



ВЕРТОЛЕТЫ РОССИИ



«**ANSAT Helicopter**»



- 1995 - development star
- 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



## Key dates



Supplementary certificate on hydro-mechanic control system

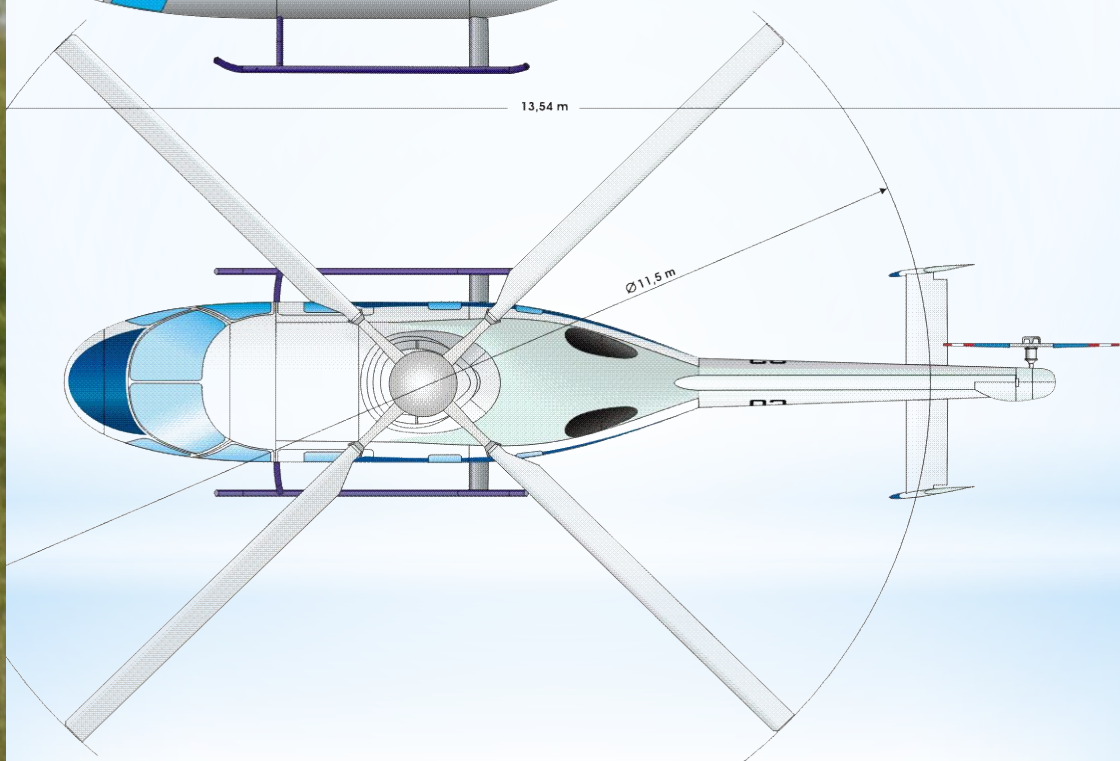
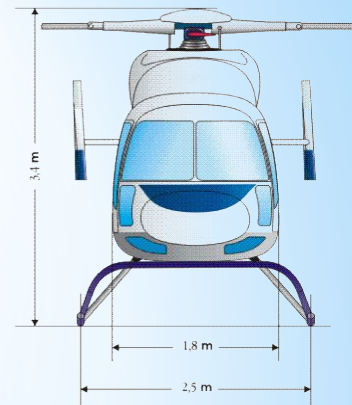
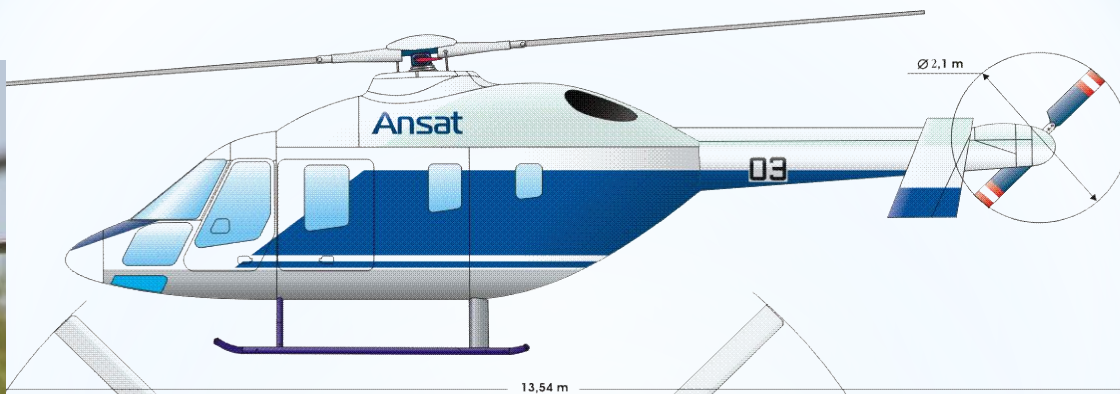
- June 2012.

