

Gidroplan Ltd was formed in 1995 and has marketed amphibian lightplanes designed by the Chernov bureau.

This venture was placed on a firmer footing in late 2000 when Gidroplan invested the equivalent of US\$500,000 in acquiring 3,500 m² (37,675 sq ft) of working area from the Samara Instrument Bearing Plant and installing production equipment. Manufacturing activities include the Tsikada (Cicada) twin-engined ultralight agricultural aircraft, some six of which were manufactured before production ceased, and the Che-22 Corvette amphibian.

In recent years, designers associated with Gidroplan have produced flying prototypes of three lightplanes not promoted outside Russia. These are the **A-17** single-seat ultralight (260 kg; 573 lb MTOW, 22.4 kW; 30 hp engine, believed from SGAU); Chernov **Che-40** flying-boat (two Rotax 582 engines, briefly described in the 1999-2000 edition and now confirmed to have been built); and **Ul'tralayt** twin-tailboom ultralight (600 kg; 1,322 lb MTOW, Rotax 912 S) built in 1998 by E Yungerovym and S Seleznevym.

UPDATED

GIDROPLAN Che-22 KORVET

English name: **Corvette**

US marketing name: **Pelican**

TYPE: Three-seat amphibian/kitbuilt.

PROGRAMME: Developed on basis of four earlier amateur-built, Vikhr-engined Che-20s, winners of many light aircraft competitions; design and construction of prototype started 1988, first flight 1989; construction of production aircraft started 1992, first flight 1993; more than 5,000 hours of test and training flights, and more than 120 amateur pilots trained on prototype and production aircraft in first five years. Promotion also undertaken by Refly (which see in this section); launched as Refly Pelican at EAA AirVenture, Oshkosh, 2000.

Upgraded version under development and certification during 2001 features cantilever wing, strengthened tail unit with increased rudder area, new control system, redesigned engine support and modified instrument panel; flight testing was completed at the end of 2001 and JAR/FAR Pt 23 certification awarded in early 2002.

CURRENT VERSIONS: **Corvette 503**: With two Rotax 503 UL two-cylinder two-stroke engines.

Corvette 582: With two Rotax 582 UL two-cylinder two-stroke engines.

Corvette 912: With one Rotax 912 UL four-cylinder four-stroke engine.

Refly Pelican: Generally as for Corvette 582.

CUSTOMERS: First preproduction delivery to a forest control organisation 1990. One (Che-22R-2 c/n 006, RP-X1548 of OVOS WLL Co) sold in Philippines. Others to China, Spain and Vietnam. Total 60 built by February 2002, including 10 in 2000. First Pelican in US (N27NS, ex-RA-02777) registered in March 2001.

COSTS: Standard aircraft US\$35,000 to US\$55,000 (2002).

DESIGN FEATURES: Designed to JAR-VLA, FAR Pt 23 and AP-23 requirements, for maximum simplicity of design and construction; primarily for forestry applications, but suitable for patrol, inspection and ecological monitoring of hunting and fishing locations, border patrol, training and business operations. Quoted build time 1,500 hours, or 50 hours for fast build kit.

Braced parasol monoplane, with light central cabane and single main bracing strut and bracing wire each side; downturned wingtips serve as stabilising floats; flying-boat hull with two steps; unswept strut-braced horizontal tail surfaces mounted on fin of sweptback vertical surfaces; engine(s) mounted on leading-edge of wing centre-section. US demonstrator has fin of reduced height. Unswept constant chord wing; CAHI (TsAGI) P-IIIA section, thickness/chord ratio 15 per cent; incidence 4° 30'; dihedral 1° 30'. Airframe life 3,000 flying hours.

FLYING CONTROLS: Conventional and manual, with pushrod actuation. Full-span slotted flaperons, elevators and horn-balanced rudder; fixed tab on port elevator.

STRUCTURE: Single-spar wing of riveted duralumin; fuselage, tail unit and integral wingtip floats of vacuum-moulded GFRP sandwich; flaperons fabric-covered.

LANDING GEAR: Optional tailwheel type; mainwheels, tyre size 350x120, carried on cantilever GFRP spring. GFRP skis optional.

POWER PLANT: Two 37 kW (49.6 hp) Rotax 503 UL-2V or two 47.8 kW (64.1 hp) Rotax 582 UL or 59.6 kW (79.9 hp)

Rotax 912 UL. Two-blade wooden or three-blade GFRP fixed-pitch propeller(s) of Russian manufacture. Two fuel tanks in wing centre-section, 100 litres (26.4 US gallons; 22.0 Imp gallons); gravity fuelling.

ACCOMMODATION: Pilot and two passengers under large glazed blister canopy, giving exceptional field of view. Detachable windscreen panels. Gull-wing canopy/door each side.

SYSTEMS: 12/24 V electrical system.

AVIONICS: *Comms*: VHF radios.

Flight: Garmin GPS.

EQUIPMENT: Optional BRS parachute.

DIMENSIONS, EXTERNAL:

Wing span	11.70 m (38 ft 4 1/4 in)
Wing chord, constant	1.40 m (4 ft 7 1/4 in)
Wing aspect ratio	8.3
Length overall	6.70 m (21 ft 11 1/4 in)
Height overall	2.20 m (7 ft 2 3/4 in)
Tailplane span	2.50 m (8 ft 2 1/2 in)
Wheel track	1.60 m (5 ft 3 in)
Wheelbase	4.55 m (14 ft 11 in)
Propeller diameter	1.50 m (4 ft 11 in)
Canopy doors (each): Height	0.70 m (2 ft 3 1/2 in)
Width	0.80 m (2 ft 7 1/2 in)
Height to sill	0.63 m (2 ft 0 3/4 in)

DIMENSIONS, INTERNAL:

Cabin: Length	1.50 m (4 ft 11 in)
Max width	1.10 m (3 ft 7 1/4 in)
Max height	1.20 m (3 ft 11 1/4 in)

AREAS:

Wings, gross	16.40 m ² (176.5 sq ft)
Flaperons (total)	3.40 m ² (36.60 sq ft)
Fin	0.55 m ² (5.92 sq ft)
Rudder	0.35 m ² (3.77 sq ft)
Tailplane	1.68 m ² (18.08 sq ft)
Elevators (total)	0.80 m ² (8.61 sq ft)

WEIGHTS AND LOADINGS (A: Corvette 503, B: Corvette 582, C: Corvette 912):

Weight empty: A, B, C	360 to 480 kg (794 to 1,058 lb)
Max fuel: A, B, C	58 kg (128 lb)
Max T-O weight: A, B, C	675 kg (1,488 lb)
Max wing loading: A	21.95 kg/m ² (4.50 lb/sq ft)
C	29.27 kg/m ² (5.99 lb/sq ft)
Max power loading: A	4.86 kg/kW (7.99 lb/hp)
C	8.05 kg/kW (13.23 lb/hp)

PERFORMANCE:

Max level speed: A	81 kt (150 km/h; 93 mph)
B, C	86 kt (160 km/h; 99 mph)
Cruising speed: A	59 kt (110 km/h; 68 mph)
B, C	65 kt (120 km/h; 75 mph)
Max rate of climb at S/L: A	300 m (985 ft)/min
B	420 m (1,378 ft)/min
C	240 m (787 ft)/min
Service ceiling: A, B, C	3,000 m (9,840 ft)
T-O run: on land: A	90 m (295 ft)
B	70 m (230 ft)
C	100 m (328 ft)
on water: A	110 m (361 ft)
B	90 m (295 ft)
C	120 m (394 ft)

Range with standard fuel:

A	232 n miles (430 km; 267 miles)
B	243 n miles (450 km; 279 miles)
C	324 n miles (600 km; 372 miles)

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Permissible wave height: A, B, C 0.5 m (1 ft 7 1/4 in)

UPDATED



Gidroplan Korvet displayed at Gelendzhik in August 2002 (Yefim Gordon)

NEW/0552879

IAPO

IRKUTSKOYE AVIATIONNOYE
PROIZVODSTVENNOYE OBEDINENIE OAO
(Irkutsk Aviation Industrial Association
JSC)

Renamed Irkut.

UPDATED

ILYUSHIN

MEZHDUNARODNYYI AVIATIONNIY
KOMPANIYA ILYUSHINA (Ilyushin
International Aviation Company)

Incorporating aircraft design and production companies, Ilyushin MAK formed April 2000 by government decree.

Initial members are Ilyushin Aviation Complex and VASO; following negotiations with Uzbekistan, will be expanded to include TAPCO as second production plant; previous Russian and Uzbek government agreement of 1998 covered collaboration in developing and marketing the Il-76 and Il-114. These plans overtaken in May 2001 by wider national

strategy of merging Ilyushin, Beriev, Mil, Sukhoi and Yakovlev.

VERIFIED

AVIATIONNIY KOMPLEKS IMENI S V
ILYUSHINA OAO (Aviation Complex
named for S V Ilyushin JSC).

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HEAD OF INTERNATIONAL RELATIONS AND CHIEF DESIGNER:

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DEPUTY GENERAL DESIGNER, MARKETING, BUSINESS

DEVELOPMENT AND FOREIGN ECONOMIC RELATIONS:

Vladimir A Belyakov

Ilyushin OKB is named after Sergei Vladimirovich Ilyushin, who died 9 February 1977, aged 82. Bureau (OKB-240) was founded 1933; has been headed by Genrikh Novozhilov since 1970. About 60,000 aircraft of Ilyushin design have been built. Personnel in 2001 totalled about 3,500; by that time, activities were 90 per cent civil orientated.

