EASA Workshop 2017-02-22/23, Cologne

Russian made airplanes in Lithuania

Statistics, Problems, Propositions

CIVILINĖS AVIACIJOS ADMINISTRACIJA

Russian made airplanes in Lithuania

Contents:

- Introduction, self-presentation,
- Statistics,
- Legal problems,
- Technical problems,
- Proposals
- Questions / discussions

Russian made airplanes in Lithuania

Introduction (1):

- Vidmantas Pleta, CAA-LT, Aircraft dept.,
  Deputy-Head of dept. (Part 145/M, CAT/GA/Annex II)

- Kestutis Leonavicius, CAA-LT, Aircraft dept.,
  Chief-specialist (Part 21/G, GA/Annex II)

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Introduction (2): Technical information

#	A/C type	MTOW kg	Seat	Vmax kmph	Production	Made	G
1	YAK-50	900	1	420/320	1972-1986	312	9/-
2	YAK-52	1315/1200	2	470/285	1977-2002	1850 (+)	7/-5
3	**YAK-54 (M)**	**1087/990**	**2**	**415/360**	**1993-2002**	**8 (+6)**	**9/-7**
4	**YAK-55 (M)**	**975/855**	**1**	**450/360**	**1986-1993**	**231**	**9/-6**
5	**YAK-18T**	**1685/1500**	**4/2**	**300/250**	**1973-2002+**	**613****	**6/-3**
6	**SU-26 (M)**	**835**	**1**	**450/370**	**1984-1992**	**65 (+12)**	**12/-10**
7	**SU-29**	**862**	**2**	**450/385**	**1991-**	**60 (+)***	**12/-10**
8	**SU-31**	**780**	**1**	**450/380**	**1992-**	**20 (+)***	**12/-10**

* - SU-26/29/31 total No: 153 (128 for export)

** - most of YAK-18T were destroyed after the service, only appr. 200 left

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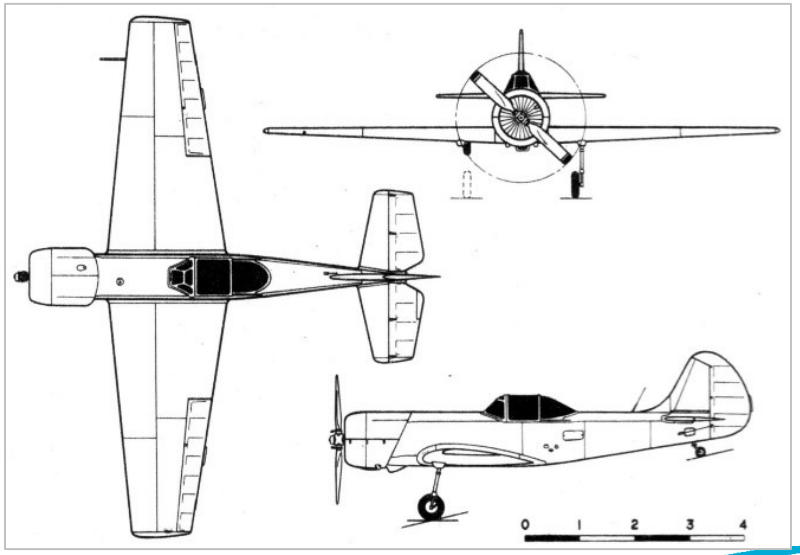
Introduction (3): **Yak-50**

Characteristics

Length:	7.8 m (25 ft 7 in)
Wingspan:	9.5 m (31 ft 2 in)
Wing area:	15.0 m² (161.5 sq ft)
Airfoil:	Clark YH
Empty weight:	750 kg (1653 lb)
MTOW:	910 kg (2006 lb)
Powerplant:	M-14P/PF/R, 360/400/450 hp

Performance

V_{NE}:	450 km/h (243 kt)
V_{MAX}:	400 km/h (216 kt)
V_{CRUISE}:	270 km/h (146 kt)
V_{STALL}:	100 km/h (54 kt)
Range:	500 km (270 nmi)
Rate of climb:	11.3 m/s @ max T/O weight
Wing loading:	60.7 kg/m² (12.43 lb/sqft)
Power/mass:	0.295 kW/kg (0.179 hp/lb)
G-loads:	+9; -6 G
Take-off roll:	100 m (328 ft)
Landing roll:	250 m (820 ft)
Take-off speed:	130 km/h (70 kt)
Landing speed:	110 km/h (59 kt)



