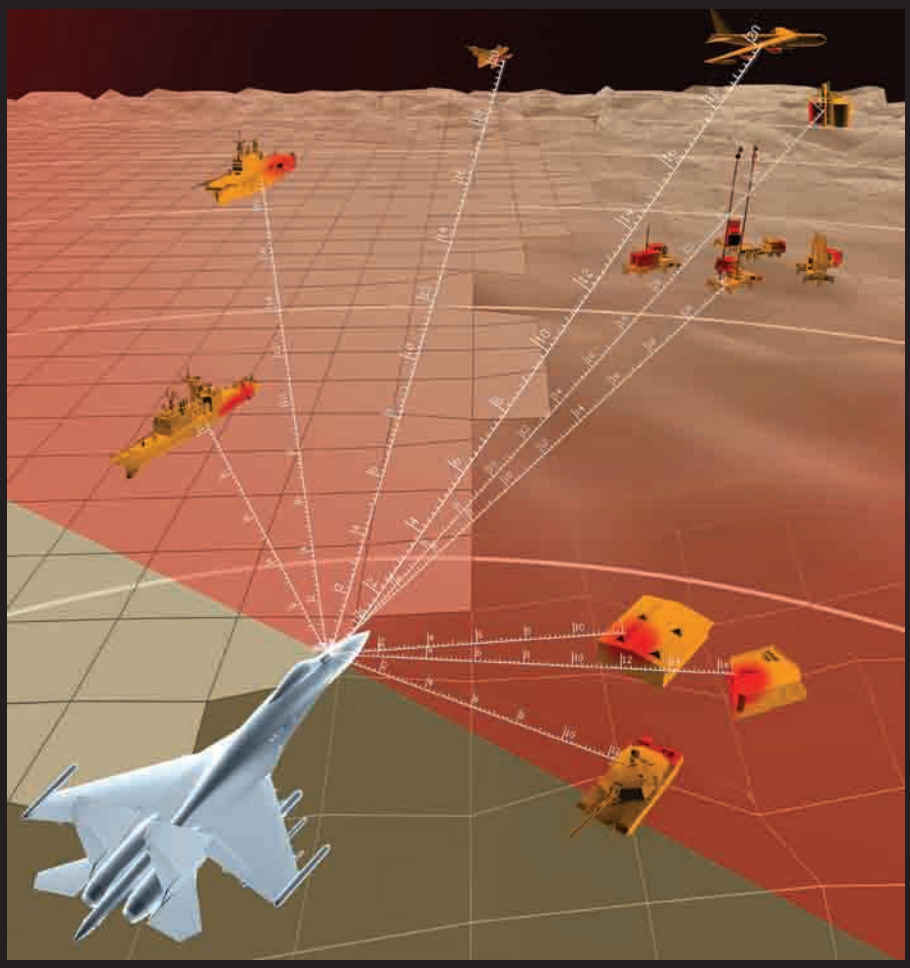
The Su-35 sighting system and weapon allows to detect and destroy long-range aerial, ground and sea targets by guided and unguided missiles at day and night and in all weather conditions