Supplementary certificate on HEMS module

- October 2012.



## Key dates



## 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

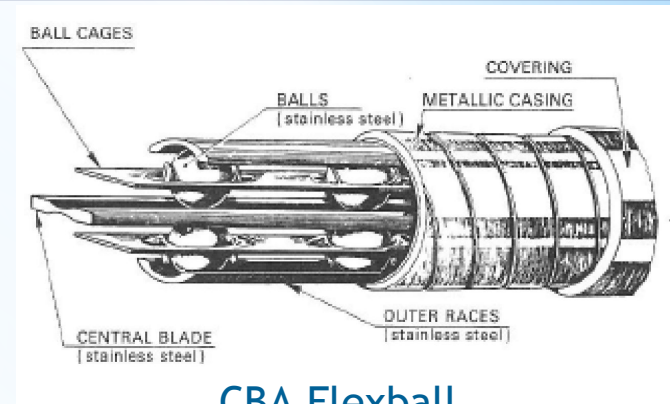


## Cockpit



## 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:

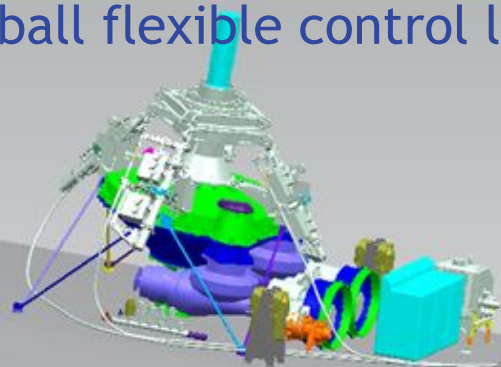
- Light weight
- Ease of routing in the helicopter
- No maintenance is required

**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



WORK Camera TFR-TRI

## 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 hub is hinge-free, torsion bar is a resilient element, made of composite materials.  
No lubrication required.

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



## 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

# Ansats - 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
Ansats; Ansats - K	10	189	1,069
Ansats -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