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Introduction (4): **Yak-52**

Characteristics:

Crew:	2
Length:	7.745 m (25 ft 5 in)
Wingspan:	9.30 m (30 ft 6¼ in)
Wing area:	15 m² (161.5 ft²)
Empty weight:	1,015 kg (2,238 lb)
Max. takeoff weight:	1,305 kg (2,877 lb)
Powerplant:	M-14P, 268 kW (360 hp)

Performance:

Never exceed speed:	360 km/h (194 kn)
Maximum speed:	285 km/h (154 kn)
Cruise speed:	190 km/h (103 kn)
Stall speed:	85-90 km/h (46-49 kn)
Range:	550 km (296 nmi)
Rate of climb:	7.0 m/s (1,378 ft/min)
Power/mass:	300 W/kg (0.18 hp/lb)

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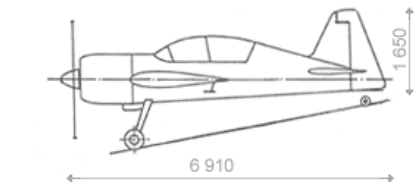
Introduction (5): **Yak-54**

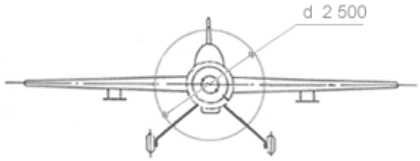
Characteristics

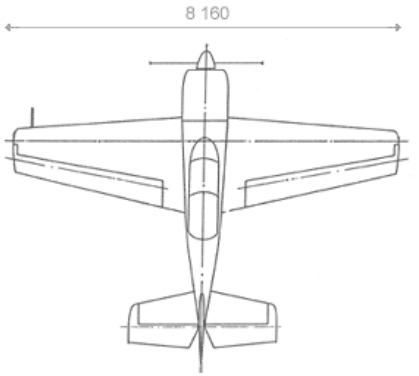
Length:	6.91 m (22 ft 8 in)
Wingspan:	8.15 m (26 ft 9 in)
Wing area:	12.890 m2 (138.75 sq ft)
MTOW:	990/850 kg (2,183/1874 lb)
Powerplant:	M-14P, 270 kW (360 hp)
Propellers:	3-bladed

Performance

Maximum speed:	450 km/h (243 kn)
Stall speed:	111 km/h (60 kn)
Ferry range:	700 km (378 nmi)
Service ceiling:	4,000 m (13,125 ft)
G limits:	+9, -7
Roll rate:	345 degrees a second
Rate of climb:	15.01 m/s (2,955 ft/min)







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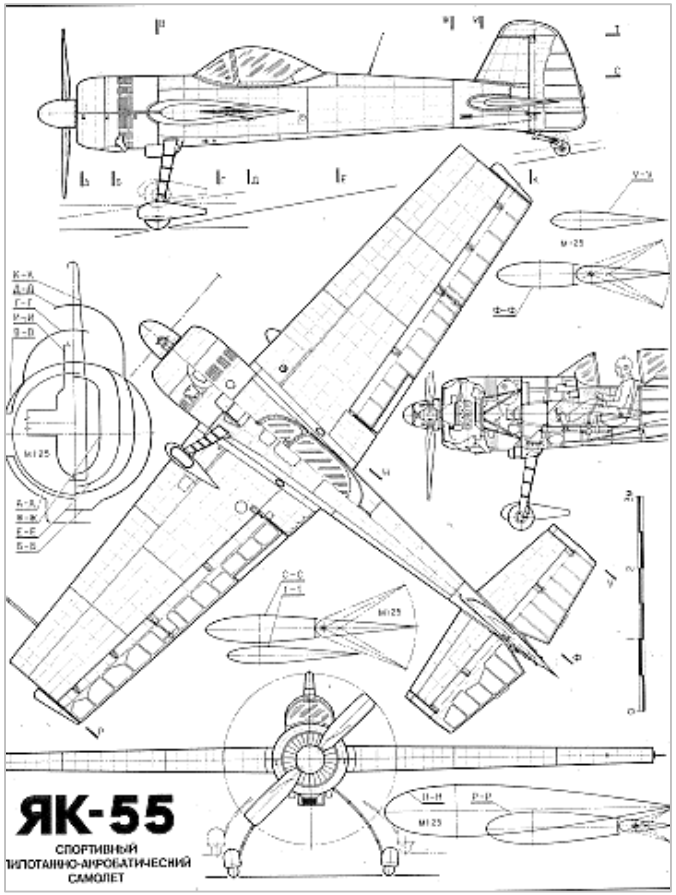
Introduction (6): **Yak-55/M**

