

Příloha 1 Rychlostní rekordy

Kategorie Microlight

| Délka okruhu | Výkon | Datum | Pilot | Letoun |
|--------------|-------------|--------------|---------------------------------------|---------------------------|
| RAL1E | | | | |
| 50 km | 189,87 km/h | 29. 9. 2012 | Jean LucSoullier (BEL) | Colomban MC-30 Luciole |
| RAL1T | | | | |
| 50 km | 175,87 km/h | 8. 6. 2006 | Jan Lukeš (CZE) | TeST TST-9 Junior 2002 |
| 50 km | 157,44 km/h | 30. 6. 1995 | Serge Ferrari (FRA) | Micro B Proto |
| 50 km | 142,60 km/h | 4. 6. 1994 | Serge Ferrari (FRA) | Micro B Proto |
| 100 km | 166,80 km/h | 14. 6. 2009 | Jan Lukeš (CZE) | TeST TST-9 Junior 2002 |
| 100 km | 163,61 km/h | 10. 10. 1995 | Serge Ferrari (FRA) | Micro B Proto |
| RAL2T | | | | |
| 50 km | 274,80 km/h | 15. 12. 2011 | Eric De Barberin - Barberini (FRA) | Shark |
| 50 km | 262,00 km/h | 11. 3. 2007 | Jiří Unzeitig (CZE) | VL-3 |
| 50 km | 186,00 km/h | 13. 4. 2002 | Julian Harris (GBR) | Jabiru UL-450 |
| 100 km | 282,40 km/h | 23. 12. 2011 | Eric De Barberin - Barberini (FRA) | Shark |
| 100 km | 268,40 km/h | 11. 3. 2007 | Jiří Unzeitig (CZE) | VL-3 |
| 100 km | 187,00 km/h | 14. 4. 2002 | Julian Harris (GBR) | Jabiru UL-450 |
| 500 km | 255,13 km/h | 22. 12. 2011 | Eric De Barberin - Barberini (FRA) | Shark |
| 500 km | 178,78 km/h | 23. 8. 2000 | Patrick Watermann (SUI) | Comcokarus C42 |
| 500 km | 162,16 km/h | 13. 8. 1999 | Patrick Watermann (SUI) | Comcokarus C42 |

Tabulka 1 Rychlostní rekordy na uzavřeném okruhu kategorie Microlight [2]

| Kategorie | Výkon | Datum | Pilot | Letoun |
|-----------|-------------|--------------|-------------------------------|--------|
| RAL2T | 323,82 km/h | 16. 12. 2015 | Alberto Rodolfo Porto(ITA) | Risen |

Tabulka 2 Absolutní rychlostní rekord kategorie Microlight [2]

| Výkon | Datum | Pilot | Letoun |
|--------------|--------------|--------------------------------------|---------------------------|
| RAL1E | | | |
| 189,87 km/h | 29. 9. 2012 | Jean LucSoullier (BEL) | Colomban MC-30 Luciole |
| RAL1T | | | |
| 194,20 km/h | 11. 10. 2003 | Pavel Škarytka (CZE) | B-612 |
| 168,55 km/h | 29. 6. 1995 | Serge Ferrari (FRA) | Micro B Proto |
| 151,71 km/h | 1. 6. 1994 | Serge Ferrari (FRA) | Micro B Proto |
| RAL2T | | | |
| 323,82 km/h | 16. 12. 2015 | Alberto Rodolfo Porto (ITA) | Risen |
| 300,51 km/h | 30. 6. 2015 | Eric De Barberin - Barberini(FRA) | Shark |
| 285,78 km/h | 15. 9. 2012 | Gilles Michel (FRA) | Shark |

Tabulka 3 Rychlostní rekordy na rovném úseku kategorie Microlight [2]