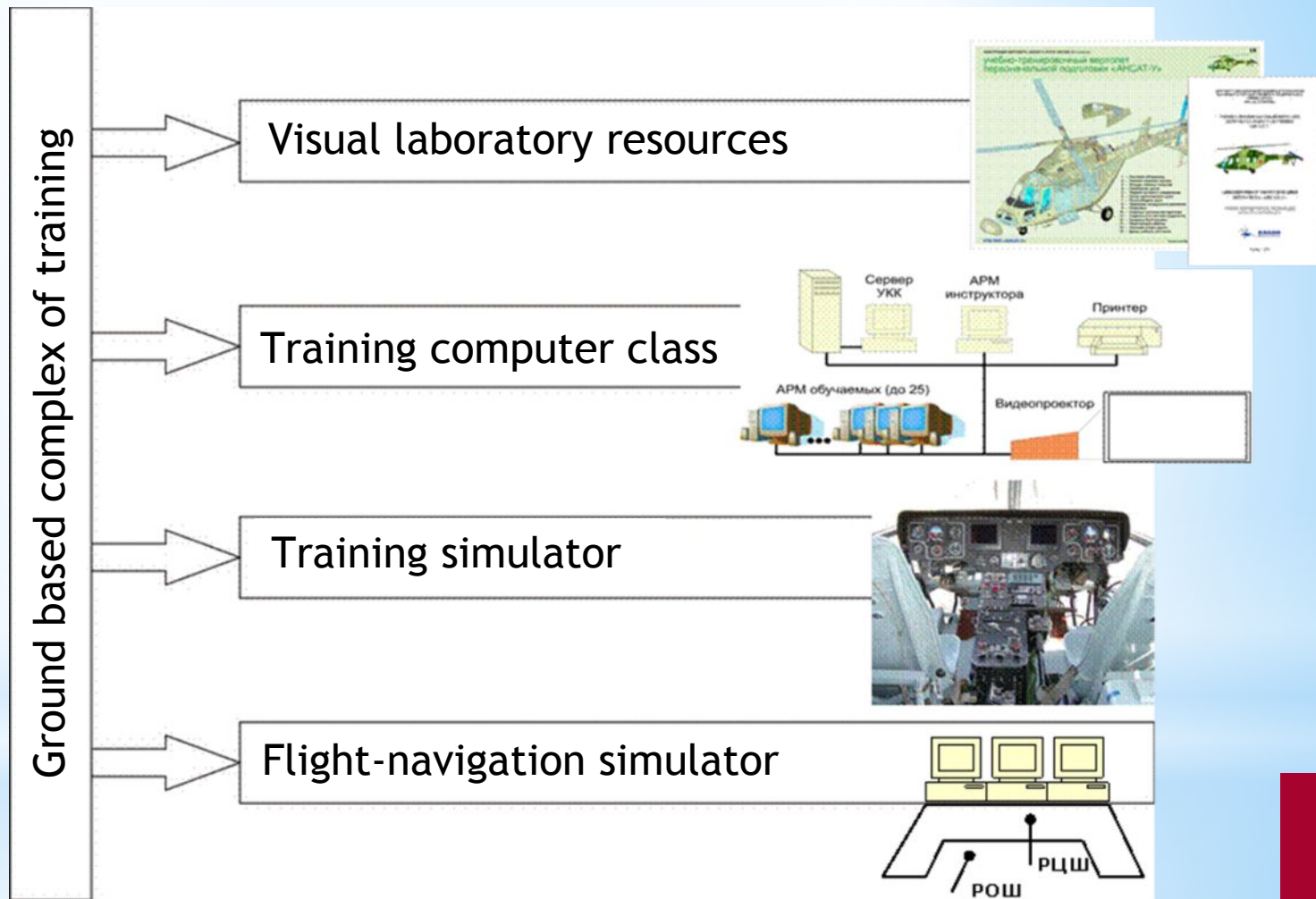


## Supply support

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



## Ground support facilities



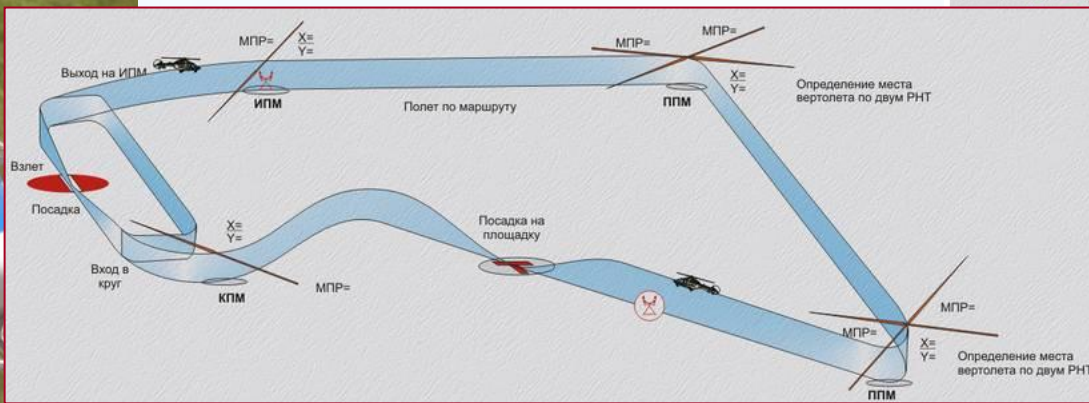