Characteristics:

Length:	7.29 m (23 ft 11 in)
Wingspan:	8.10 m (26 ft 7 in)
Wing area:	12.8 m^2 (138 sq ft)
Aspect ratio:	5.13
Gross weight:	855 kg (1,885 lb) aerobatics
Max takeoff weight:	975 kg (2,150 lb) ferry flight
Powerplant:	M14P 268 kW (360 hp)

Performance:

Maximum speed:	305 km/h (165 kn)
Stall speed:	100 km/h (54 kn)
Never exceed speed:	450 km/h (243 kn)
Ferry range:	705 km (381 nmi)
G limits:	+9, -6
Roll rate:	345 degrees per second
Rate of climb:	15.5 m/s (3,050 ft/min)



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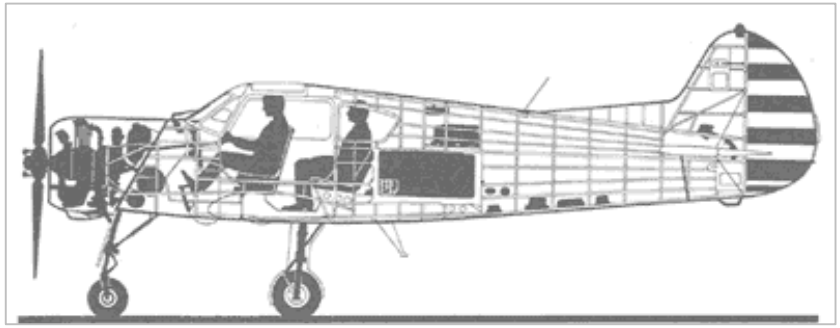
Introduction (7): **Yak-18T**

Characteristics

Seats:	5/2
Length:	8.39 m (27 ft 6 in)
Wingspan:	11.16 m (36 ft 7½ in)
Wing area:	18.8 m² (202.36 ft²)
Airfoil:	Clark YH
Aspect ratio:	6.62:1
Empty weight:	1217 kg (2,683 lb)
MTOW:	1650/1510 kg (3,638 lb)
Powerplant:	M14P, 268 kW (360 hp)

Performance

V_{NE}:	300 km/h (161 kn)
Maximum speed:	262 km/h (141 kn)
Cruise speed:	250 km/h (135 kn)
Stall speed:	114 km/h (61 kn)
Range:	750 km (400 nmi)
Rate of climb:	5.0 m/s (984 ft/min)



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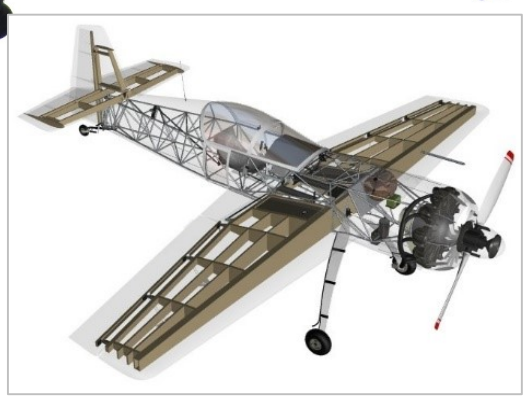
Introduction (8): **Su-26**

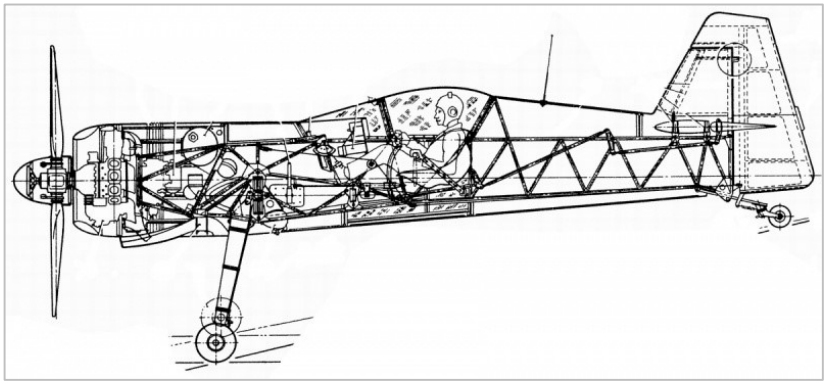
Characteristics

Length:	6.827 m (22 ft 5 in)
Wingspan:	7.80 m (25 ft 7 in)
Wing area:	11.83 m² (127 ft²)
Empty weight:	700 kg (1545 lb)
Loaded weight:	790 (1743 lb)
MTOW:	962 kg (2123 lb)
Powerplant:	M-14P, 270 kW (360 hp)