Funding problems and bank collapses have affected Ilyushin and some of its suppliers, delaying the establishment

of an Il-114 leasing arm and the acquisition of Western systems for the Il-96T, which was eventually abandoned. However, Bureau is jointly designing Il-214 twin-jet transport in collaboration with HAL of India (see International section). It is a partner, with Boeing and Sukhoi, in the RRJ regional jet programme announced in August 2001 and selected for production in 2003. Collaboration with Boeing began in 1997 and resulted in August 2001 opening of joint design training centre in Moscow to provide engineers, mainly from Ilyushin, for Boeing's design and technical research centres in Russian capital.

UPDATED

ILYUSHIN II-76

Production of the Il-76 is, effectively, at an end, the Tashkent plant in Uzbekistan having a stock of some 40 uncompleted airframes with which to satisfy orders in the medium-term, including any for the stretched Il-76MF placed by the Russian Air Forces or its Il-76TF civil counterpart. Il-76MF underwent Russian military evaluation in first half of 2003, possibly leading to further supplies from 2006 onwards (Tashkent's first-stage flight test report issued on 24 April 2003). However, associated requirement is transfer of production line from Uzbekistan to Russia (VASO plant at Voronezh), cost of which may result in further delay. Some 100 MFs required. Additional Chinese interest in 38 aircraft.

Il-76 is also the basis of the Beriev A-50 AEW aircraft. Recent orders for similar aircraft are expected to involve conversion of existing Il-76/A-50s, one such being request by Israel Aircraft Industries in late 2002 for three to be converted with Phalcon AEW avionics for India.

UPDATED

ILYUSHIN II-78M

NATO reporting name: Midas

There have been no recent conversions of Il-76 to this airborne tanker configuration. However, India ordered six Il-78MKMs in February 2001 and these are being converted from stocks of uncompleted Il-76s held at TAPO in Uzbekistan. First two were officially transferred to India in March 2003.

UPDATED

ILYUSHIN II-96-300

TYPE: Wide-bodied airliner.

PROGRAMME: First of two flying prototypes (SSSR-96000) flew at Khodinka 28 September 1988 and exhibited at Paris in June 1989; second (SSSR-96001) first flew 28 November 1989; further airframe used for static and fatigue testing; all three built at GAZ 30, Khodinka; areas of commonality with Il-86 permitted planned test programme to be reduced to 750 flights totalling 1,200 hours; route proving trials by second production Il-96-300 (SSSR-96005) conducted late 1991; production at VAPO (now VASO), Voronezh; certification received 29 December 1992.

Following initially poor reliability, Aeroflot (ARIA) serviceability improved, as evidenced by TBO increase from 1,600 to 4,130 hours between 1997 and 1999. PS-90A engine in-flight shutdown had improved to one per 29,000 hours by 1999.

Westernised Il-96M/T versions developed during 1990s, but abandoned in mid-2001.

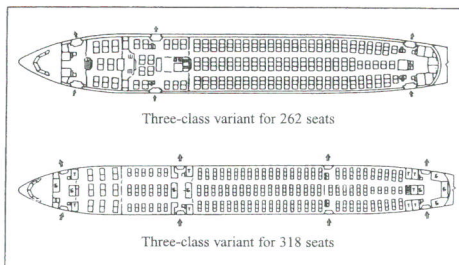
CURRENT VERSIONS: **Il-96-300:** As described.

Il-96-300V: Extended-range version on order by Vnukovo Airlines, 1999. Increased fuel for additional 1,200 miles (2,222 km; 1,380 miles).



First production Ilyushin Il-96-300 in service with Atlant Soyuz (Yefim Gordon)

NEW/0558794



Internal arrangements of Ilyushin Il-96-300 with 262 passengers and (not to scale) Il-96M with 318

001185

Il-96PU: One aircraft (RA-96012) built for use of Russian president: VIP interior, additional communications facilities by OAO Relero of Omsk and medical centre. Second aircraft, designated Il-96PU(M), authorised by Russian government on 6 May 2000; this has different interior layout; first flown 20 April 2003 with registration RA-96016; delivered to Rossiya for internal flights 14 May 2003; intended 30 August 2003 delivery date as replacement 'Air Force One'.

Il-96-300 Freighter: Design under way by early 2000; development partnership also includes VAPO and Russian banks. To carry 70,000 kg (154,325 lb) payload over 4,859 n miles (9,000 km; 5,592 miles); uprated PS-90 engines each 176.5 kN (39,683 lb st). Estimated unit cost US\$30 million (2000).

Il-96-400T: Under development by mid-2000 (when designation Il-96-3XX briefly employed). Equivalent to Il-96M/T, but employing only Russian engines and avionics. Power plant envisaged as Aviadvigatel PS-90A modified with additional 14.67 kN (3,300 lb st) to allow full range at MTOW of 270,000 kg (595,250 lb), including 92,000 kg (202,825 lb) of cargo. However, details published in August 2003 quote only standard 156.9 kN (35,275 lb st) PS-90As and 68,000 kg (149,915 lb) payload (386 to 436 passengers) and range of 3,077 n miles (5,700 km; 3,541 miles) with max payload or 5,237 n miles (9,700 km; 6,027 miles) with maximum passengers, taking off in 2,830 m (9,285 ft) and cruising at 469 kt (870 km/h; 540 mph) at FL430. Proposed to convert 10 uncompleted Il-96Ms (which see) to this standard for lease from Ilyushin Finance by Atlant Soyuz cargo airline; provisional agreement signed February 2001, envisaging 2003 service-entry; however, retrospective installation of

cargo door could weaken airframe; Soyuz signed firm order for four -400Ts in August 2001, first being former Il-96T prototype, due in service early 2002; second -400 to follow 24 months thereafter. Also in 2001, Aeroflot issued letter of intent for four -400Ts to be delivered from 2006, and was considering passenger version.

CUSTOMERS: Aeroflot Russian International Airlines (six delivered by 1996); Domodedovo Airlines (four on order, of which third was delivered 16 April 1999); Russia State Transport Company (three; one delivered 1995; two completed, but not delivered, in 1997); and Atlant Soyuz (received first production aircraft in 1999, following trials use). Total 11 production aircraft delivered: 10th in February 1996; 11th in April 1999. By early 2002, six Il-96-300 and two Il-96T airframes were incomplete at the VASO plant.

Aeroflot signed lease agreement with Ilyushin Finance in November 1999 for further six, plus sale, refurbishment and leaseback of one of original six; contract involves uncompleted aircraft on production line, permitting deliveries between 2001 and 2003. Target was not achieved but order remained in place, despite Aeroflot commitment to Il-96-400T. In March 2003, it was announced that VASO had received from Ilyushin Finance Company an initial payment of Rb180 million to fund restart of work on the eight Il-96s then on the assembly line, these comprising six for Aeroflot and two freighters for Atlant-Soyuz. Deliveries to begin 18 months later and proceed at two-monthly intervals, although mid-2003 legal dispute put timetable into question. China Xinjiang Airlines requires three Il-96-300s and was continuing negotiations in early 2002; Kras Air of Russia revealed requirement in late 2001.

COSTS: Il-96-300 US\$39 million (2003). Il-96-400T US\$38 million, flyaway (2001).

DESIGN FEATURES: Superficial resemblance to Il-86, but new design, with different engines to overcome performance deficiencies of original Il-86; new structural materials and state-of-the-art technology intended to provide life of 60,000 hours and 12,000 landings; no lower deck passenger entry. Current development aiming at range of 6,475 n miles (12,000 km; 7,450 miles) with 300 passengers.

Conventional wide-bodied airliner, with low wing (and winglets) and four pod-mounted engines.

Supercritical wings, with 30° sweep at quarter-chord; sweepback at quarter-chord 37° 30' on tailplane, 45° on fin.

FLYING CONTROLS: Triplex fly-by-wire, with manual reversion; each wing trailing-edge occupied by, from root, double-slotted inboard flap, small inboard aileron, two-section single-slotted flaps, and outboard aileron used only as gust damper and to smooth out buffeting; seven-section full-span leading-edge slats on each wing; three airbrakes forward of each inboard trailing-edge flap; six spoilers forward of outer flaps; inboard pair supplement ailerons, others operate as airbrakes and supplementary ailerons; variable incidence tailplane; two-section rudder and elevators, without tabs.

STRUCTURE: Basically all-metal, including new high-purity aluminium alloy, with composites flaps, maindeck floors and underfloor holds of honeycomb and CFRP; inner wings three-spar, outer panels two-spar; each wing has seven machined skin panels, three top surface, four bottom, with integral stiffeners; circular-section semi-monocoque fuselage; leading- and trailing-edges of fin and tailplane of composites. Some components manufactured by PZL (Polish Aircraft Factory), Poland.

LANDING GEAR: Retractable four-unit type. Forward-retracting steerable twin-wheel nose unit; three four-wheel bogie main units. Two of latter retract inward into wingroot/fuselage fairings; third is mounted centrally under fuselage, to rear of others, and retracts forward after the bogie has itself pivoted upward 20°. Oleo-pneumatic shock-absorbers. Nosewheel tubeless tyres size 1,260x460; mainwheel tubeless tyres size 1,300x480. Tyre pressure (all) 11.65 bar (169 lb/sq in).

POWER PLANT: Four Aviadvigatel PS-90A turbofans, each 156.9 kN (35,275 lb st), on pylons forward of wing leading-edges. Thrust reversal standard. Integral fuel tanks in wings and fuselage centre-section, total capacity 148,260 litres (39,166 US gallons; 32,613 Imp gallons).



