ВЕРТОЛЕТЫ РОССИИ

«ANSAT Helicopter»

- **1995** – development start
- **17 августа 1999 года** – first flight
- **2002** – certification test flights
- **2004** – type certificate
- **2005** – type certificate for two pilot helicopter
- **2005** – supplementary certificate for emergency splashdown system Aerazur
- **2005** – serial production start

МЕЖГОСУДАРСТВЕННЫЙ АВИАЦИОННЫЙ КОМИТЕТ
INTERSTATE AVIATION COMMITTEE

АВИАЦИОННЫЙ РЕГИСТР
AVIATION REGISTER

СЕРТИФИКАТ
РАЗРАБОТЧИКА АВИАЦИОННОЙ ТЕХНИКИ
DESIGN ORGANIZATION CERTIFICATE

№ Р-45

НАСТОЯЩИЙ СЕРТИФИКАТ ВЫДАН
THIS CERTIFICATE IS ISSUED TO
Акционерному обществу "Казанский вертолетный завод"
г.Казань, Татарстан, Россия
УДОСТОВЕРЯЕТСЯ, ЧТО ДЕРЖАТЕЛЬ НАСТОЯЩЕГО СЕРТИФИКАТА, ПРИЗНАН В КАЧЕСТВЕ
IT IS HEREBY CERTIFIED THAT THIS CERTIFICATE HOLDER IS RECOGNIZED AS
Разработчика гражданских вертолетов

ПРИ УСЛОВИИ СОБЛЮДЕНИЯ ИМ ПРОЦЕДУР, НОРМ И СТАНДАРТОВ, УСТАНОВЛЕННЫХ АВИАЦИОННЫМИ ПРАВИЛАМИ.
ON CONDITION OF HIS ADHERENCE TO THE REGULATIONS, PROCEDURES, AND STANDARDS ESTABLISHED BY AVIATION REGULATIONS

ДАТА И МЕСТО ВЫДАЧИ
DATE AND PLACE OF ISSUANCE
17 января 1997г.
г. Москва

АВИАЦИОННЫЙ РЕГИСТР

ПОДПИСЬ, ПЕЧАТЬ
Председатель
Авиарегистра МАК
ДОЛЖНОСТЬ, TITLE
В.В.Сушко

Key dates

Key dates

Supplementary certificate on hydro-mechanic control system

- June 2012.

Supplementary certificate on HEMS module

- October 2012.

МЕЖГОСУДАРСТВЕННЫЙ АВИАЦИОННЫЙ КОМИТЕТ
INTERSTATE AVIATION COMMITTEE

АВИАЦИОННЫЙ РЕГИСТР
AVIATION REGISTER

СЕРТИФИКАТ ТИПА
TYPE CERTIFICATE

№ СТ236 – Ансат

ИЗДЕЛИЕ / *PRODUCT*: Вертолет "Ансат"

НАСТОЯЩИЙ СЕРТИФИКАТ, ВЫДАННЫЙ / *THIS CRTIFICATE ISSUED TO*: ОАО "Казанский вертолетный завод", г. Казань, Россия