Performance

Maximum speed:	450 km/h (281 mph)
Cruise speed:	295 km/h (193 mph)
Range:	800 km (500 mi)
Service ceiling:	4,000 m (12,120 ft)
Rate of climb:	18 m/s (3,543 ft/min)
G limits:	12/-10





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Introduction (9): **Su-29**

Characteristics

Length:	7.32 m (24 ft)
Wingspan:	8.20 m (26 ft 11in)
Wing area:	12.24 m² (131.8 sq ft)
Empty weight:	760 kg (1,675 lb)
Max. takeoff weight:	1,100 kg (2,425 lb)
Powerplant:	M-14P, 265 kW (360 hp)

Performance

Never exceed speed:	450 km/h (243 kn)
Maximum speed:	340 km/h (183 kn)
Cruise speed:	295 km/h (159 kn)
Stall speed:	110 km/h (59 kn)
Ferry range:	965 km (520 nmi)
Rate of climb:	18.0 m/s (3,543 ft/min)
Load factor:	12/-10
Roll rate:	360 degree/sec

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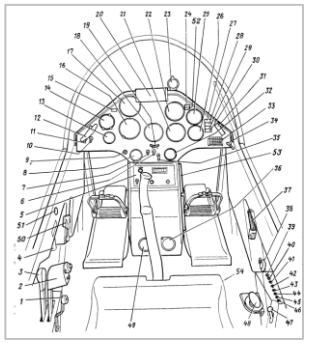
Introduction (1): **Su-31**

Characteristics

Length:	6.83 m (22.41 ft)
Wingspan:	7.80 m (25.59 ft)
Height:	2.76 m (9.06 ft)
Wing area:	11.83 m² (127.34 sq ft)
Empty weight:	700 kg (1,543 lb)
Max. take-off weight:	1,050 kg (2,315 lb)
Powerplant:	M-14PF, 294 kW (400 hp)

Performance

Never exceed speed:	450 km/h (243 kn)
Maximum speed:	331 km/h (178 kn)
Stall speed:	106 km/h (57 kn)
Range:	1,100 km (594 nmi)
Rate of climb:	24 m/s (4,724 ft/min)
G factor:	12/-10
Roll rate:	7 rad/sec (401 deg/sec)



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Statistics: Russian made airplanes in LY register

YAKOVLEV			
#	YAK-	No	Notes
1	52	**36**	Annex II, ex-warbird
2	50	**8**	Annex II, ex-warbird
3	**54**	**1**	**Annex II, ex-warbird (PtF)**
4	**55/M**	**7**	**Annex II, ex-warbird (PtF)**
5	**18T**	**3**	**Annex II, ? (SAS/PtF)**
6	18A	**1**	Annex II, historic
7	12/M/101	**3**	Annex II, historic
	Σ	**59**	2017-01-05 status

SUKHOY			
#	SU-	No	Notes
1	**26/M**	**1**	**Annex II, ex-warbird (PtF)**
2	**31**	**2**	**Annex II, ex-warbird (SAS)**
	Σ	**3**	2017-01-05 status

ANTONOV			
#	AN	No	Notes
1	AN-2	**19**	Annex II, historic

RU airplanes, total No.: **81 (14)**

Russian made airplanes in Lithuania

Legal problems (1): Russian aircraft integration into EASA system:

EASA webpage: EASA / General Aviation / Russian aircraft; two possibilities:

1. **RCofA** at the Member State´s NAA in accordance with art. 21.A.173(b). Applies to the aircraft listed in the SAS:
   - SAS.A.093 for Su-29;
   - SAS.A.094 for Su-31;
   - SAS.A.095 for Yak-18T.
2. **Permit to Fly** under the flight conditions issued by EASA, only for the airplanes registered of one of the Member States at the date of applicability of the Basic Regulation (Yak-54, Yak-55, Su-26).

