Advanced turboprop, propfan and turbojet bypass engines for GA and light airplanes
Over a whole past period, engine manufacturing plants have produced more than 80,000 aircraft gas turbine and piston engines, turbostarters and industrial plants.

Today, the engines designed by SE IVCHENKO-PROGRESS power 57 types of flying vehicle in 109 countries.

Over the years, SE IVCHENKO-PROGRESS engines logged more than 300 million flight hours.
Piston engines:
AI-26, AI-14, AI-4

Turboprops:
AI-20, AI-24
APU: AI-8

Turbofans:
AI-25, AI-25Т, D-36
APUs: AI-9, AI-9V

Turbofans with high power and thrust:
D-136, D-18T

4-th stage
D-27 propfan, TV3-117VMA-SBM1 turboprop, D-436 turbofan, AI-22 turbofan, AI-222 turbofan, AI-450 turboshaft, AI-450 turboprop, SPM-21 turbofan

3-rd stage

2-nd stage

1-st stage
Piston engines:
AI-26, AI-14, AI-4
DIRECTIONS OF ACTIVITY

CIVIL AVIATION: commercial aircraft and helicopters

STATE AVIATION: trainers and combat trainers, military transport aircraft and helicopters, multipurpose aircraft
Totally 60 certificates of various types

- **Bureau Veritas (France)**
  - Certificate No. 213617, No. 010-UKR and No. 010-UKF

- **Aviation Register of Interstate Aviation Committee (ARMAK)**
  - Certificates No. SPR-15, No. R-3, No. R-69 and others

- **European Aviation Safety Agency (Germany)**
  - Certificate No. 216/2008, No. 1702/2003 Part 21A.23(b)2

- **State Department of Aviation Transport of Ukraine**
  - Certificates No. VR 0036, No. TD 0005 and others
**Advanced Small Gas Turbine Engine**

Our Tasks:

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Our Partners:

- První brněnská strojírna Velká Bíteš, a.s., PBS, **Czech Republic**
- Centre de Recherche en Aéronautique, ASBL, CENAERO, **Belgium**
- Technische Universität München, Institute of Energy Systems, IES, **Germany**
- Swedish Defence Research Agency, FOI, **Sweden**
- Université de Liège, ULg, **Belgium**
**Generation of GTE family appearance. Advanced engine core as a family baseline**

- **Advanced engine for aircraft with haul-range up to 1000 km (Turboprop engine)**

- **Advanced engine for aircraft with haul-range over 1000 km (Turbofan engine)**

- **Turboprop, turboshift engine featuring latest design of variable thermodynamical cycle with counter-rotating turbine**
ADVANCED CORE

TURBOPROP ENGINE

TURBOFAN ENGINE
THE FIRST IN EUROPE GEARED ENGINE WITH BPR> 10
FOR LIGHT EXECUTIVE AIRCRAFT

AI-450 turboshaft engine

Engine and aircraft accessory
electrical drive
Air intake electric heating

Advanced Centrifugal Compressor

Pressure Ratio 9...10
Efficiency 0.80...0.81

Geared fan

Combustion Chamber

Cooled Turbine

© SE Ivchenko-Progress, 2009
TURBOPROP ENGINE
FOR LIGHT EXECUTIVE AIRCRAFT

Engine and aircraft accessory electrical drive

Advanced reduction gear

Uniform system of automatic control for the engine and the propeller

Engine weight reduction

Advanced Centrifugal Compressor

Pressure Ratio 9...10
Efficiency 0.80...0.81

Advanced Combustion Chamber

Cooled Turbine

© SE Ivchenko-Progress, 2009
TURBOPROP, TURBOSHAFT ENGINE FEATURING LATEST DESIGN OF VARIABLE THERMODYNAMICAL CYCLE WITH COUNTER-ROTATING TURBINE. VARIABLE N.G.Vs ARE NOT INTEGRATED IN THE ENGINE. MODIFICATION OF ENGINE CYCLE IS ACHIEVED BY CHANGED POWER TURBINE SPEED

- CO₂ and NOx emissions reduced by 10% - 15% and 25%, correspondingly;
- noise reduced by 5 dB;
- SFC reduced by 10% - 15%;
- engine development cost and time saved by 40%;
- cost of engine life cycle decreased by 25%;
- engine reliability improved by 50%.

*Engine design is adapted to heat exchanger applied for reduction of fuel consumption.*
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<td>Performing of gears optimization by means of calculating of teeth</td>
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<td>Verification of calculation accuracy of program for gears optimization</td>
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<td>on the universal test rig for gears</td>
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Optimization of high contact ratio meshing (double-flank engagement) offers:
- weight of gears for reduction gearbox reduced by 10 %;
- power transfer exceeded by 20 %, within same dimension limits;
- 1.5 - 2 time saving of certification test costs;
- twice as little vibration level achieved.