Model of Ilyushin Il-96-400, showing Aviadvigatel PS-90A engines (Sebastian Zacharias)

NEW/0567711

ACCOMMODATION: Pilot, co-pilot and flight engineer; two seats for supplementary crew or observer. Ten or 12 cabin staff. Basic all-tourist configuration has two cabins for 66 and 234 passengers respectively, nine-abreast at 87 cm (34.25 in) seat pitch, separated by buffet counter, video stowage and two lifts from galley on lower deck. Two aisles, each 55 cm (21.65 in) wide. Two lavatories and wardrobe at front; six more lavatories, a rack for cabin staff's belongings and seats for cabin staff at rear. Seats recline, and are provided with individual tables, ventilation, earphones and attendant call button. Indirect lighting is standard. 235-seat mixed class version has front cabin for 22 first class passengers, six-abreast in pairs, at 102 cm (40 in) seat pitch and with aisles 75.5 cm (29.7 in) wide; centre cabin with 40 business class seats, eight-abreast at 90 cm (35.4 in) seat pitch and with aisles 56.5 cm (22.25 in) wide; and rear cabin for 173 tourist class passengers, basically nine-abreast at 87 cm (34.25 in) seat pitch, with aisle width of 55 cm (21.65 in).

Future Aeroflot standard, defined late 1999, is 12 first class, 21 business class and 180 economy seats, plus complete interior renewal. Refurbishment cost (including some Western avionics) US\$1.5 million per aircraft.

Passenger cabin is entered through three doors on port side of upper deck, at front and rear and forward of the wings. Opposite each door, on starboard side, is emergency exit door. Lower deck houses front cargo compartment for six ABK-1.5 (LD3) containers or igloo pallets, central compartment aft of wing for 10 ABK-1.5 containers or pallets, and tapering compartment for general cargo at rear. Three doors on starboard side provide separate access to each compartment. Galley and lifts are between front cargo compartment and wing, with separate door aft of front cargo compartment door.

SYSTEMS: Four independent hydraulic systems, using fireproof and explosion-proof fluid, at pressure of 207 bar (3,000 lb/sq in). APU in tailcone for engine starting and air conditioning on ground.

AVIONICS: *Flight*: Triplex flight control and flight management systems, together with a head-up display, permit fully automatic en route control and operations in ICAO Cat. IIIa minima. Duplex engine and systems monitoring and failure warning systems feed in-flight information to both the flight engineer's station and monitors on the ground. Autothrottle is based on IAS, without angle of attack protection.

Instrumentation: Primary flight information is presented on dual twin-screen colour CRTs, fed by triplex INS, a satellite-based and Omega navigation system and other sensors. Another electronic system provides real-time automatic weight and CG situation data.

DIMENSIONS, EXTERNAL:	
Wing span: excl winglets	57.66 m (189 ft 2 in)
over winglets	60.11 m (197 ft 2½ in)
Wing aspect ratio	9.5
Length overall	55.35 m (181 ft 7¼ in)
Fuselage: Length	51.15 m (167 ft 9¾ in)
Max diameter	6.08 m (19 ft 11½ in)
Height overall	17.55 m (57 ft 7 in)
Tailplane span	20.57 m (67 ft 6 in)
Wheel track	10.40 m (34 ft 1½ in)
Wheelbase	20.07 m (65 ft 10 in)
Passenger doors (three): Height	1.83 m (6 ft 0 in)
Width	1.07 m (3 ft 6 in)
Height to sill: Nos. 1 and 2	4.54 m (14 ft 10¼ in)
No. 3	4.80 m (15 ft 9 in)
Emergency exit doors (three): Height	1.825 m (5 ft 11¼ in)
Width	1.07 m (3 ft 6 in)
Cargo compartment doors (front and centre): Height	1.825 m (5 ft 11¼ in)
Width	1.78 m (5 ft 10 in)
Height to sill: front	2.34 m (7 ft 8¼ in)
centre	2.48 m (8 ft 1¾ in)
Cargo compartment door (rear): Height	1.38 m (4 ft 6¼ in)
Width	0.97 m (3 ft 2¼ in)
Height to sill	2.74 m (9 ft 0 in)
Galley door: Height	1.20 m (3 ft 11¼ in)
Width	0.80 m (2 ft 7½ in)

DIMENSIONS, INTERNAL:	
Cabins, excl flight deck: Height	2.60 m (8 ft 6¼ in)
Max width	Approx 5.70 m (18 ft 8½ in)
Volume	350.0 m³ (12,360 cu ft)
Cargo hold volume: front	37.1 m³ (1,310 cu ft)
centre	63.8 m³ (2,253 cu ft)
rear	15.0 m³ (530 cu ft)

AREAS:	
Wings, gross	391.60 m² (4,215.1 sq ft)
Vertical tail surfaces (total)	61.00 m² (656.60 sq ft)
Horizontal tail surfaces (total)	96.50 m² (1,038.75 sq ft)

WEIGHTS AND LOADINGS:	
Basic operating weight	117,000 kg (257,950 lb)
Max payload	40,000 kg (88,185 lb)
Max fuel	114,900 kg (253,310 lb)
Max T-O weight	216,000 kg (476,200 lb)
Max landing weight	175,000 kg (385,800 lb)
Max zero-fuel weight	157,000 kg (346,125 lb)
Max wing loading	551.6 kg/m² (112.97 lb/sq ft)
Max power loading	344 kg/kN (3.37 lb/lb st)

PERFORMANCE (estimated):	
Normal cruising speed at 10,100-12,100 m (33,135-39,700 ft)	459-486 kt (850-900 km/h; 528-559 mph)
Approach speed	140-146 kt (260-270 km/h; 162-168 mph)
Balanced T-O runway length	2,600 m (8,530 ft)
Balanced landing runway length	1,980 m (6,500 ft)
Range, with UASA reserves: with max payload	4,050 n miles (7,500 km; 4,660 miles)
with 30,000 kg (66,140 lb) payload	4,860 n miles (9,000 km; 5,590 miles)
with 15,000 kg (33,070 lb) payload	5,940 n miles (11,000 km; 6,835 miles)
OPERATIONAL NOISE LEVELS: IL-96-300 is designed to conform with ICAO Chapter 3 Annex 16 noise requirements	

UPDATED

ILYUSHIN II-100

TYPE: Utility turboprop twin.
PROGRAMME: Announced February 2000, when in basic design stage. Draft design complete by October 2000. First flight due two years after go-ahead, which conditional upon 50 firm commitments. Manufacture of production aircraft at Lkhovitsy (LMZ). Estimated sales minimum of 200; potential 1,200 over 10 years. Following positive response from potential market, Ilyushin began search in late 2001 for launch customer to assist with costs of development.

CURRENT VERSIONS: **IL-100**: Baseline version; 12 seats.

IL-100A: Stretched version; 18-20 seats.
COSTS: Development estimated as US\$20 million to US\$30 million. Unit cost US\$1 million (2000).

DESIGN FEATURES: Replacement for Antonov An-2 utility biplane, but with 40 per cent reduction in direct operating cost. Accordingly, stated to be "in Cessna Caravan I class". Rugged, unpressurised and simple to maintain; STOL performance. High-wing, T-tail configuration with unswept rear fuselage, but only port side freight door. Airframe life 60,000 cycles. Choice of Russian (Kuznetsov NK-123) or Western (RR 250 or PT6) turboprop engines.

WEIGHTS AND LOADINGS:	
Max payload	1,500 kg (3,307 lb)
PERFORMANCE (estimated):	
Cruising speed	200 kt (370 km/h; 230 mph)
T-O run	400 m (1,315 ft)
Landing run	260 m (855 ft)

VERIFIED

ILYUSHIN II-103

TYPE: Four-seat lightplane.
PROGRAMME: Exhibited in model form at Moscow Aerospace '90; programme go-ahead 1990; first flight (RA-10321) 17 May 1994; second prototype (RA-10302) flew 30 January 1995 at LMZ (now LAPIK), Lkhovitsy, following August 1993 decision to establish a production line there; pre-series batch comprised three flyable and two static test aircraft, former having flown 414 sorties in two years after maiden flight; first production aircraft flew 30 January 1995.

Type certificate by Russian authorities under AP-23 received 15 February 1996; production approval certificates issued 7 March 1996 and 7 April 1998; airworthiness certificate granted 9 July 1997. Amended Russian certification granted 4 December 1997, following addition of GPS, radio compass and AHRS to avionics suite.

FAR Pt 23 certification achieved 9 December 1998 (first by a Russian-built aircraft) after 110-hour/208-sortie programme, but with 1,150 kg (2,535 lb) MTOW limit. Annex of 6 September 1999 allows operation from unpaved runways. FAR MTOW increased to 1,310 kg (2,888 lb) on 13 September 2002 (c/n 0501 onwards); retrofit available for earlier aircraft.



Ilyushin II-103 wearing the name of General Designer Genrikh Novozhilov (Paul Jackson)

NEW/0547746

Initial export order, six for Peruvian Air Force, agreed June 1999 and finalised in April 2000; deliveries had not begun by August 2000, due to lack of payment, but all reported in service by late 2001.

CURRENT VERSIONS: **IL-103-01**: Baseline VFR version for Russian Federation market.

IL-103-10: Export version with fully upgraded avionics suitable for international airways navigation.

IL-103-11: Export version with partly upgraded avionics suitable for local air navigation.

Initial certification is for a max T-O weight of 1,285 kg (2,832 lb), as reflected in weight and performance data below. The IL-103 will later be certified at 1,310 kg (2,880 lb) and, ultimately, 1,460 kg (3,218 lb).