## Training Complex - Structure





## 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

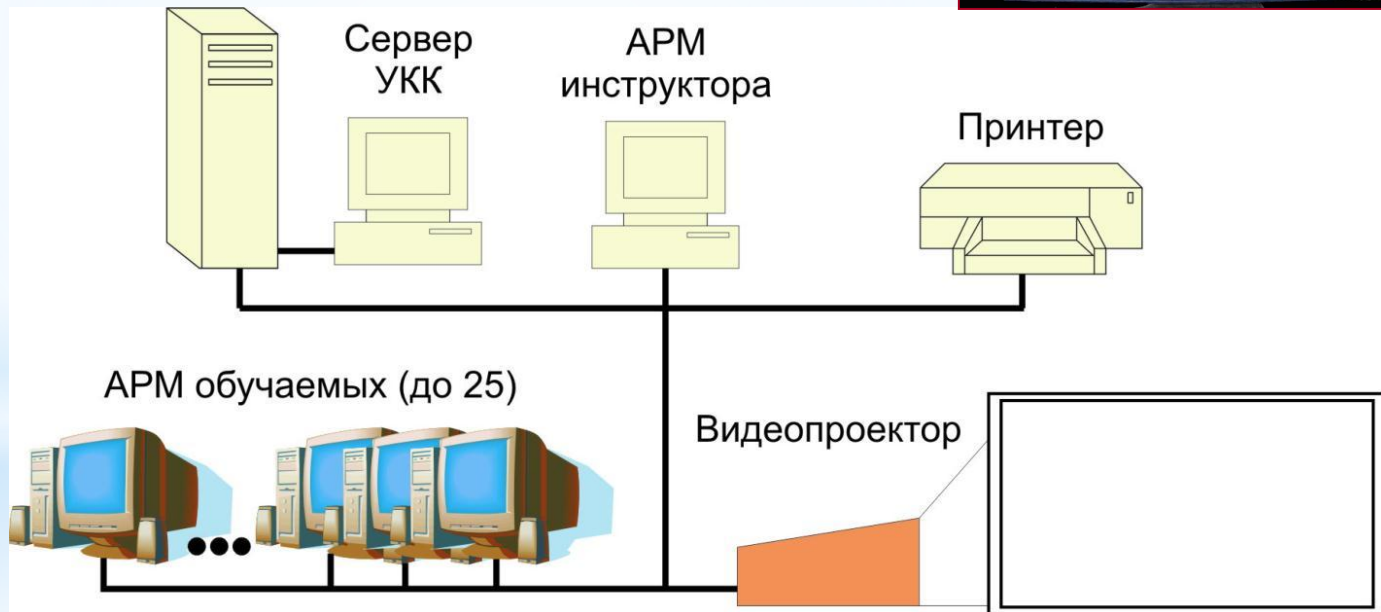
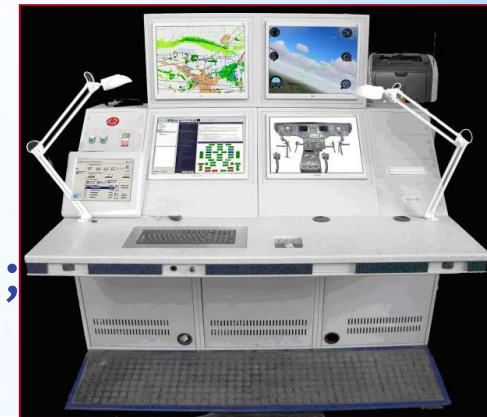
# Training complex visual aid



## Purpose

for theoretical training:

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

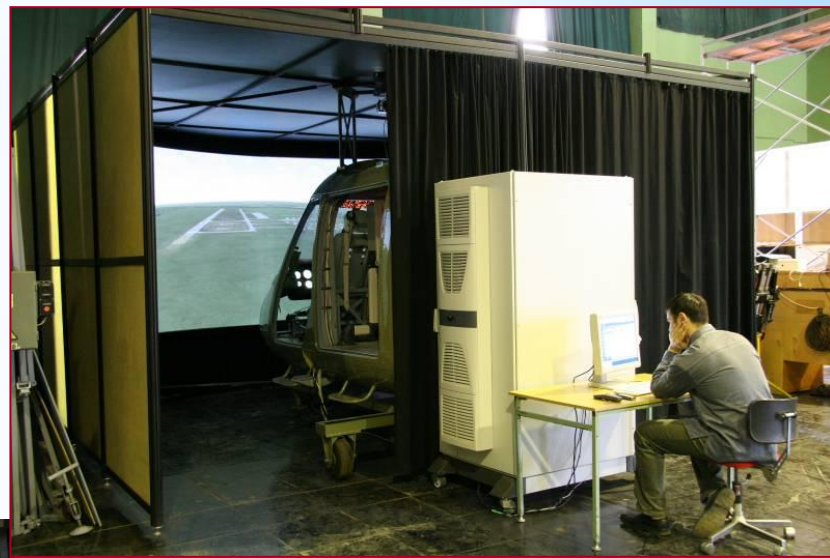


## Training complex - training computer class



## Purpose:

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



## Возможности

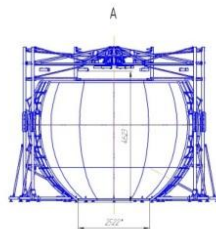
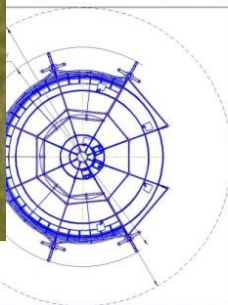
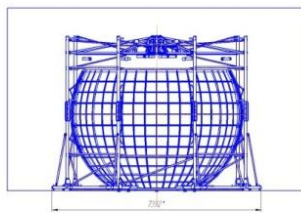
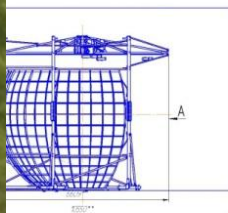
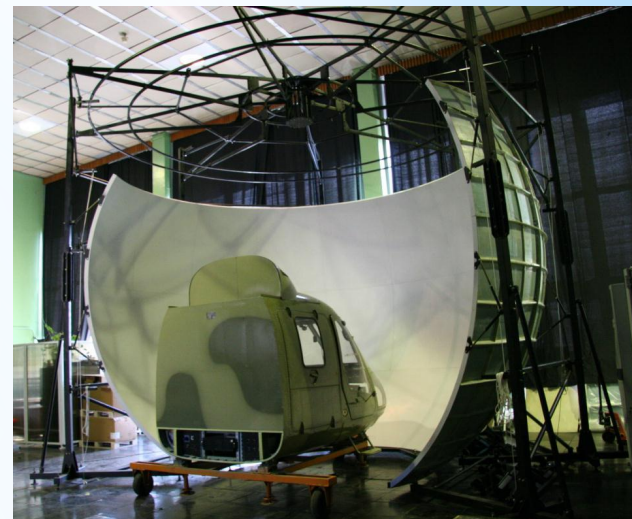
- ✓ Selecting various training exercises
- ✓ Registration Action train ee for analysis

# Procedural simulator



## 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



1. Иллюстрация для справки  
2. \*\* Димензии указаны для справки и не являются окончательными. Димензии конструкции определяются конструкцией.  
3. Димензии указаны для справки и не являются окончательными. Димензии конструкции определяются конструкцией.  
4. Димензии указаны для справки и не являются окончательными. Димензии конструкции определяются конструкцией.

ФЭИ/1.201	
Комплекс эривер	
Габаритный чертёж	
№ документа	1.201
№ чертежа	1.201.01
№ листа	1
№ документа	1.201
№ чертежа	1.201.01
№ листа	1