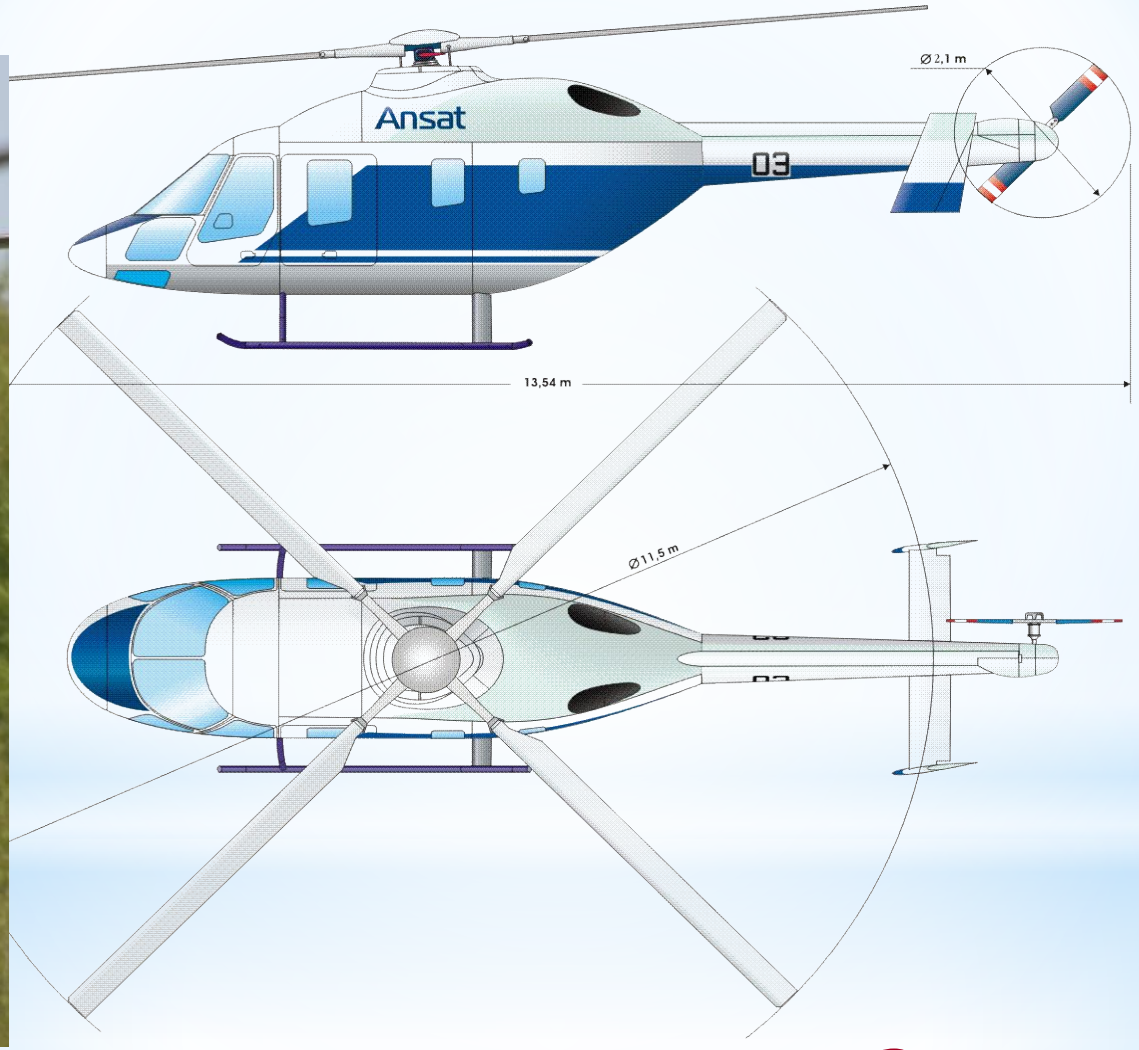
УДОСТОВЕРЯЕТ, ЧТО ТИПОВАЯ КОНСТРУКЦИЯ / *CERTIFIES THAT THE TYPE DESIGN OF THE*

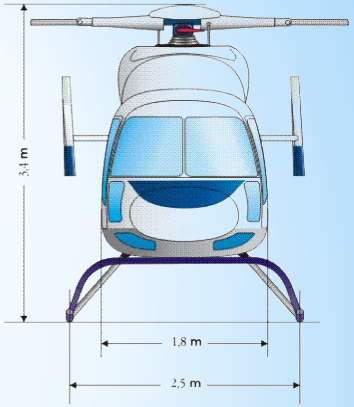
вертолета "Ансат" соответствует требованиям Сертификационного базиса СБ-Ансат-29 от 21.12.2004г.

ОСНОВНЫЕ ЭКСПЛУАТАЦИОННЫЕ ОГРАНИЧЕНИЯ И ХАРАКТЕРИСТИКИ СОДЕРЖАТСЯ В КАРТЕ ДАННЫХ, КОТОРАЯ ЯВЛЯЕТСЯ НЕОТЪЕМЛЕМОЙ ЧАСТЬЮ НАСТОЯЩЕГО СЕРТИФИКАТА
THE PRINCIPAL PERFORMANCE CHARACTERISTICS AND OPERATING LIMITATIONS ARE PRESENTED IN THE DATA SHEET FORMING AN INTEGRAL PART OF THIS CERTIFICATE

ДАТА И МЕСТО ВЫДАЧИ / *DATE AND PLACE OF ISSUANCE*: 29 декабря 2004 г., г. Москва

А.Г. Круглов
ПОДПИСЬ / *SIGNATURE*
ДОЛЖНОСТЬ / *TITLE*: *Председатель Авиационного регистра МАК*





General view

- Meets AP-29 requirements to rotorcraft category A
- Design with single main rotor and tail rotor
- Hinge-free hub of main rotor
- Fiberglass plastic of main and tail rotors' blades
- Two different control systems
- 4-fold redundant Fly-by-wire control system
- hydromechanical control system
- PW-207K engines by Pratt & Whitney (Canada)
- Onboard information check system
- Skid landing gear