IL-103LL: Flying testbed (*Letny Laboratoriya*) fitted in mid-2003 with Russkaya Avionika LCD navigation display and imported inertial platform.

IL-103SKh: Crop-sprayer (*selskokhozyaistvenny*: agricultural) version; first flown 29 March 2000.

IL-103P: Surveillance version announced June 2002 in response to interest from Kazakhstan for Caspian Sea patrol. Undisclosed sensors have range of 40 km (64 miles) from cruising height of 3,000 m (9,840 ft). Potential for armament, including two machine guns.

CUSTOMERS: Initial operators (by 1999) included IL-Service at Myachkovo, Cherepovets Aviation Club, Avialesokhrana (forestry), Special Ecological Aviation Centre, Tatarstan National Flying Club, Civil Aviation Academy and St Petersburg Methodological Centre. Sales in 2000 comprised four to GP Bellesavia of Belarus in September for forest firefighting; one to IL-Service; and one for Vladimirovsky Aerial Forest Protection. Despite prediction of Russian market for 1,500 and plans to produce 100 per year, sales stagnated in 2001; manufacture by LAPIK was reported, in mid-2000, temporarily to have ceased.

Avialine requires fleet of 12 for air taxi service from Moscow-Domodedovo. Federal Fire Service interested in 30. Uzbekistan government announced requirement for 100 in crop-spraying role, late 1999. Russian Federal Air Transport service reportedly ordered 30 in 1999 for issue to several flying schools, but these failed to materialise. Total 23 delivered by January 2002, including 10 exports (Belarus, four, and Peru, six). Further sales in 2002 included 23 to South Korean Air Force (signed 16 May 2002) and three to Laos. Korean deliveries then due to begin in September 2003, but Laotian funding was still awaited in mid-2003.

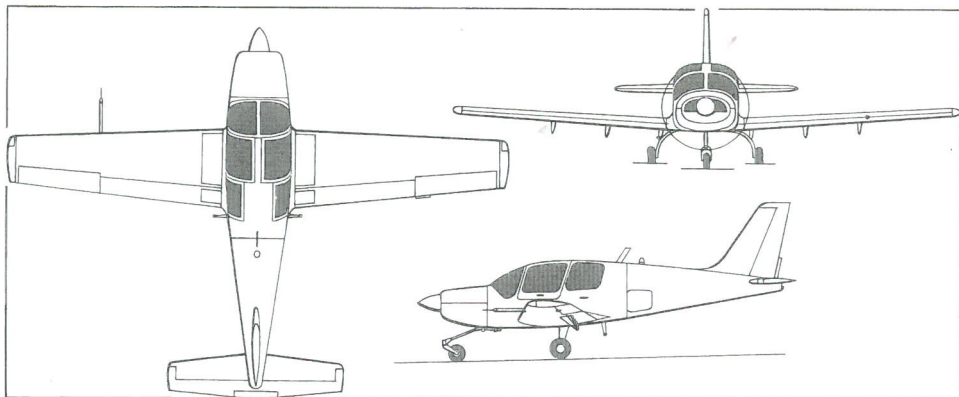
COSTS: US\$164,000 to 210,000 (2000).

DESIGN FEATURES: Conventional low-wing monoplane, with non-retractable landing gear, originally to meet DOSAAF requirement for 500 military/civil pilot trainers. Designed for daytime VFR flying, in non-icing conditions and ambient air temperature of -35 to +45°C; intended service life 12,000 hours/20,000 landings/15 years.

Wing sweep 0° at quarter-chord, slight dihedral from roots, twist 0°, thickness/chord ratio 16 per cent at root, 15 per cent at tip, taper ratio 1.9.

FLYING CONTROLS: Conventional and manual. Actuation by pushrods, except cable-actuated rudder; horn-balanced rudder and single-piece elevator; single-slotted trailing-edge flaps, 0° or 10° deflection; electrically actuated elevator trim tab. Deflection angles: ailerons +25/-20°, elevator +25/-20°, rudder ±25°. Ground-adjustable trim tabs on starboard aileron and rudder.

STRUCTURE: All-metal, basically aluminium alloy, except for titanium firewall frame and wingroot attachments; bonded GFRP wingtips, elevator and rudder tips and elevator tab; and small amounts of magnesium alloys and Al-Li alloys. Single-spar wings, with front and rear false spars, integral fuel tanks and detachable leading-edge, mounted at sides of fuselage. Main spar is riveted beam with extruded caps; false spars stamped from sheet alloy; rolled sheet stringers. Semi-monocoque front/centre fuselage with inbuilt wing carry-through structure; separate rear fuselage; separate tailcone. Longitudinal fuselage members comprise two



Ilyushin Il-103 two/five-seat multipurpose light aircraft (James Goulding)

0079319

reinforced spars in cabin floor, two side-ribs of centre wing section and three beams for landing gear attachment. Two-spar, single-piece tailplane attached to fuselage by four bolts; two-spar fin. Detachable wings, fin and tailplane.

LANDING GEAR: Non-retractable tricycle type, with single wheel on each unit. Cantilever spring nose and mainwheel legs of titanium alloy; castoring nosewheel with shimmy damper; oleo-pneumatic nosewheel leg tested on RA-10300 in 1998. Mainwheel tyres size 400x150-115, pressure 3.95 bar (57 lb/sq in) on KT-214-1 wheels; nosewheel tyre size 310x135-99, pressure 3.43 bar (50 lb/sq in) on K-290 wheels. Optional tyres 6.00-6 and 5.00-5, respectively, on Parker 40-75B and 40-77B wheels. Multidisc hydraulic anti-lock brakes on mainwheels, pedal-actuated. Turning radius (outboard wheel) 4.70 m (15 ft 6 in). Floats and skis optional.

POWER PLANT: One 157 kW (210 hp) Teledyne Continental IO-360-ES2B flat-six engine; Hartzell BHC-C2YF-1BF/F8459A-8R two-blade, constant-speed (hydraulic), metal propeller. (Manual pitch control on three development aircraft; automatic pitch selection on production aircraft.) Alternative 194 kW (260 hp) Textron Lycoming or similarly rated Teledyne Continental engine under consideration. Fuel and oil systems suitable for inverted flight; two main fuel tanks in wingroots, total capacity 200 litres (52.8 US gallons; 44.0 Imp gallons); supply tank, capacity 3 litres (0.8 US gallon; 0.66 Imp gallon), in fuselage forward of wing front spar carry-through; gravity refuelling points in wingroots.

ACCOMMODATION: Two forward-folding seats side by side at front of cabin; bench seat for two adults or three children at rear; optional control wheel in place of standard stick; optional dual controls; optional front seats for parachutes; space for 220 kg (485 lb) freight with rear bench seat removed; two gull-wing window/doors, hinged on centreline, at front of canopy. Rear windows removable for ground emergency exit. Unrestricted access to baggage hold.

SYSTEMS: Cabin ventilated and heated and windscreen demisted electrically by fan heater. Electrical system 27 V DC, with 1,800 W 60 A generator and 25 Ah battery.

AVIONICS: Comms: Yurok VHF radio as standard; P-855A1 optional extra. Il-103-11 equipment includes UBD transponder. Il-103-10 has Bendix/King KX 165 nav/com/glideslope (replacing Russian radios) and KT 76A transponder.

Flight: BUR-4 flight data recorder.

Il-103-11 includes MKS-1 compass and Bendix/King KR 87 ADF and KLN 89B GPS. Il-103-10 additionally equipped with VOR/ILS, KN 63 DME, KMA 24 audio control/MKR, KCS 55A compass and encoding altimeter.

DIMENSIONS, EXTERNAL:

Wing span	10.56 m (34 ft 7 3/4 in)
Wing aspect ratio	7.6
Wing chord: at root	1.825 m (5 ft 11 1/4 in)
at tip	0.96 m (3 ft 1 3/4 in)
Length overall	8.00 m (26 ft 3 in)
Fuselage: Length	7.81 m (25 ft 7 1/2 in)
Max height	1.42 m (4 ft 8 in)
Max width	1.40 m (4 ft 7 in)
Height overall	3.135 m (10 ft 3 1/2 in)
Tailplane span	3.90 m (12 ft 9 1/2 in)
Wheel track	2.405 m (7 ft 10 3/4 in)
Wheelbase	2.045 m (6 ft 8 1/2 in)
Propeller diameter	1.93 m (6 ft 4 in)
Baggage door: Width	0.70 m (2 ft 3 1/2 in)
Height	0.34 m (1 ft 1 1/4 in)

DIMENSIONS, INTERNAL:

Cabin: Length	2.65 m (8 ft 8 1/4 in)
Max height	1.27 m (4 ft 2 in)
Max width	1.30 m (4 ft 3 in)

AREAS:

Wings, gross	14.71 m ² (158.4 sq ft)
Ailerons (total)	1.137 m ² (12.24 sq ft)
Flaps (total)	2.204 m ² (23.72 sq ft)
Fin	0.84 m ² (9.04 sq ft)
Rudder	0.56 m ² (6.03 sq ft)
Tailplane	1.48 m ² (15.93 sq ft)
Elevator	1.56 m ² (16.79 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	900 kg (1,984 lb)
Baggage capacity	60 kg (132 lb)
Max payload	270 kg (595 lb)
Max fuel	150 kg (330 lb)
Max T-O weight	1,310 kg (2,888 lb)
Max wing loading	89.1 kg/m ² (18.24 lb/sq ft)
Max power loading	8.37 kg/kW (13.75 lb/hp)

PERFORMANCE:

Never-exceed speed (VNE)	183 kt (340 km/h; 211 mph)
Max level speed	119 kt (220 km/h; 137 mph)
Cruising speed	97 kt (180 km/h; 112 mph)
Stalling speed: flaps up	64 kt (117 km/h; 73 mph)
10° flap	60 kt (111 km/h; 69 mph)
Max rate of climb at S/L	190 m (623 ft)/min
Max certified altitude	3,000 m (9,840 ft)
T-O run	380 m (1,250 ft)
Landing run	320 m (1,050 ft)
Max range at cruising speed, pilot and 270 kg (595 lb) payload, 30 min reserves	432 n miles (800 km; 497 miles)

g limits: Utility	+4.4/-1.8
Aerobatic	+6/-3

OPERATIONAL NOISE LEVELS: Designed to conform with GOST 23023-85 and ICAO Annex 16

UPDATED

ILYUSHIN II-112

TYPE: Twin-turboprop transport.