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

Optical location system

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

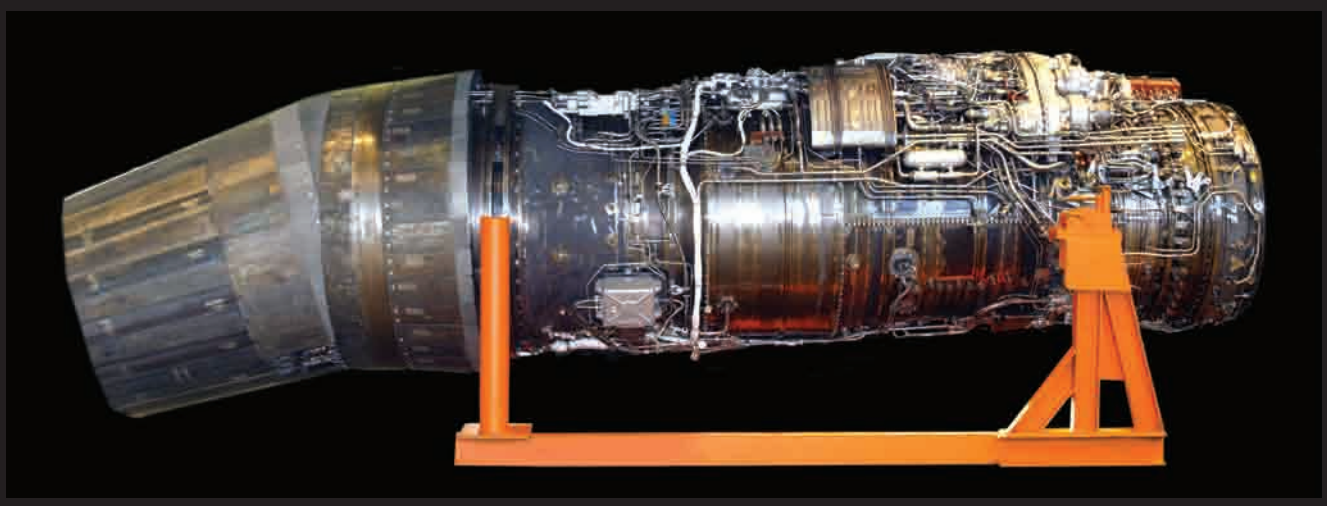


Performance

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

Power plant

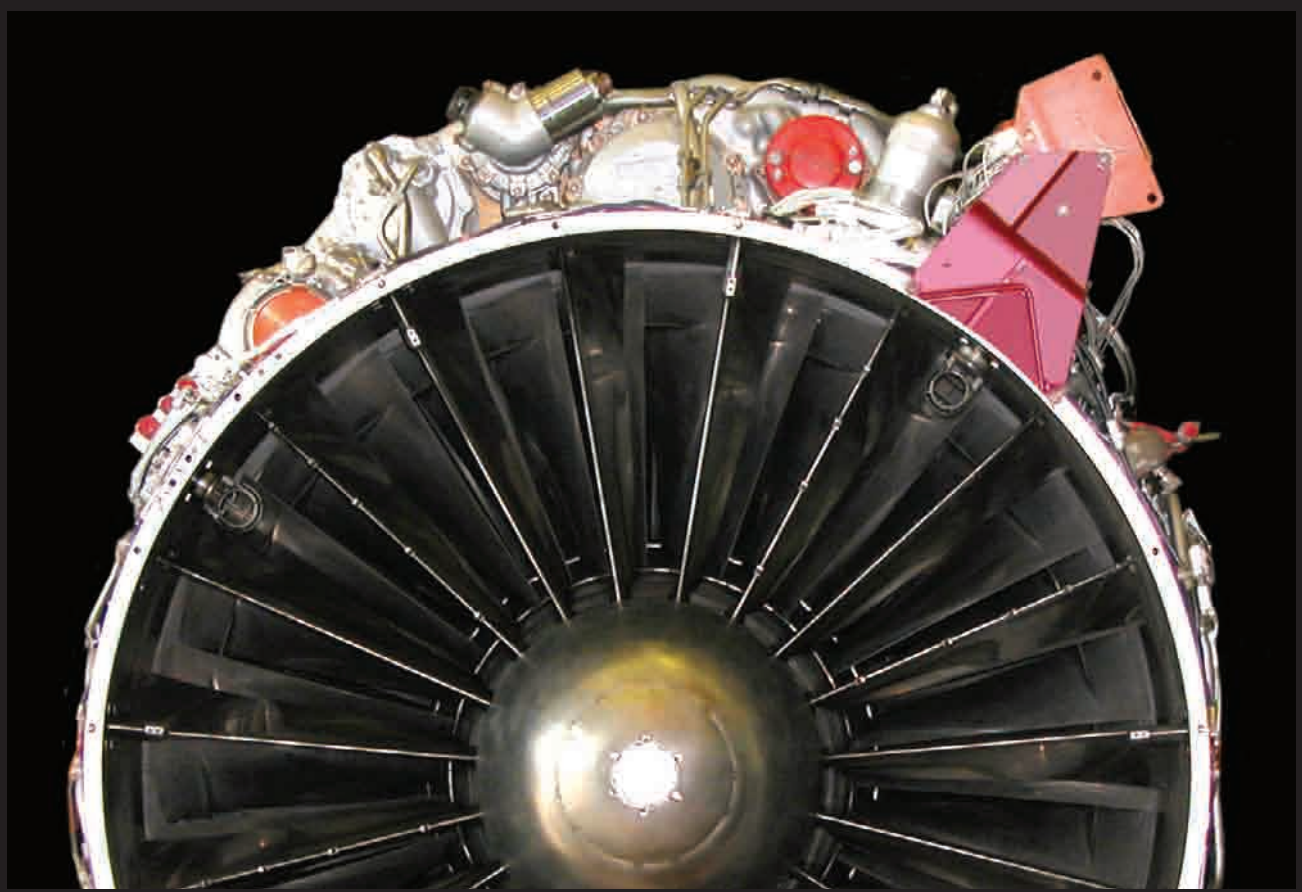
The Su-35 power plant includes two 117C type bypass afterburning turbojet engines with the multi-axis thrust vector control, auxiliary turbine engine, fuel system, fire-extinguishing system, and auxiliary gearbox