Main technical characteristics

MTOW	3,300 kg
Usefull Load	1,184 kg
Max speed	275 km/h
Cruise speed	250 km/h
Optimum speed	220 km/h
Economic speed	120 km/h
Max rate of climb	12 m/s
Max flight range	510 km
Max endurance	3,5 hrs.
Hover ceiling (IGE)	3,300 m
Hover ceiling (OGE)	2,900 m
Service ceiling	5,500 m

Main flight performance

Comprises of two PW-207K engines with single-stage centrifugal compressor and single-stage axial turbine of gas generators

Digital electronic regulators (FADEC) ensures continuous rotation speed of main rotor

Emergency mechanical system of manual control is available

Electric start-up in automatic or manual modes

PW-207K operating modes:

2.5 min OEI	710 hp
Continuous OEI	648 hp
Take-off	630 hp
Max continuous	558 hp

Power plant

- Two shock-absorbing seats Fisher
- Two jettisonable doors
- Traditional controls
- Windscreen wipers

for one pilot (basic variant)

Cockpit

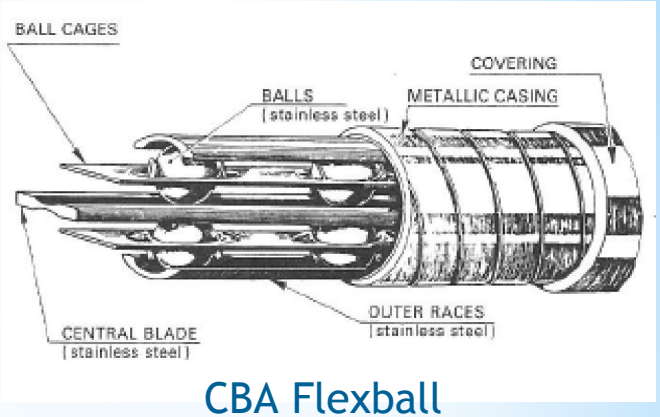
for two pilots (basic variant)

for two pilots

Cockpit

CBA Flexball control linkage

Applied by: Eurocopter (EC120, Ecureuil, Dauphin, Super Puma, EC155, EC175 , EC135, EC145, NH90), Airbus (A320, A330, A380), Dassault Aviation (Falcon family)



CBA Flexball

Areas of application in the helicopters:

- Main and tail rotor control (+ fenestron)
- MR brake control
- Manual engines control
- Rafts (floats) emergency release control
- Fire extinguishers control

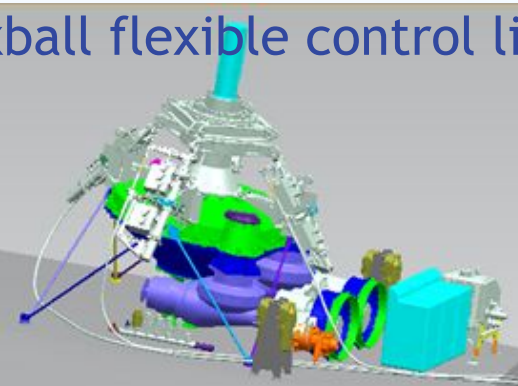
Advantages:

- Light weight
- Ease of routing in the helicopter
- No maintenance is required

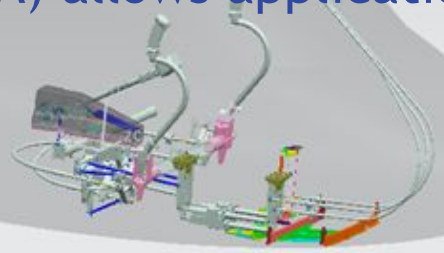
Control system – hydromechanical control system

Current status

- Main and tail rotor mechanical control system with the use of CBA Flexball flexible control linkage is developed



- System provides for installation of electrical actuators
- Stability augmentation system (SAS-A) allows application of electrical actuators



Control system - hydromechanical control system

Control system is electrohydraulic with 4-fold electric redundancy and 2-fold hydraulic redundancy