PROGRAMME: Initiated 1994, with possibility of Russian government funding as alternative to Ukrainian Antonov An-38; design since enlarged and considerably refined; planned manufacture by KAPP at Kumertau and (Il-112V) VASO at Voronezh.

Revealed July 1999 that Il-112V selected by Russian defence ministry as potential replacement for Antonov An-24/26, Yak-40 and Let L 410; significant performance improvements to be achieved by redesign begun in same month. Presidential approval granted April 2000. First flight originally due in 2002, but revised timetable called

only for final decision in that year between Il-112 and competitors. In April 2003, Il-112VT confirmed by Russian Air Forces selection committee as competition winner, overcoming opposition from Sukhoi Su-80, MiG-110, Myasishchev M-60 and Tupolev Tu-136. Four-year development programme expected to be launched in mid-2003.

CURRENT VERSIONS: Il-112: Passenger transport, as described in detail.

Il-112 business transport: Basically as Il-112 airline version, but cabin divided into three sections, separated by curtains. Front cabin contains four pairs of facing seats, with tables between, and centre aisle, a wardrobe on the port side between the door and flight deck bulkhead, inward-opening door to flight deck, and large baggage compartment on starboard side with outside access.

Central compartment has four armchairs on port side, with tables between, three-seat sofa on starboard side to rear of cabins; aisle width between armchairs and sofa 86 cm (34 in); wardrobe at rear on each side. Rear section contains main passenger door with airstairs on port side, two buffets, seat for attendant, and access to rear baggage compartment and lavatory.

Il-112T: Freighter with rear-loading ramp; lavatory and seat for loadmaster at front of unobstructed main hold; ramp forms rear wall of hold when stowed. Typical payloads include four 1AK-1.5 (LD3) or five 3AK-1 containers or five PA-1.5 pallets. Airstair door at front of hold on port side; service door opposite; emergency exit on each side in centre of hold.

Il-112VT (voenny transportnyy: military transport): Passenger/freighter for Russian armed forces. Rear ramp; provision for 35 passengers, or 18 stretchers or 34 paratroops. Patrol/surveillance version also to be produced. Detail design under way by early 2001; selected for production in April 2003.

CUSTOMERS: Requirement by Russian Air Forces could total 100 to 120; estimated potential for 120 civil sales.

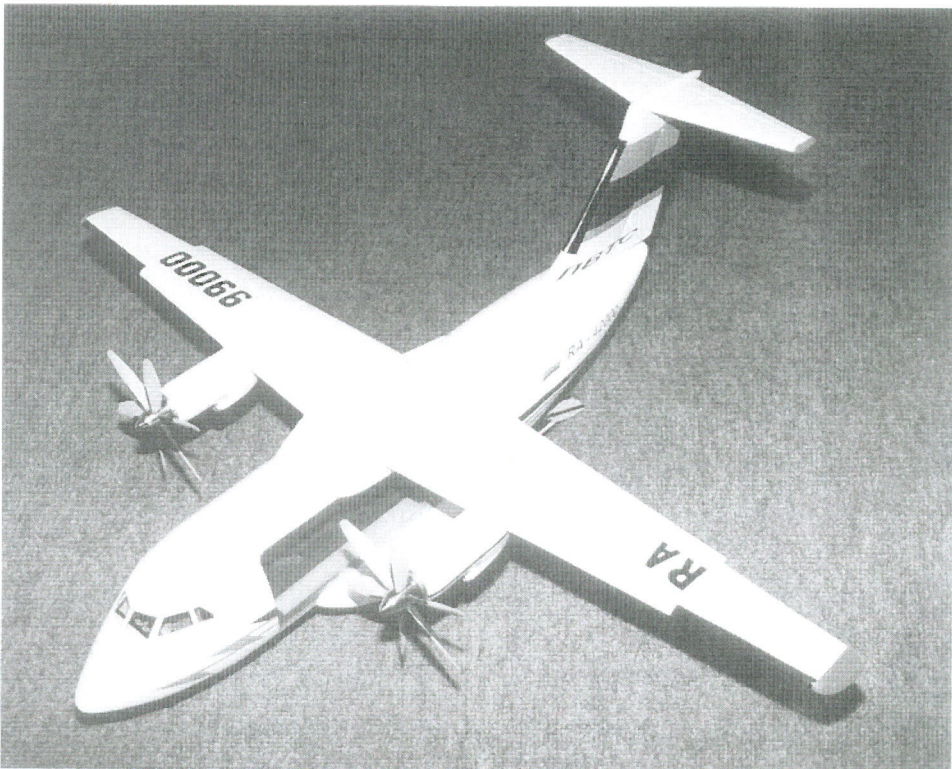
DESIGN FEATURES: Based on Il-114 airframe. Conventional high-wing monoplane with T tail; constant-chord wing centre-section, tapered outer panels; sweptback fin and rudder; circular-section pressurised fuselage.

FLYING CONTROLS: Entire trailing-edge of each wing made up of horn-balanced aileron and two-section, area-increasing flaps; two-section spoilers forward of flap on each side of centre-section. Horn-balanced rudder and elevators; tab in rudder.

LANDING GEAR: Retractable tricycle type; twin-wheel nose unit; single wheel on each main unit, retracting into large fairing outside fuselage pressure cell.

POWER PLANT: Two 1,838 kW (2,466 shp) Klimov TV7-117SM turboprops in Il-112VT.

ACCOMMODATION: Flight crew of two; standard seating for 40 passengers, with 11 pairs of seats on port side and nine on starboard side of 45 cm (17.7 in) wide centre aisle. Maximum 60 in military version. Baggage/freight compartment with outside access on starboard side at front of cabin. Main airstair passenger door at rear of cabin on port side, with service door opposite; emergency exits at front of cabin on port side, in centre on starboard side. Access to rear baggage compartment and lavatory at rear of cabin; buffet and seat for attendant.



Model of Ilyushin Il-12 in civilian guise (Yefim Gordon)

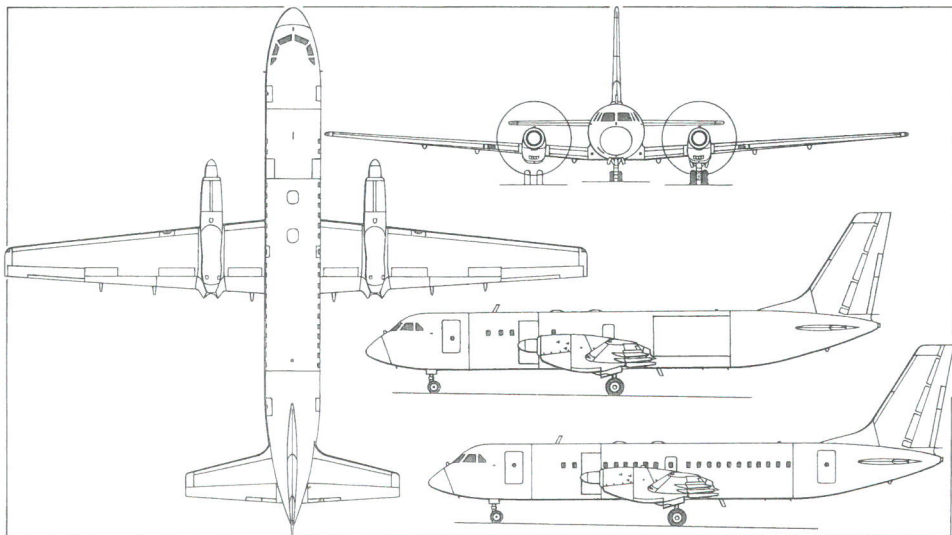
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SYSTEMS: Aerosila TA-14 APU.	
DIMENSIONS, EXTERNAL:	
Wing span: except Il-112V	22.55 m (73 ft 11¼ in)
Il-112V	23.45 m (76 ft 11¼ in)
Length: except Il-112V: overall fuselage	21.78 m (71 ft 5½ in)
Il-112V	20.00 m (65 ft 7½ in)
Height overall: except Il-112V	20.65 m (67 ft 9 in)
Il-112V	7.63 m (25 ft 0¼ in)
Tailplane span	7.90 m (25 ft 11 in)
Wheel track	7.14 m (23 ft 5 in)
Passenger door: Height	3.80 m (12 ft 5½ in)
Width	1.70 m (5 ft 7 in)
Service door: Height	0.76 m (2 ft 6 in)
Width	1.38 m (4 ft 6¼ in)
Forward baggage door: Height	0.72 m (2 ft 4¼ in)
Width	1.30 m (4 ft 3 in)
Emergency exits (each): Height	0.96 m (3 ft 1¼ in)
Width	0.91 m (2 ft 11¾ in)
	0.51 m (1 ft 8 in)
DIMENSIONS, INTERNAL:	
Hold: Max height	2.40 m (7 ft 10½ in)
Max width	2.40 m (7 ft 10½ in)
WEIGHTS AND LOADINGS (A: passenger transport, B: business transport, C: Il-112V):	
Weight empty, equipped: A, B, C	9,100 kg (20,062 lb)
Max payload: A, B	4,000 kg (8,818 lb)
C	6,000 kg (13,227 lb)
Max T-O weight: A	14,530 kg (32,033 lb)
B	13,490 kg (29,740 lb)
C	16,700 kg (36,817 lb)
Max power loading: A	3.95 kg/kW (6.49 lb/shp)
B	4.67 kg/kW (6.03 lb/shp)
C	4.54 kg/kW (7.46 lb/shp)
PERFORMANCE (estimated):	
Nominal cruising speed at 7,600 m (24,950 ft)	
A, B	297-324 kt (550-600 km/h; 342-373 mph)
C	351 kt (650 km/h; 404 mph)
T-O run: A	520 m (1,710 ft)
B	500 m (1,640 ft)
C	650 m (2,135 ft)
T-O balanced field length: A	980 m (3,215 ft)
B	940 m (3,085 ft)
C	1,200 m (3,940 ft)
Landing balanced field length: A, B	1,000 m (3,280 lb)
Landing run: A, B	400 m (1,315 ft)
Range: A	809 n miles (1,500 km; 932 miles)
B	1,943 n miles (3,600 km; 2,236 miles)
C: with 6,000 kg (13,227 lb) payload	
	540 n miles (1,000 km; 621 miles)
with 2,000 kg (4,409 lb) payload	
	3,239 n miles (6,000 km; 3,728 miles)

