

KLIMOV at Indian market



About Company

- ▲ Was founded in 1914 as Russian Renault JSC
- ▲ Designer and producer of power plants (engines, gearboxes, aircraft accessory gearboxes) for helicopters and airplanes including:
 - TV3-117, VK-2500 engines for Mi-17, Mi-35, Ka-28/29, Ka-31 helicopters
 - RD-33 engines for MiG-29 fighters
- ▲ Head enterprise of the Russian Federation on development, production, overhaul and service support of TV3-117 engines
- ▲ Official supplier of TV3-117 engines for helicopters of President of the Russian Federation



KLIMOV worldwide



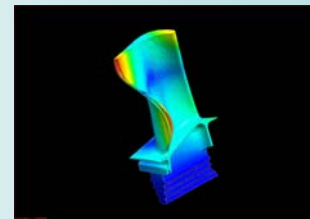
Our engines are operated in **82** countries of the world

 **KLIMOV**

Qualification

Total cycle of development – from center line to certification including:

- development of a concept,
- designing applying advanced technologies,
- production of mockups and prototypes,
- testing of all kind including altitude-environmental test (more than 70 test benches),
- advanced developments of the engines of the 5th generation,
- readiness for cooperation.



Scope of activities

Development of the gas turbine engines of all types for power plants of:

▲ helicopters – power range

400-4,000 hp

▲ turboprop airplanes – power range

400-4,000 hp

▲ turbojet airplanes of military application including drones – thrust range

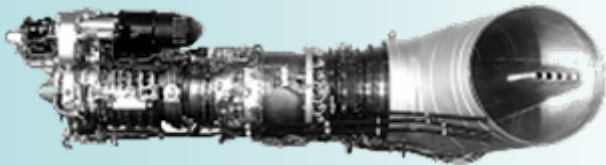
100-12,000 kgf

▲ auxiliary power units – power range

100-400 hp

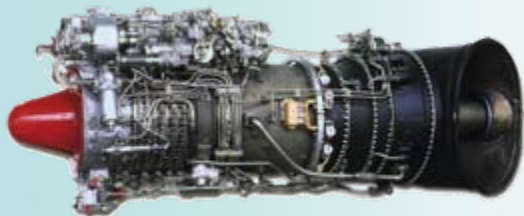


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102 helicopters

**TV2-117
turboshaft engines**



92 helicopters

**TV3-117
turboshaft engines**



75 airplanes

**RD-33
turbojet engines**



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NOW



VK-2500

Participation in tender of HAL company on development of 10-ton helicopter

RD-33MK

Power plant for MiG-29K deck based fighter

Aircraft programme



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RD-33 family engines feature the high level of gas dynamic stability including an effect of the weapon action

More than 10 modifications were developed on the base of RD-33 engine

2007

Rosoboronexport concluded a contract on establishment of RD-33 license production

250 million USD worth

KLIMOV is head enterprise on supply of design documents



MiG-29

RD-33

27 countries in the world

50% of all engines in thrust range 8,000 kgf

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MiG-29K

Development of RD-33MK engine modification
Works on the RD-33MK are performed in framework of the RAC “MiG” contract on supply of 16 MiG-29K airplanes for the aircraft carrier acquired by India

Klimov delivered the first batch of the engines for flight tests in December 2005

At present KLIMOV performs endurance engine service life tests

Design flight tests of the airplane are performed

| | | |
|----------------|--------------------------------|--|
| RD-33MK | Service life Control system | twice increased digital, FADEC type |
|----------------|--------------------------------|--|

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МиГ-29ОВТ

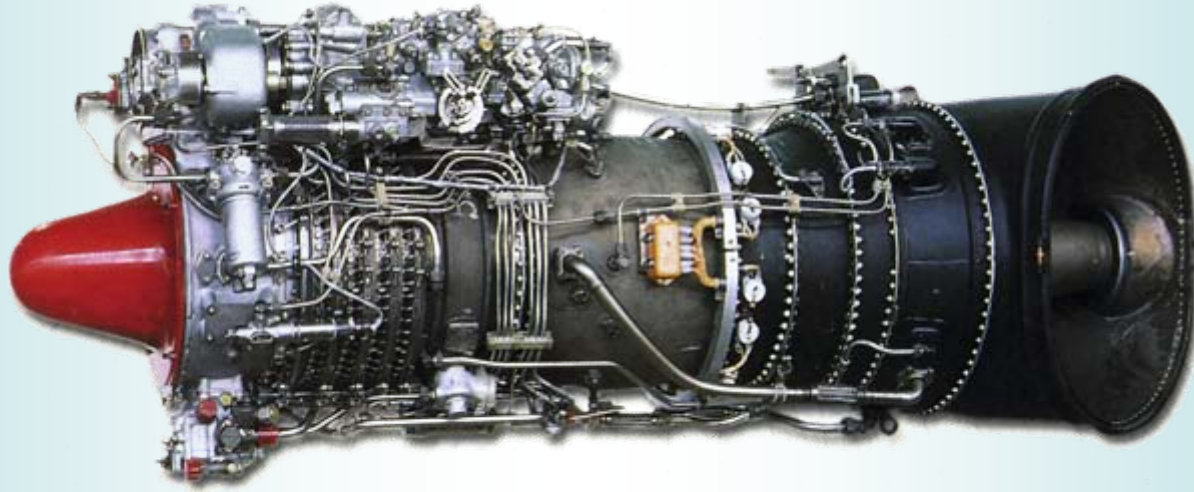
Thrust Vectoring Nozzle was developed according to KLIVT technology (Klimov’s thrust vector) for RD-33 and AL-31 engines

New nozzle can be installed in the engine for **MiG-35** fighter which is taken for IAF tender for 126 fighters

Thrust vectoring nozzle provides the unique manoeuvre performance of MiG-29 fighter and increases the combat efficiency of the fighter by 12-15%

| | | | |
|----------------------|--------------------------------|----------|-------------------------|
| RD-33 OVT | Angle of deviation, degree | ± 15 | 360° deviation |
| | Speed of deviation, degree/sec | 60 | afterburner mode |

Helicopter programme



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Mi-17/35, Ka-28/31

TV3-117VMAR – 27 engines produced for Ka-31 helicopters of IAF – **NO COMPLAINS**

TV3-117VK – 48 engines of IAF were overhauled – **NO COMPLAINS**

2005 – contract on overhaul of 23 TV3-117VK engines of IAF

2006 – tender won on supply of 6 TV3-117MT engines for IAF

TV3-117

74 countries in the world
more than 20,000 engines
81% helicopter fleet of the Russian Federation

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Mi-17/35 upgrading

VK-2500 thorough upgrading of TV3-117 engine

Increased engine power and service life. Upgrade is possible for Mi-17, Mi-35 helicopters

Klimov participates in the tender on supply of 70 Mi-17-V5 helicopters

VK-2500P – the latest modification of VK-2500 equipped with **anti-surge system**

VK-2500P is taken for tender of HAL company on development of Indian helicopter with takeoff mass 10 tons

| | | |
|----------------|----------------------------|------------------|
| VK-2500 | Start altitude | increased by 50% |
| | Helicopter climb rate | increased by 60% |
| | Helicopter service ceiling | increased by 30% |
| | Engine service life | increased by 50% |



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*Leading aero engines
design company*

Thank you for the attention!

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