Problems, questions:

1. Russian a/c: considered as Annex II in 2004 (?), some switched to SAS/PtF in 2008;
2. Complex transition from Annex II to SAS/PtF status (close to impossible: full AW review…);
3. There are some RU airplanes used by Soviet DOSAAF or/and national Air Forces of EU member, legal for Annex II.

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Legal problems (2):

1. Russian problems:

1.1. Type Certification problems in Russia. CIS MAK is no longer approved by the government for the TC activity;

1.2. No legal project/TC owners for Su 29/31 (GSS/Sukhoi/MIG?), Yak 54 (Yakovlev/Arsenyev Progress/Gorki JU2?);

2. EASA problems:

2.1. A/C classification problems (Annex II / EASA TC). Which is superior: Annex II, or EASA T/C list? Examples: vintage German gliders (Bergfalke, Spatz…), CIS airplanes, etc.

2.2. Insufficient EASA competence for Russian made A/C :

- Legal: no basic concept, any “expert” or single NAA may have influence to EASA decisions,
- Technical: new AD’s, etc..

As a result:

2.3. Problems for a NAA. Theory - Russian airplanes are legal in EU, reality – every a/c is an issue for EASA Standardization audit.

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Legal problems (3):

4. NAA problems:

4.1. Mixed legal status (RCofA, PtF, Annex II) for the same type of A/P in the same country. Examples: YAK-18T, Su-29/31, etc. ;

4.2. Mixed legal statuses for the same type of A/P in different countries. Transition problems for foreign a/c (RCofA, PtF, Annex II);

4.3. Problems for a NAA. In theory - Russian airplanes are legal in EU, reality – every a/c is an issue for EASA Standardization audit.

5. Maintenance problems:

5.1. No legal components and spare parts with EASA Form 1 (or equivalent);

5.2. Modification/repair not covered by CS-STAN. No legal DOA/POA;

5.3. Different SB/AD status in different countries;

5.4. Problems with national/Part 66 licenses for mixed (RCofA, PtF, Annex II) airplane status;

5.5. Main components/products (engines, propellers) have no TC , problems between owners, AMO, NAA issuing RtC docs. No EASA Form 1 possible for M-14P engine, V 530 prop.

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Legal problems (4): Yak-18T

1. There are only two possibilities for Yak-18T according EASA:
   - Restricted CofA under EASA.SAS.A.095 iss.7. Total #: **34 airplanes** (14%). No further import is allowed (switch to PtF is allowed);
   - Annex II, ex-military airplanes. **Very limited #** (app. 1%), because Yak-18T wasn't used by DOSAAF, only by national Air Forces in some countries.
2. The rest of Yak-18T (app. **200**, or 85%)???
   - Permit-to-Fly?
   - Annex II (without legal basis)?

EASA.SAS.A.095 iss.7, Section 4 b) : The only **Yak-18T** aircraft eligible for RCoA in accordance with article 21.A.173(b)2 are those with serial numbers listed in this section:

Initial series:	5200509, 5201507, 7201413, 8200916, 8201416
Series 18:	05-18 (22202023842)
Series 21:	08-21 (22202034023), 14-21 (22202034044), 22202034068
Series 23:	01-23 (22202034143)
Series 25:	07-25 (22202040216)
Series 26:	17-26 (22202044785)
Series 27:	07-27 (22202047216), 19-27 (22202047812), 20-27 (22202047817)
Series 32:	01-32, 10-32
Series 33:	01-33, 06-33, 11-33, 12-33
Series 34:	08-34, 10-34
Series 35:	11-35, 12-35, 13-35, 14-35, 15-35
Series n/a:	22202034139, 22202040425, 22202044533, 22202044595, 22202044623, 22202052122
Total #:	**34 a/c**

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Legal problems (5): SU-29/31

1. The same problem as for Yak-18T is with:
   - Sukhoi **Su-29**, EASA.SAS.A.093, iss. 5, Section 4.1 (**11/60**+ a/c)
   - Sukhoi **Su-31**, EASA.SAS.A.094, iss. 5, Section 4.1 (**9/20**+ a/c)

EASA.SAS.A.093: The only **Su-29** aircraft eligible for a RCoA in accordance with article 21.A.173(b)2 are those with serial numbers listed in this section:
74-05, 75-03, 75-04, 76-03, 77-05, 78-02, 78-03, 80-01, 76-021, 90-08, 001-01 (total: 11 a/c)