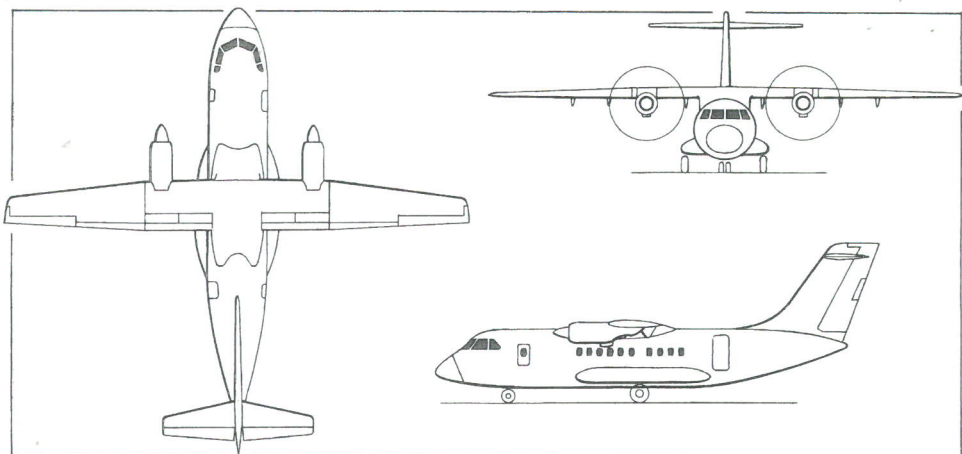
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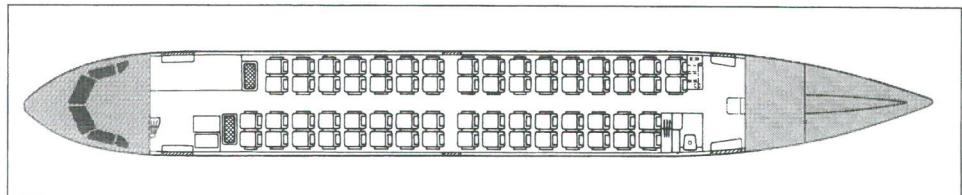
Former Uzbekistan Airlines Ilyushin Il-114 following transfer to Vyborg (Yefim Gordon) NEW/0552040



Ilyushin Il-114 short-range passenger transport, with additional side view (upper) of Il-114T freighter (Jane's/Mike Keep) 0011989



Ilyushin Il-112 twin-turboprop short-range passenger transport (James Goulding) 0092139



Ilyushin Il-114 interior with 64 seats at 75 cm (29½ in) pitch

ILYUSHIN Il-114

TYPE: Twin-turboprop airliner.
PROGRAMME: Design finalised 1986, as replacement for aircraft in An-24 class; was scheduled to enter service (with Aeroflot's Tashkent division) in 1992. Prototype (SSSR-54000) first flew at Khodinka 29 March 1990; second prototype (SSSR-54001) flew at Khodinka 24 December 1991, but lost in accident on 5 July 1993, resulting in withdrawal of government funding. Series production by TAPO at Tashkent, Uzbekistan, initial aircraft comprising Nos. 0101, 0103 and 0105 for flight development plus 0102 for static tests and 0104 for dynamic tests; first production aircraft flew 7 August 1992. Certification delayed by loss of second prototype and deferred certification of TV7 engines, but finally achieved on 26 April 1997. Negotiations reportedly under way in 1996 for production at Esfahan by Iran Aircraft Manufacturing Company; this venture lapsed upon

selection of rival Antonov An-140. Recent development effort centred on -100 version.

In 1998, Russian and Uzbek governments agreed to promote Il-114; Ilyushin and Inkombank signed provisional agreement for production funding (although the bank's trading licence was revoked shortly afterwards, resulting in further delays); and Uzbekistan Airlines took delivery of production aircraft, making first commercial flight on 27 August 1998.

CURRENT VERSIONS: **Il-114:** As described in detail.

Il-114T: Cargo version developed for Uzbekistan Airlines; port freight door, size 3.25 × 1.715 m (10 ft 8 in × 5 ft 7½ in) in rear fuselage; removable roller floor; cargo attendants' cabin at forward end of freight hold accommodates up to two persons, is smokeproof and variable in size. MTOW and performance as for Il-114 passenger version, except where otherwise indicated. First production example (RA-91005) flew at Tashkent 14 September 1996. Second (UK-91004) converted by 1998, but lost in accident 5 December 1999. Prototype delivered to LII at Zhukovskiy in early 2000 for certification trials; these were continued in Yakutia in early 2002.

Il-114-N200S: Rear loading ramp version; none yet built.

Il-114-100: With 2,051 kW (2,750 shp) P&WC PW127H turboprops, Hamilton Sundstrand 586E-7 six-blade propellers, Sextant avionics and new systems; primarily for export; English inscriptions and Imperial calibration; designated **Il-114PC** until late 1997; passenger and cargo (**Il-114-100T**) versions envisaged. Performance generally as Il-114, but with increased range and economy. Weight empty, equipped (including two crew) 16,100 kg (35,494 lb). Joint venture agreed by Ilyushin and P&WC on 16 June 1997; first flight at Tashkent (UK-91009) 26 January 1999; CIS Interstate Aviation Committee type certificate awarded 27 December 1999.

Il-114M: With TV7M-117 turboprops, increased maximum T-O weight and 7,000 kg (15,430 lb) payload.

Il-114MA: Version of Il-114M with P&WC engines to carry 74 passengers at 324-351 kt (600-650 km/h; 373-404 mph) on 1,079 n mile (2,000 km; 1,242 mile) stages.

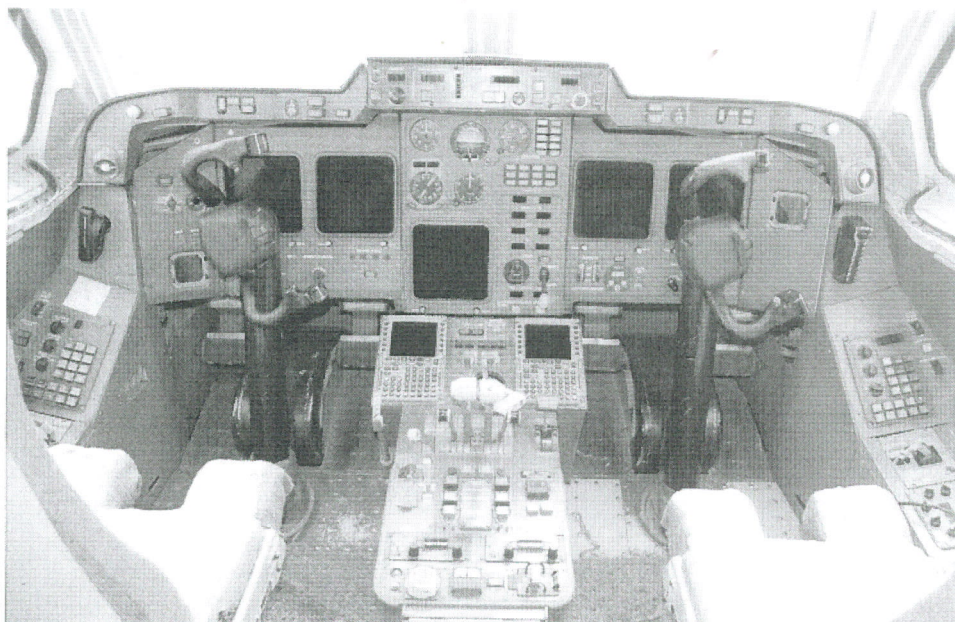
Il-114P and Il-114MP: Maritime patrol versions. Described in 2001-02 and previous editions.

Il-114FK: Military reconnaissance/cartographic survey version. Described in 2001-02 and previous editions.