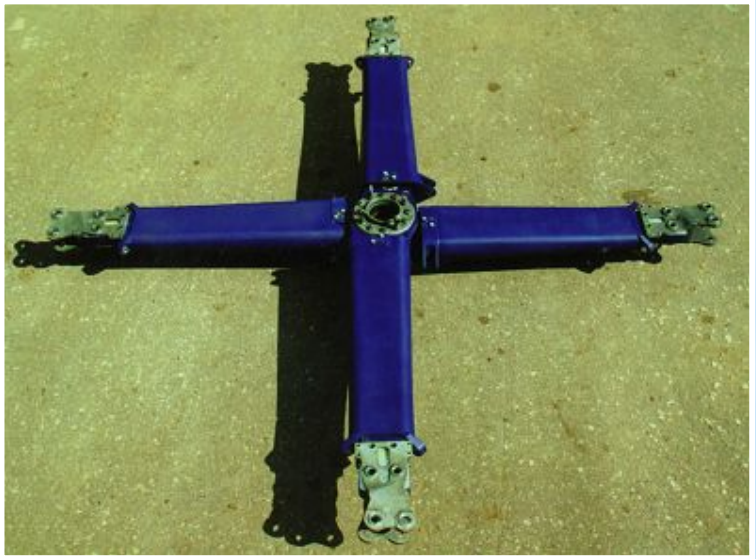
Includes:

- Traditional controls with electric sensors
- Electronic module (computer)
- Panel
- Electrohydraulic control actuator
- Roll rate sensors
- Swash plate
- Rods in aft-booster bay

Fly-by-wire Control system

Main rotor blade is rectangular in plan, made of composites, features erosion-preventive binding and trimmer plate.

Main rotor hug is hinge-free, torsion bar is a resilient element, made of composite materials.
No lubrication required.



Main rotor

Composition:

- two electronic raster multifunctional displays ИМ-14
- computation and formation unit БВФ-А
- indication control panel ПУИ-А

Functions:

- input of parametric and signaling information from engines and systems
- formation and output of information to protected data storage device
- input of pre-flight details
- data gathering and real-time processing, output of data on systems' status and remaining service life

Provides:

- Duplicate check of onboard systems
- Complex intra-cockpit warning
- Data loading and off-loading to portable computer
- Pre-flight and post-flight check of systems' and aggregates' status

Onboard information check system

Features of Ansat operation by Forestry Aviation of South Korea

- Monitoring of forests, fire-fighting and pest control
- Most of the sorties performed at economical speed
- Performs terrain following flights in mountainous areas

Features of Ansat operation by Aviation of Russian Federal Security Bureau

- Supervision and flight crew training
- Nap-of-the-earth flights, hot and high sorties

Features of Ansat operation by Radar-MMS, JSC

- Testing of special electronic equipment, including in the areas of HIRF impact
- Cleared for operation with MTOW 3,600 kg

Operational features

Helicopter No.	Operator	Induction date	Flight hours
10A01	Police of South Korea	2005	155
10A02	Forestry aviation of South Korea	2005	177
10A03	Forestry aviation of South Korea	2005	116
10A04	Forestry aviation of South Korea	2005	108
3013	Radar-MMS, JSC	2005	103
3015	Aviation of Russian Federal Security Bureau	2007	189
3016	Aviation of Russian Federal Security Bureau	2007	173

Operational experience

Main differences:

Derived from Ansat

- Skid landing gear replaced with wheels
- Flight engineer introduced to the crew
- Amended onboard equipment suite

Key tasks:

- Initial pilot training
- Training of instructors

Ansat – U

29.10.2008 – signed Act on State Joint Trials

2 prototypes built

2009 – launch of production

Delivered:
2009 – 6 helicopters
2010 – 2 helicopters
2011 – 5 helicopters
(in production)

Over 40 helicopters to be produced by 2018

Ansat - U

Helicopter No.	Operator	Induction date	Flight hours
330XX	Russian MoD	2009	99
330XX	Russian MoD	2009	142
330XX	Russian MoD	2009	67
330XX	Russian MoD	2009	36
330XX	Russian MoD	2009	227
330XX	Russian MoD	2009	84
330XX	Russian MoD	2010	179
330XX	Russian MoD	2010	193

Operation of Ansat - U

Model	Produced	Leader	Cumulative flight hours
Prototypes	4+2	598	1,510
Ansat; Ansat - K	10	189	1,069
Ansat -U	8	227	1,027
TOTAL	24		3,606

Total flight hours

Description	Assigned service life, h	Service time, years
Helicopter	12000	20
Fuselage	12000	20
Tail boom	4000	20
Main rotor blade	4000	12
Main rotor hub	2000	12
Tail rotor	2000	12
Transmission accessories	4000	12
Swash plate	4000	12
Actuating portion of main rotor control system	4000	12
Actuating portion of tail rotor control system	4000	12
Landing gear	10000 t/l	12

Assigned service life

Supply support

- Facilities of towing, containment, tie-down, transport
- Lift facilities
- Assembly access facilities
- Assembly-dismantling facilities