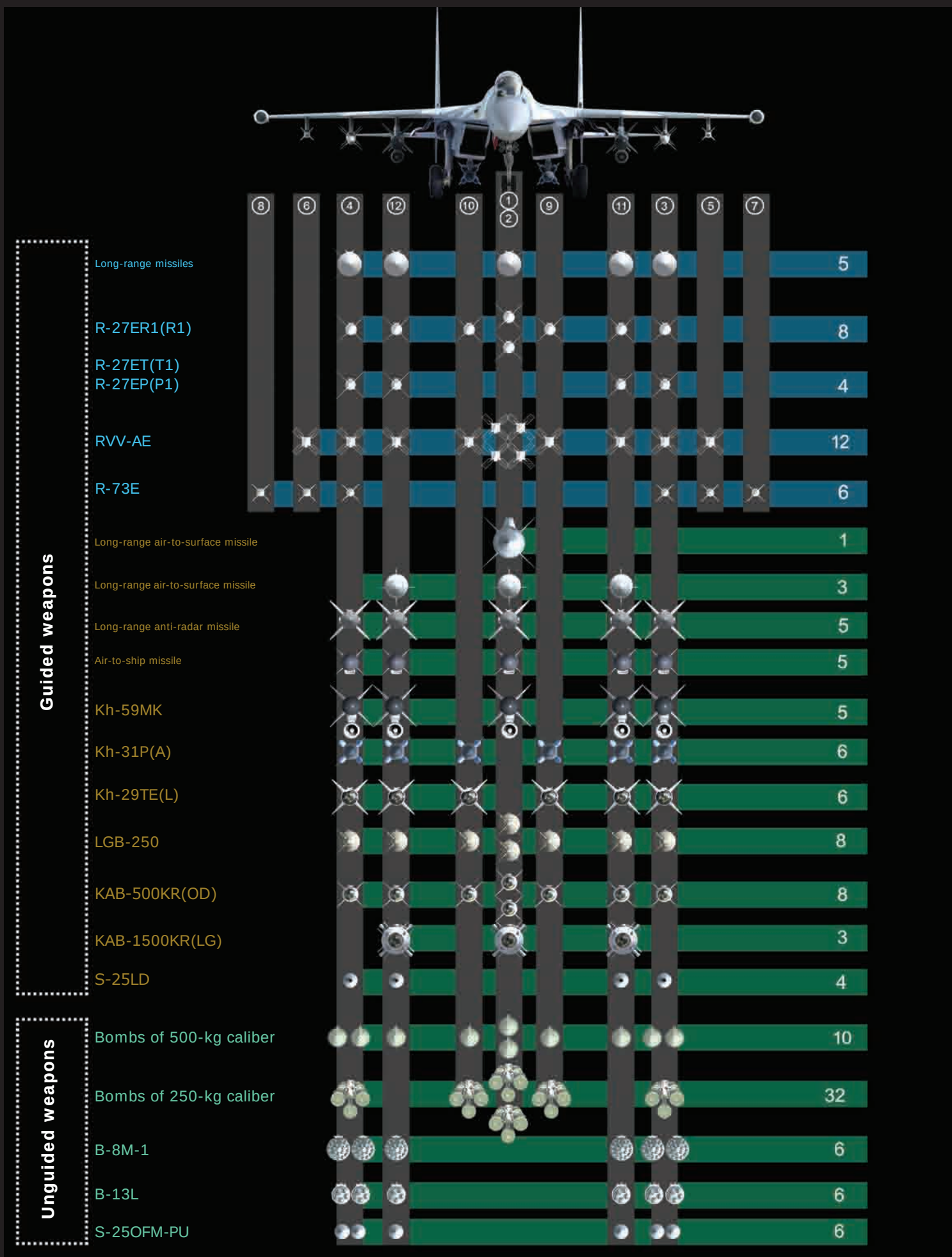
Performance

Thrust, kilogram-force:	
special mode	14,500
combat mode	
“full afterburning”	14,000
“maximal”	8,800

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



Extemal stores loading capacity



Combat application

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

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