## Effect:

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

# Flight simulator



- “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

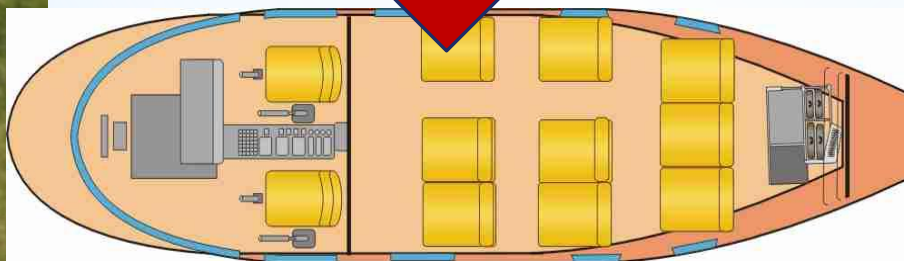
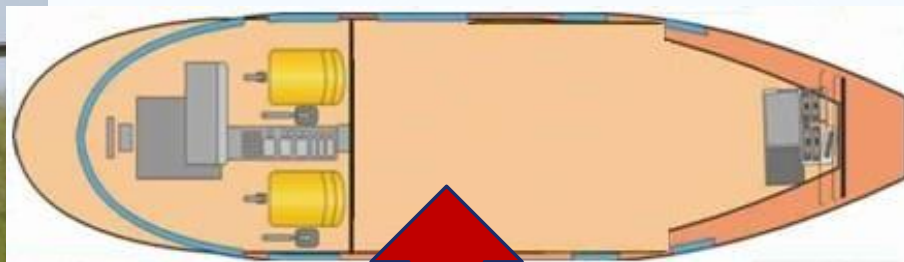


- **CARGO & PASSENGER**
- **PASSENGER**
- **EXECUTIVE**
- **SEARCH & RESCUE**
- **MEDEVAC**
- **SCAUT**

## Configurations



The overall cabin volume is 8 m<sup>3</sup> and there are six cargo retainers available...

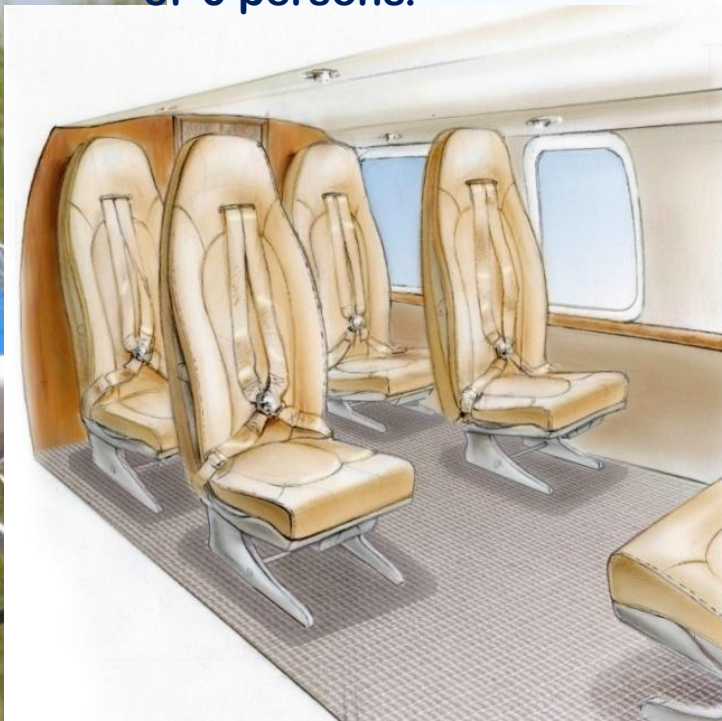
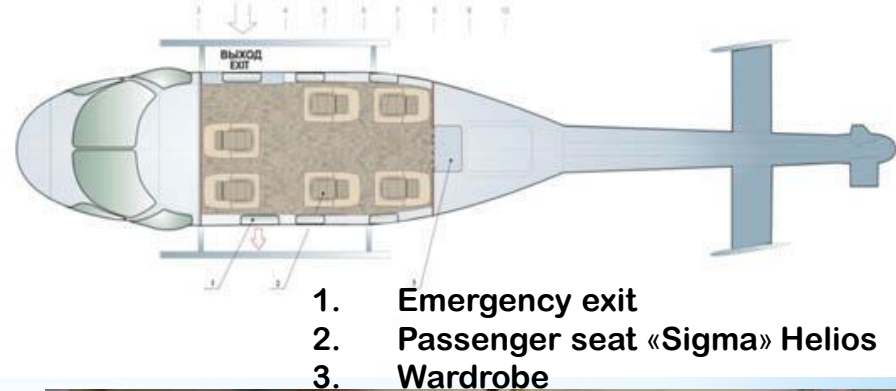


... Simple transformation for 8 passengers transportation.