Ground support facilities

Supply support

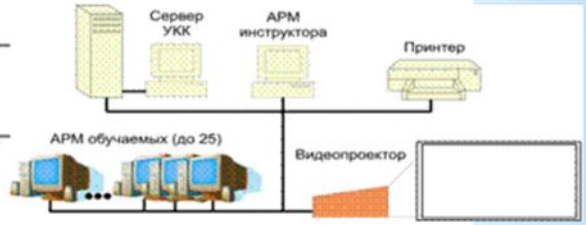
- Operating stock
- Handling facilities of the systems and units
- Helicopter protection facilities on the ground
- Helicopter support tool
- Power source

Ground support facilities

Ground based complex of training

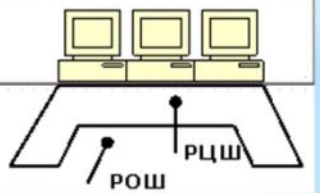
- Visual laboratory resources

- Training computer class



- Training simulator

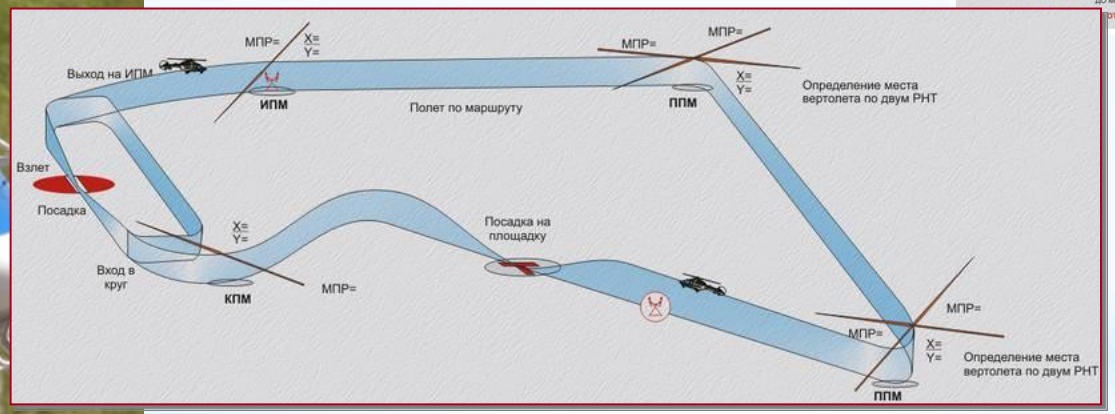
- Flight-navigation simulator



Training Complex - Structure

Назначение

- Design description
- Operation specifics
- Flight crew instructions
- Technical stuff instructions



Состав

- Posters set (6 sets)
- Printed materials (19 books)

- 12 flight crew instructions
- 7 Technical stuff instructions

Training complex visual aid

Purpose

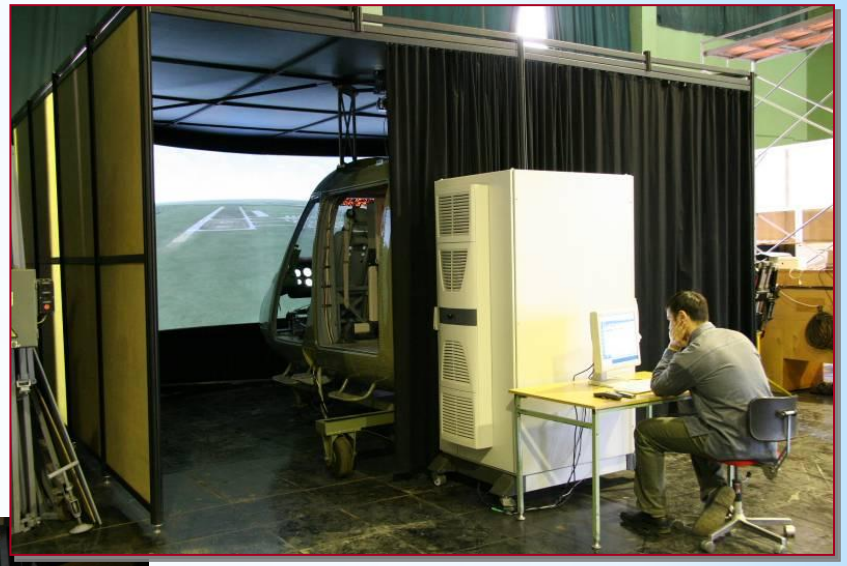
for theoretical training:

- **Computer aided training programs;**
- **electronic technical documentation;**
- **electronic cockpit.**

Training complex – training computer class

Purpose:

- ✔ Aircrew training;
- ✔ intended for initial training;
- ✔ “light” version of flight-simulator;