EASA.SAS.A.094: The only **Su-31** aircraft eligible for a RCoA in accordance with article 21.A.173(b)2 are those with serial numbers listed in this section:
40546, 40579, 01-03, 02-05, 04-01, 04-02, 05-05, 06-01, 06-04 (total: 9 a/c)

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Technical problems (1):

1. Different limited service life for the same components in different RU planes.
2. SB/AD are different in different countries. National LT-AD's:
   2.1. **CAI-TSD-008/2000** „Cracks on the wing attaching fittings" – one time NDT (magnetic particle) inspection of all wing-fuselage attachment fittings before next flight; **(Yak 55);**
   2.2. **CAI-TSD-017/2001** „Maintenance" – for aircrafts with low flight-hours (100 FH or less per year) and without annual inspection according maintenance data: 100 FH inspection every year; (Yak 12, Yak 18, **Yak 18T**, Yak 50, Yak 52, **Yak 54, Yak 55**, SU 26, **SU 29, Su 31**);
   2.3. **CAA-TSD-001/2006** „Life limit of the carburetor membrane" – to change carburetor membrane at every 6 years (K-14A and K-14P carburetors). (Yak 12, Yak 18, **Yak 18T**, Yak 50, Yak 52, **Yak 54, Yak 55**, SU 26, **SU 29, Su 31**);
   2.4. **CAA order** "Time limits for Annex II a/c" – no time limits for Annex II a/c and components if alternative means are approved by CAA.

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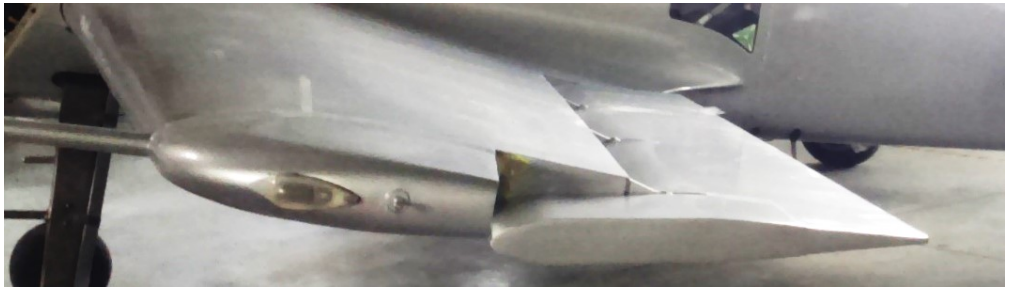
Technical problems (2). Modification/repair:

Modifications:



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Technical problems (3). Modification/repair:

Most popular modifications of RU A/C:

- Taildragger mod. (Yak-52);
- Additional integral fuel tanks;
- Smoke system;
- Western propellers;
- Western instruments, avionic (nav/comm, transp., ELT…);
- Fuel system (injection);
- New lightweight alternator;
- Oil drainage system;
- New hoses, spark wires;
- New cockpit interior;
- Seat belts;
- Landing, nav. lights;
- Tow hooks (esp. Yak-55);
- ...

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Propositions:

1. Keep it flexible. Allow different solutions for different countries and owners (RCofA, PtF, Annex II). LT-CAA would like to keep Annex II status for all of RU aircraft;
2. Keep it simple. One basic solution (one of RCofA/PtF/Annex II) for every country, with a possibility for exemptions;
3. Keep it safe. Some of mod's and deviations (illegal for EASA) increases safety, especially for RU aircraft;
4. Cooperation. Some form of international cooperation in the Annex II area under the EASA umbrella would be very useful (especially for 3-rd country a/c):

- Between NAA's issuing national CofA's for RU A/C (UK CAA, PL CAA, LBA …)
- Between NAA's recognizing foreign national CofA's for RU A/C (LBA, FOCA, DGAC..)
- Between NAA's recognizing national approvals for specialists: maintenance, AW inspectors, etc.

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Conclusions:

1. Present situation is quite messy;
2. More freedom and flexibility for GA (esp. Annex II a/c);
3. More responsibility and authority for NAA (esp. for Annex II and/or 3-rd country a/c);
4. More cooperation/collaboration between NAA-s (incl. Annex II area).

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Thank you for your attention!

Questions?
Propositions?
Discussion?