Il-114PR: Signals intelligence and electronic warfare version; announced October 2000.

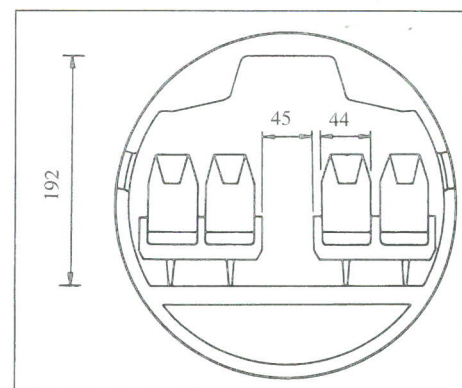
Il-140: Tactical air control (Il-140) and maritime patrol/SAR (Il-114M) versions under study by October 2000. No further reports, but at International Maritime Defence Show at St Petersburg in June 2003, Radar-MMS showed a model of an Il-114 with Il-20M style of signet/LOROP camera fairings, dorsal (Il-22 style) and ventral antenna pods and pylon-mounted SLAR pods.

CUSTOMERS: Uzbekistan Airlines purchased two pre-series aircraft in 1994; later modified with extra lavatory, new galley and accommodation reduced from 64 to 52; each flew 300 hours before engine overhaul time expiry and grounding; airline operated both Il-114Ts on service trials in 1998 and had total requirement for 10 Il-114Ts, three of which on order in Il-114-100 configuration by April 2000 for delivery in March and April 2001, but failed to appear; first had been received by February 2003, with remaining two due in second half of that year. Interest expressed by Bulgarian airlines; order for three Il-114-100s from Singaporean purchaser reported early 2000; delivery



Ilyushin Il-114 flight deck (Yefim Gordon)

NEW/0552041



Cross-section of Il-114; dimensions in centimetres

AVIONICS: Digital avionics for automatic or manual control by day or night, including automatic approach and landing in limiting weather conditions (ICAO Cat. I and II).

Flight: Barco computer for FMS.

Instrumentation: Two colour CRTs for each pilot for flight and navigation information. Centrally mounted CRT for engine and systems data.

DIMENSIONS, EXTERNAL:

Wing span	30.00 m (98 ft 5 1/4 in)
Wing aspect ratio	11.0
Length overall	26.875 m (88 ft 2 in)
Fuselage: Length	26.20 m (85 ft 11 1/2 in)
Max diameter	2.86 m (9 ft 4 1/2 in)
Height overall	9.185 m (30 ft 1 1/2 in)
Tailplane span	11.10 m (36 ft 5 in)
Wheel track	8.40 m (27 ft 6 1/2 in)
Wheelbase	9.13 m (29 ft 11 1/2 in)
Propeller diameter	3.60 m (11 ft 9 3/4 in)
Propeller ground clearance	0.50 m (1 ft 7 3/4 in)
Propeller fuselage clearance	0.97 m (3 ft 2 1/4 in)
Passenger doors (each): Height	1.70 m (5 ft 7 in)
Width	0.90 m (2 ft 11 1/2 in)
Service door (front): Height	1.30 m (4 ft 3 3/4 in)
Width	0.96 m (3 ft 1 3/4 in)

planned in 2001, although nothing further heard. Vyborg ordered three new aircraft in 2001 for operations from St Petersburg; deliveries planned for 2002 in 64-seat configuration, but first receipts, from August 2002, were two former Uzbekistan Airlines aircraft following their modification for flights in western European airspace. Vyborg services from St Petersburg began early May 2003. Three (excluding prototype) owned by Ilyushin Bureau.

Total of 15 flying or substantially complete January 1998, most awaiting orders; delivery totals officially quoted as 1992 two, 1993 one, 1994 one, 1997 one and 1998 one. No further new production by end of 2001, when seven remained on assembly line, including two Il-114Ts; by early 2002, components sets for first 40 production aircraft had been manufactured wholly or in part. Transaero opened negotiations in 2001 for between five and 10.

COSTS: US\$10 million for Il-114; US\$8 million for Il-114T (2000).

DESIGN FEATURES: Conventional low-wing monoplane; only fin and rudder swept; slight dihedral on wing centre-section, much increased on outer panels; operation from unpaved runways practical. Service life of 30,000 cycles/30,000 hours/30 years, with overhaul at 6,000 hour intervals.

FLYING CONTROLS: Manual actuation for all except elevator; each wing trailing-edge occupied entirely by aileron, with servo and trim tabs, and hydraulically actuated double-slotted trailing-edge flaps, inboard and outboard of engine nacelle; two airbrakes (inboard) and spoiler (outboard) forward of flaps; spoilers supplement ailerons differentially in event of engine failure during take-off. Elevator control is FBW with back-up cable actuation. Trim and servo tabs in rudder, trim tab in each elevator.

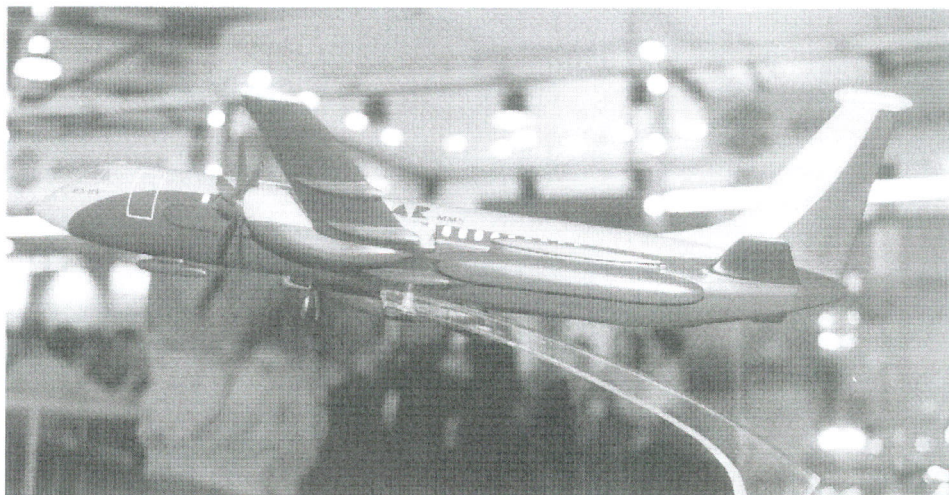
STRUCTURE: Approximately 10 per cent of airframe by weight made of composites; two-spar wings; removable leading-edge on outer panels; circular-section aluminium alloy semi-monocoque fuselage built as five subassemblies; metal tail unit (CFRP tailplane and fin boxes planned for later aircraft).

LANDING GEAR: Retractable tricycle type, with twin wheels on each unit. All retract forward hydraulically; emergency extension by gravity. Oleo-pneumatic shock-absorbers. Tyres size 620x80 on nosewheels, 880x305 on mainwheels. Nosewheels steerable $\pm 55^\circ$. Disc brakes on mainwheels. All wheel doors remain closed except during retraction or extension of landing gear.

POWER PLANT: Two 1,839 kW (2,466 shp) Klimov TV7-117S turboprops (with potential to increase to 2,088 kW; 2,800 shp), each driving a low-noise six-blade Stupino SV-34 CFRP propeller. Integral fuel tanks in wings, capacity 8,780 litres (2,319 US gallons; 1,931 Imp gallons).

ACCOMMODATION: Flight crew of two, plus stewardess. Emergency exit window each side of flight deck. Four-abreast seats for 64 passengers in main cabin, at 76 cm (30 in) seat pitch, with central aisle 45 cm (17 1/4 in) wide. Provision for rearrangement of interior for increased seating, removal of seats for cargo-carrying, and lengthening of fuselage for 70 to 75 passengers. Two passenger doors on port side: airstair door at front of cabin, further door at rear, both opening outward. Galley, cloakroom and lavatory at rear; emergency escape slide by service door on starboard side. Type III emergency exit over each wing. Service doors at front and rear of cabin on starboard side. Baggage compartments forward of cabin on starboard side and to rear of cabin, plus overhead baggage racks. Optional carry-on baggage shelves in lobby by main door at front.

SYSTEMS: TsNPKO-114 autopilot began trials on Il-114-100 in 2001. Dual-redundant pressurisation and air conditioning system using bleed air from both engines; maximum differential 0.44 bar (6.4 lb/sq in). Two independent hydraulic systems, pressure 207 bar (3,000 lb/sq in), for landing gear actuation, wheel brakes, nosewheel steering, airbrakes and flaps. Three-phase 115/220 V 400 Hz AC electrical system powered by 40 kW alternator on each engine. Secondary 24 V DC system. Wing and tail unit leading-edges de-iced electrically by patented pulse wave system. Electrothermal anti-icing system for propeller blades and windscreen. Engine air intakes de-iced by hot air. APU in tailcone.