Возможности

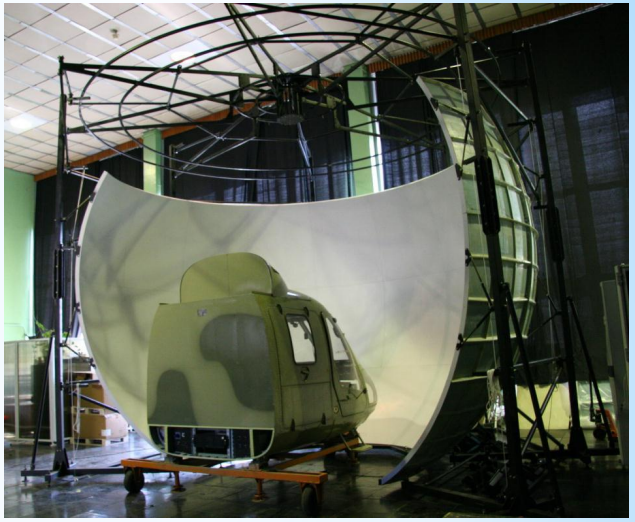
- ✔ Selecting various training exercises
- ✔ Registration Action train ee for analysis

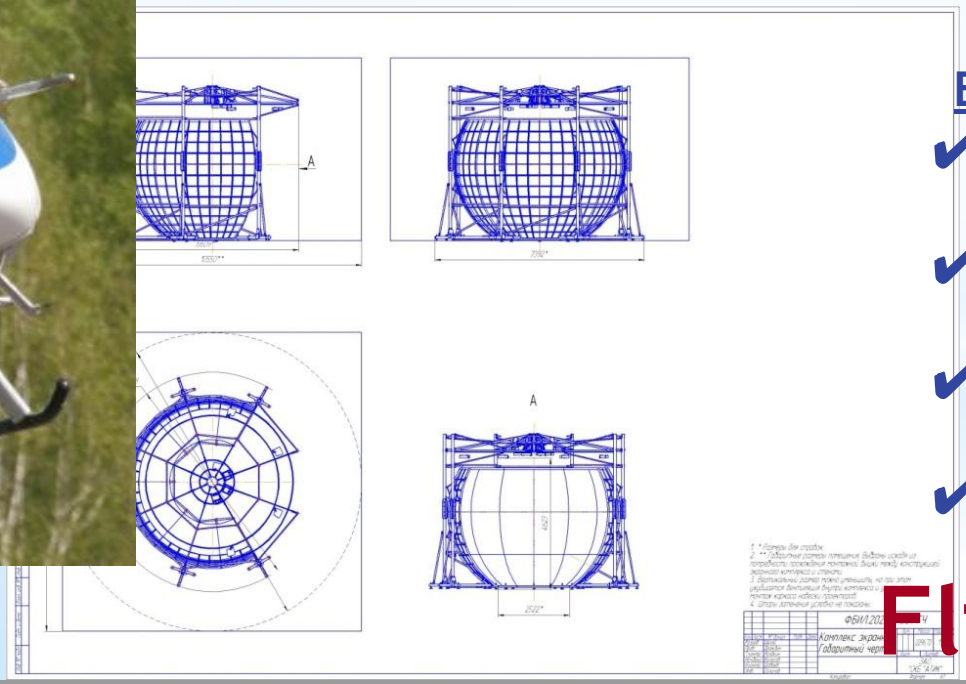
Procedural simulator

Flight simulator

Purpose:

- ✔ Aircrew training
- ✔ Total simulation of the flight
- ✔ Intended for initial training (engine start, takeoff)
- ✔ Crew training on the main training stage on the entire task complex





Effect:

- ✔ reducing the cost of training;
- ✔ reducing (50-70%) fuel consumption;
- ✔ reducing the preparation time;
- ✔ improving safety