# CARGO & PASSENGER



**ANSAT PASSENGER**  
specialized configuration  
provides  
comfortable transportation  
of 6 persons.



## PASSENGER Configuration





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

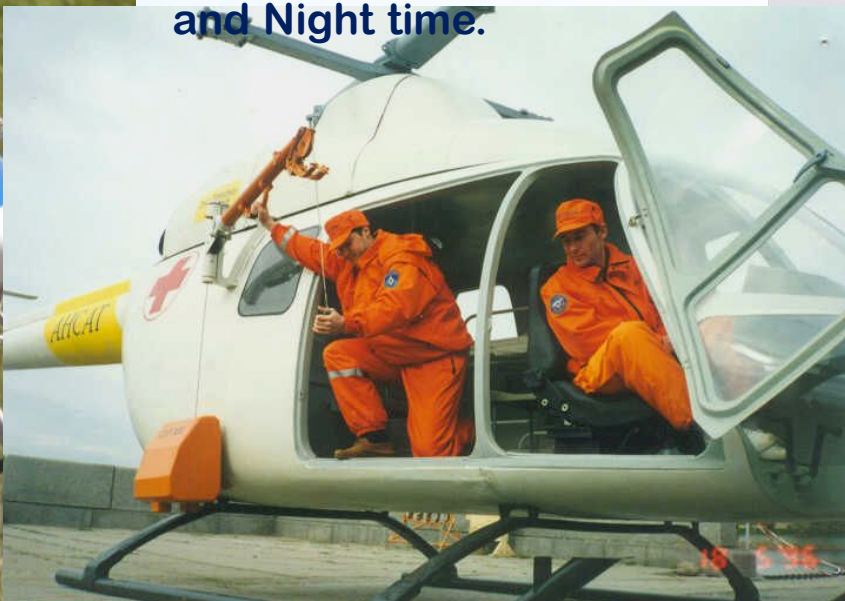
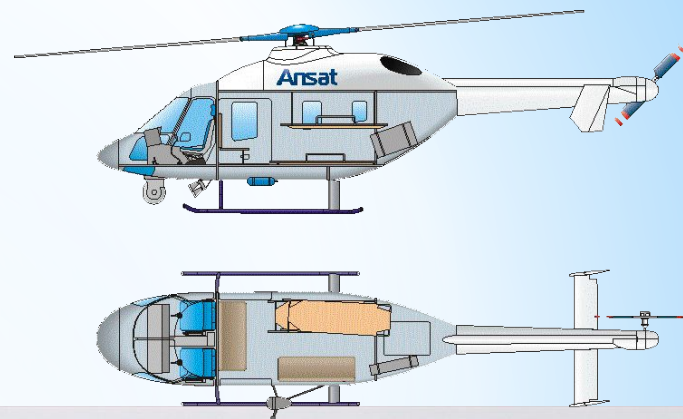
**The cabin provides an opportunity to install different types of interior parts, cloakroom, luggage compartment and lavatory.**

## **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.

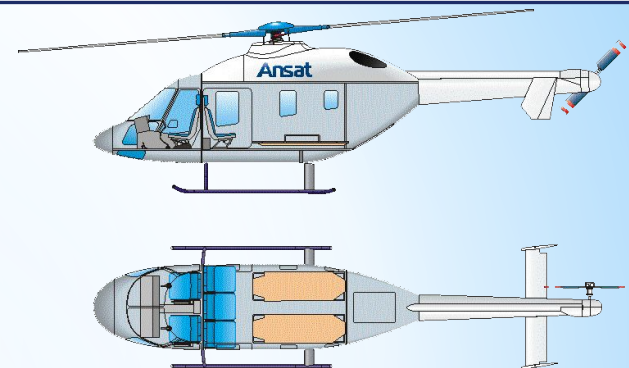


## SEARCH & RESCUE



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



# ВЕРТОЛЕТЫ РОССИИ



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

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

Largest capacity in light  
twin turbo class 8 m<sup>3</sup>



Compliance with SAR  
helicopter requirements

Up to 2 stretchers  
installation

SAR winch  
installation



HOT&HIGH operations

Transportation up to 7  
passengers

2 patients and 2  
paramedics in HEMS  
configuration



## Functionality



**Ansats – 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 Ansats**



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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