Model of a projected surveillance Il-114 shown in mid-2003 by Radar-MMS (Dmitriy Komissarov) NEW/0552993



Interior of Vyborg Il-114 (Yefim Gordon)

NEW/0552042

Service door (rear): Height	1.38 m (4 ft 6¼ in)
Width	0.72 m (2 ft 4¼ in)
Emergency exit (each): Height	0.91 m (3 ft 0 in)
Width	0.51 m (1 ft 8 in)
DIMENSIONS, INTERNAL:	
Length between pressure bulkheads	22.24 m (72 ft 11½ in)
Cabin: Length	18.93 m (62 ft 1¼ in)
Width: max	2.64 m (8 ft 8 in)
at floor	2.28 m (7 ft 5¾ in)
Max height	1.92 m (6 ft 3½ in)
Cargo cabin volume (IL-114T)	76.0 m³ (2,684 cu ft)

AREAS:	
Wings, gross	81.90 m² (881.6 sq ft)
WEIGHTS AND LOADINGS:	
Operating weight empty	15,000 kg (33,070 lb)
Max payload	6,500 kg (14,330 lb)
Max fuel	6,500 kg (14,330 lb)
Max T-O weight	23,500 kg (51,808 lb)
Max ramp weight	23,600 kg (52,029 lb)
Max wing loading	286.9 kg/m² (58.77 lb/sq ft)
Max power loading	6.39 kg/kW (10.50 lb/shp)
PERFORMANCE:	
Max level speed	270 kt (500 km/h; 310 mph)

Cruising speed	254 kt (470 km/h; 292 mph)
Approach speed	100 kt (185 km/h; 115 mph)
Landing speed	87 kt (160 km/h; 100 mph)
Optimum cruising height: IL-114	7,600 m (24,940 ft)
IL-114T	6,000 m (19,680 ft)
T-O run: paved	1,360 m (4,465 ft)
Landing run: paved or unpaved	1,260 m (4,135 ft)
Range, with reserves:	
with 64 passengers	540 n miles (1,000 km; 621 miles)
with 1,500 kg (3,300 lb) payload	2,590 n miles (4,800 km; 2,980 miles)

UPDATED

IRKUT

NAUCHNO-PROIZVODSTVENNAYA
KORPORATSIYA IRKUT OAO (Irkut
Scientific-Production Corporation JSC)

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Founded on 28 March 1932 and commissioned on 24 August 1934, as GAZ 125 (becoming GAZ 39 in 1941), Irkut has built some 6,500 aircraft of 16 types from Antonov, Ilyushin, MiG, Petlyakov, Sukhoi, Tupolev and Yakovlev bureaux and supplied them to 21 countries. In recent years, it has manufactured MiG-23UB trainers (1970-85); 165 kits for Indian-assembled MiG-27MLs; Su-27UB trainers (from 1986); and is currently responsible for producing the Su-30 fighter (since 1991) and Beriev Be-200 amphibian. Su-30 customers include China and India; offers Su-27UBM and Su-30KN upgrades to older aircraft. Series manufacture of the Yak-112 lightplane has been abandoned, although company has been allocated prospective manufacture of the Ilyushin/HAL IL-214 twin-jet transport. Also undertakes Su-30 upgrades.

Irkut shareholders are Brunswick UBS Warburg Nominees (25.72 per cent), Forpost Commercial Bank (20.60 per cent), FTK Company (20.35 per cent), APVK Sukhoi (14.70 per cent), Aerocom (10.18 per cent), other companies (4.9 per cent) and individuals (3.55 per cent). Subsidiary companies are Irkut Aviation Industrial Association (aircraft manufacturing plant), Beriev (39.57 per cent holding), Beta-Air (66.15 per cent), Russian Avionics (57 per cent), Irkut Aviastep (wholly owned), Itela (51 per cent) Techserviceavia (51 per cent), Hidroaviasalon (30 per cent) and Irkut private pension fund (wholly owned).

Is member of AVPK Sukhoi. Known from April 1989 until 2002 as IAPO (Irkutsk Aviation Industrial Association), having become a joint stock company in October 1992, but on 19 December 2002, shareholders approved a company change of name to Irkut NPK OAO, IAPO becoming a subsidiary. In 1997 was first Russian aviation enterprise to gain ISO 9002 status and in April 2001 became first Russian military production enterprise to issue short-term debt notes on financial market.

In 2000, IAPO branched out into design and manufacture of its own products in the form of the prototype A-002 autogyro. Expansion of civil programmes is strategic objective. The Irkut 111 design is for an ultra-wide-bodied regional airliner with twin fins and three-aisle configuration for only 106 passengers.

Under government plans announced in May 2001, IAPO is to join the aerospace group also including Sukhoi, Ilyushin, Mil, Yakovlev and their associated factories. In August 2003, Irkut and Yakovlev announced plans for a joint venture company to manage their eventual merger. Employees in 2003 totalled 22,000 including 15,000 at IAPO factory; over 12,000; further 1,500 firms supply plant with materials. In March 2003, Irkut announced intention to acquire at least 25 per cent shareholding in Taganrog (Beriev) aviation plant.

NEW ENTRY

IRKUT A-002

TYPE: Three-seat autogyro.

PROGRAMME: Project announced October 2000; first product of Irkutsk Light Aircraft Design Bureau (OKB Legkoi Aviatsy OAO), although an experimental version was tested in 1998. Almost complete prototype shown at Moscow, August 2001. Maiden flight 21 April 2002.

DESIGN FEATURES: Conforms to FAR Pt 27 and Russian AP-27. Streamlined, cabin autogyro which can be stored and serviced in a motorcar garage. Choice of engines, including those using motorcar fuel. Classic configuration, with pusher propeller; single, sweptback fin with large rudder; broad track landing gear. Engine-driven pre-rotation of rotor.

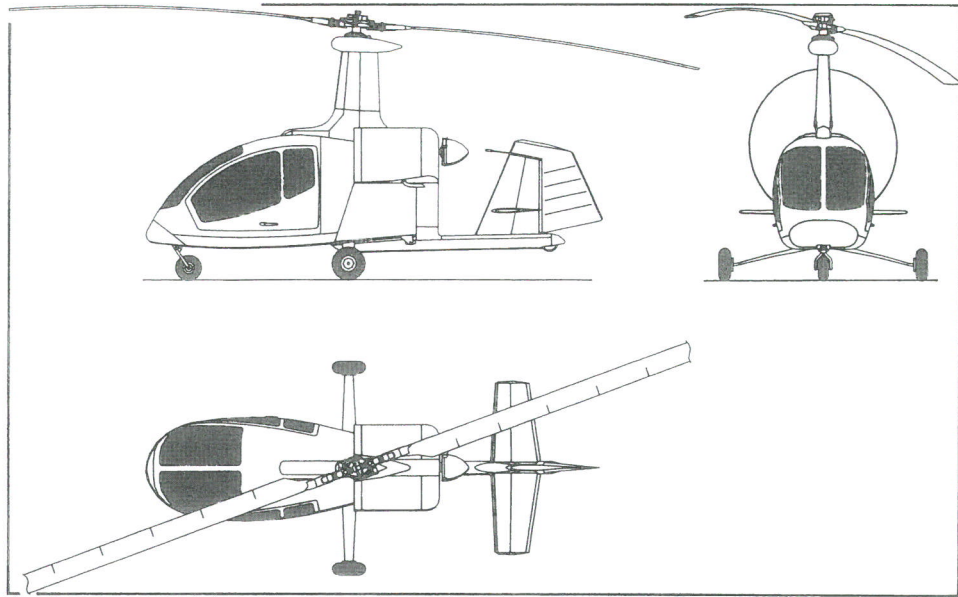
FLYING CONTROLS: Manual. All-moving tailplane mounted at one-third of fin height; horn- and mass-balanced rudder.

STRUCTURE: Generally of metal. Rudder and elevator of composites.



Irkut A-002 autogyro on its second flight

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General arrangement of the Irkut A-002 autogyro

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LANDING GEAR: Tricycle type; fixed. Cantilever-spring mainwheels; rubber-in-compression shock-absorber on nosewheel. Mainwheel tyres 400×150; nose 300×125. Hydraulic disc brakes on mainwheels. Safety tail skid on prototype; auxiliary tailwheel on production version.

POWER PLANT: Prototype has one 157 kW (210 hp) Teledyne Continental IO-320 flat-six driving a fixed-pitch, two-blade propeller. Alternative engines of 134 to 157 kW (180 to 210 hp) and three-blade propeller can be installed. Subaru motorcar engine under consideration in April 2003.

ACCOMMODATION: Two front seats, side by side, with dual controls; single rear seat. Upward-hinged door each side. Heating and ventilation provided.

DIMENSIONS, EXTERNAL:	
Rotor diameter	9.80 m (32 ft 1¼ in)
Length of fuselage	4.98 m (16 ft 4 in)
Height, rotor removed	3.17 m (10 ft 4¼ in)
Wheel track	2.40 m (7 ft 10½ in)
Wheelbase	2.015 m (6 ft 7¼ in)
Propeller diameter	1.90 m (6 ft 2¾ in)

AREAS:	
Rotor disc	75.43 m² (811.9 sq ft)
WEIGHTS AND LOADINGS:	
Weight empty	500 kg (1,102 lb)

T-O weight: normal max	800 kg (1,763 lb)
overload	850 kg (1,873 lb)
Max disc loading, normal	10.61 kg/m² (2.17 lb/sq ft)
Max power loading, normal	5.11 kg/kW (8.40 lb/shp)

PERFORMANCE (157 kW; 210 hp) engine:	
Max level speed	113 kt (210 km/h; 130 mph)
Min flying speed	22 kt (40 km/h; 25 mph)
Max rate of climb at S/L	150 m (492 ft)/min
Service ceiling	3,000 m (9,840 ft)
T-O run: jump start	zero
normal	40 m (135 ft)
Range with 200 kg (441 lb) payload	270 n miles (500 km; 310 miles)

Endurance	6 h
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UPDATED

IRKUT (AVIASTEP) 111

TYPE: Regional jet airliner.

PROGRAMME: Developed by Aviastep bureau (General Director: Sergey Bogdanov) in Moscow and promoted by Irkut. Design began in 2000; first details released in 2002; model shown at Paris, June 2003.