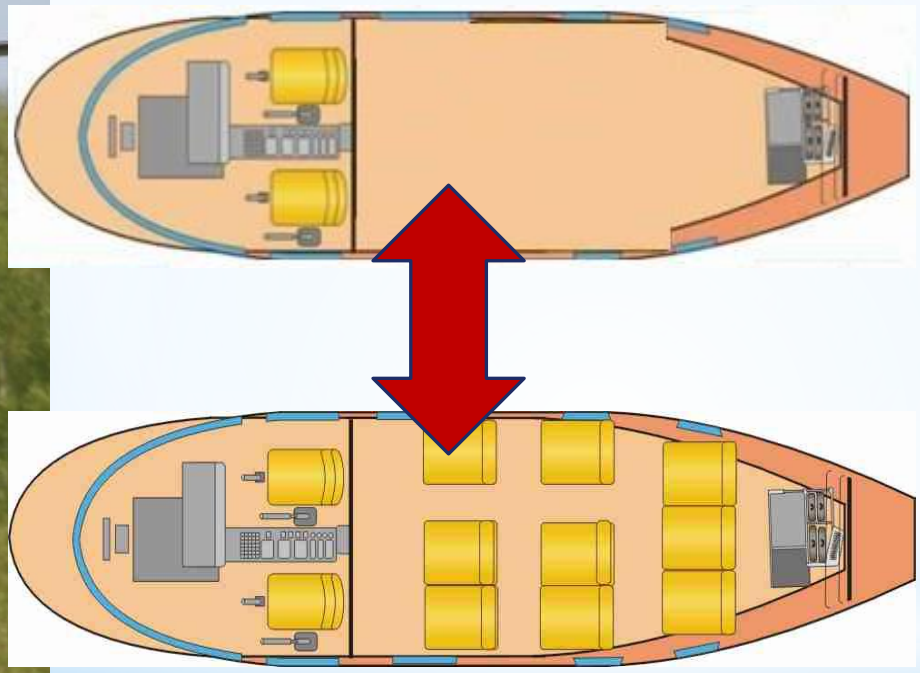
- “One stop shop” concept
- Global Service Net
- Rise of aircrew and technical staff level
- New cooperation format
  - IT technology (web-portal, cMRO system)
  - Complex service contracts
  - Power by the hour scheme

ILS. Development prospects

- CARGO & PASSENGER
- PASSENGER
- EXECUTIVE
- SEARCH & RESCUE
- MEDEVAC
- SCAUT

Configurations

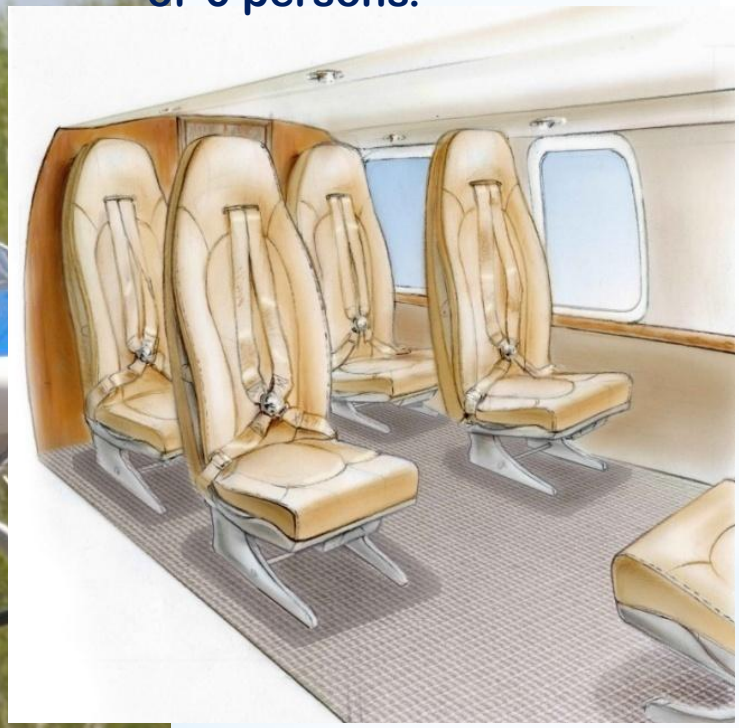
The overall cabin volume is 8 m^3 and there are six cargo retainers available…

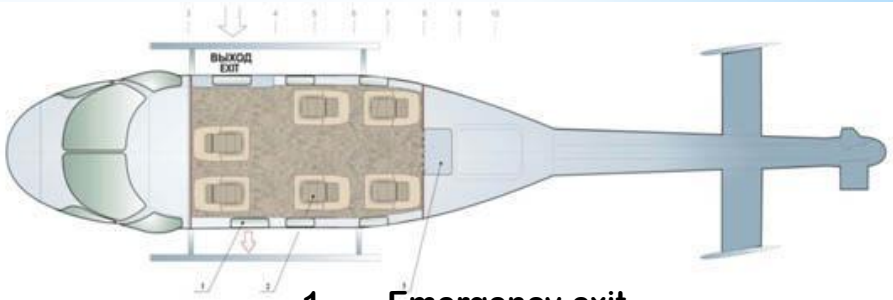


… Simple transformation for 8 passengers transportation.

CARGO & PASSENGER

ANSAT PASSENGER specialized configuration provides comfortable transportation of 6 persons.





1. Emergency exit
2. Passenger seat «Sigma» Helios
3. Wardrobe

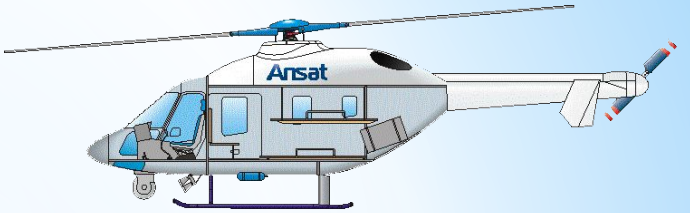
PASSENGER Configuration

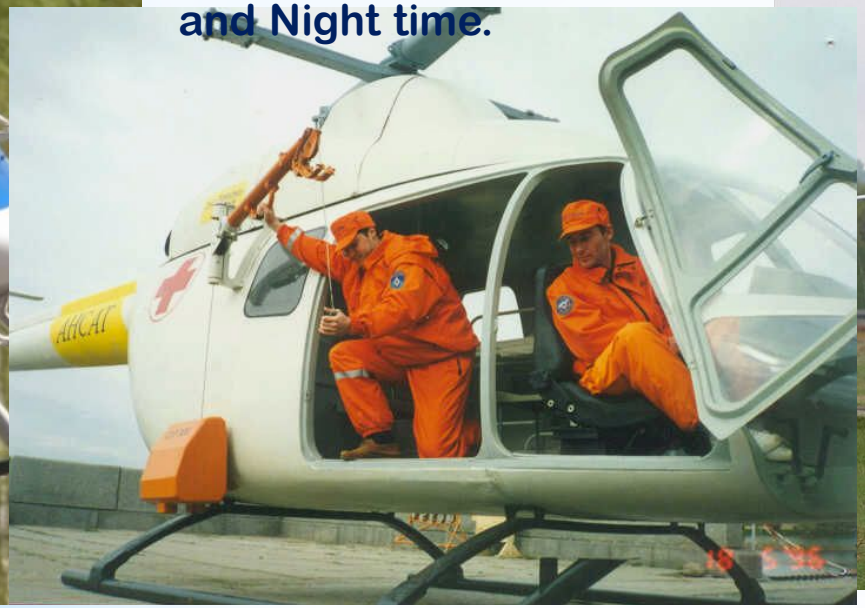
ANSAT EXECUTIVE Configuration is a combination of the high level comfort and mobility.

The cabin provides an opportunity to install different types of interior parts, cloakroom, luggage compartment and lavatory.

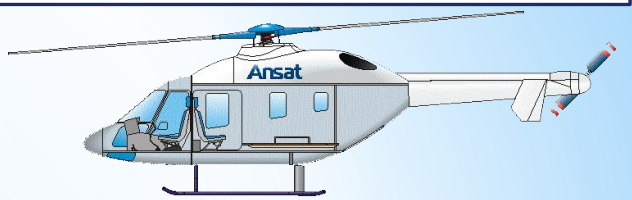
EXECUTIVE Configuration

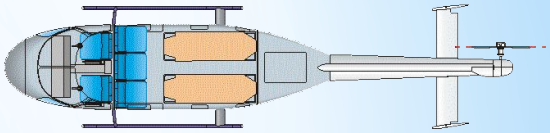
- ANSAT Basic Multipurpose can be easily transformed to Search and Rescue (SAR) configuration by special equipment setting.
- Unique performances of Ansat permit to operate helicopter in all-weather conditions at Day and Night time.





SEARCH & RESCUE





Light medical issues can be solved by ANSAT Basic Multipurpose with limited medical equipment. The Medevac is used for the following purposes:

- Urgent delivery of an emergency medical team to the scene of accident;
- Rendering emergency medical aid to the injured and suffering;
- Evacuation of casualties and survivors to healthcare facilities

MEDEVAC Configurations

Compliance with SAR helicopter requirements

Up to 2 stretchers installation

SAR winch installation

High climb rate (12 m/s)
maximum speed (270 km/h)
wide sliding door,

HOT&HIGH operations

HIGE 3000 м
Service ceiling 4 800 м
OAT -50 до +50

Transportation up to 7 passengers

2 patients and 2 paramedics in HEMS configuration

Largest capacity in light twin turbo class 8 m^3

Functionality

Ansat – is the best proposal for your business.

- Balanced performance
- Price – more than 20% lower than other in class
- Lower operational expenses

It is best in terms price-vs-functionality

Why Ansat

We would be proud to give you more information on the static.

We would be glad to provide you with information about PRICE on every configuration.

We are waiting for your interest.

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Let us know you need Ansat

Thank you for your attention!

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