Kategorie Aeroplane

| Délka Dráhy | Výkon | Datum | Pilot | Letoun |
|---------------|-------------|--------------|--------------------------------|------------------------|
| C-1a/o | | | | |
| 3 km | 360,13 km/h | 1. 12. 2010 | Gúnar Armin Halboth(BRA) | CEA-308 |
| 3 km | 351,39 km/h | 28. 8. 1999 | Peter Scheichenberger (AUT) | Bede BD-5B |
| 3 km | 343,08 km/h | 30. 8. 1992 | Michael S. Arnold (USA) | Arnold AR-5 |
| C-1a | | | | |
| 3 km | 521,08 km/h | 22. 8. 2015 | Gúnar Armin Halboth(BRA) | Anequim |
| 3 km | 466,83 km/h | 15. 11. 1998 | Jon M. Sharp (USA) | Sharp DR 90 Nemesis |
| 3 km | 456,65 km/h | 3. 8. 1996 | Jon M. Sharp (USA) | Sharp DR 90 Nemesis |
| 15 km | 511,19 km/h | 21. 8. 2015 | Gúnar Armin Halboth(BRA) | Anequim |

Tabulka 4 Rychlostní rekordy na dráze kategorie Aeroplane [2]

| Délka okruhu | Výkon | Datum | Pilot | Letoun |
|--------------|-------------|--------------|---------------------------|--------------------|
| C-1a/o | | | | |
| 100 km | 326,80 km/h | 12. 12. 2010 | Gúnar Armin Halboth (BRA) | CEA-308 |
| 100 km | 297,20 km/h | 3. 8. 1982 | Charles T. Adrews (USA) | Monnett Monex |
| 500 km | 293,04 km/h | 3. 8. 1982 | Charles T. Andrews (USA) | Monnett Monex |
| 1000 km | 193,83 km/h | 20. 5. 1993 | Wilhelm Lischak (AUT) | LW-02 Experimental |
| 1000 km | 187,15 km/h | 24. 5. 1987 | Wilhelm Lischak (AUT) | LW-02 Experimental |
| 1000 km | 171,43 km/h | 21. 6. 1986 | Wilhelm Lischak (AUT) | LW-02 Experimental |
| 2000 km | 178,19 km/h | 18. 6. 1988 | Wilhelm Lischak (AUT) | LW-02 Experimental |
| C-1a | | | | |
| 100 km | 490,14 km/h | 22. 8. 2015 | Gúnar Armin Halboth (BRA) | Anequim |
| 100 km | 389,57 km/h | 12. 9. 2010 | Richard Young (USA) | W. Air Race |
| 100 km | 382,87 km/h | 28. 4. 2004 | Robert L. Gibson (USA) | Cassut IIM |
| 500 km | 493,74 km/h | 23. 8. 2015 | Gúnar Armin Halboth (BRA) | Anequim |
| 500 km | 387,40 km/h | 17. 4. 2015 | Klaus H. Savier (USA) | RutanVariEze |
| 500 km | 344,73 km/h | 2. 8. 1983 | John E. Saum (USA) | CassuttSpecial |
| 1000 km | 327,78 km/h | 14. 3. 1992 | Klaus H. Savier (USA) | RutanVariEze |
| 1000 km | 299,63 km/h | 6. 8. 1985 | John E. Saum (USA) | CassuttSpecial |
| 1000 km | 272,32 km/h | 30. 6. 1967 | Edgar J. Leshner (USA) | LeshnerTeal |
| 2000 km | 322,06 km/h | 14. 3. 1992 | Klaus H. Savier (USA) | RutanVariEze |
| 2000 km | 228,26 km/h | 20. 10. 1967 | Edgar J. Leshner (USA) | LeshnerTeal |
| 2000 km | 183,43 km/h | 10. 5. 1952 | Albert Rebillon (FRA) | - |

Tabulka 5 Rychlostní rekordy na uzavřeném okruhu kategorie Aeroplane [2]

| Výkon | Datum | Pilot | Letoun |
|-------------|-------------|---------------------------|-----------------------|
| C-1a/o | | | |
| 169,15 km/h | 16. 7. 1990 | Alain Flottard (FRA) | Janowski J-5 Marco |
| 149,39 km/h | 20. 7. 1990 | Alain Flottard (FRA) | Janowski J-5 Marco |
| 148,24 km/h | 17. 7. 1990 | Alain Flottard (FRA) | Janowski J-5 Marco |
| C-1a | | | |
| 440,00 km/h | 28. 7. 2008 | Robin Austin (AUS) | SoneraiSpecial |
| 404,30 km/h | 17. 5. 2008 | Robin Austin (AUS) | SoneraiSpecial |
| 262,83 km/h | 28. 7. 2014 | Elliot D. Seguin (USA) | SeguinWasabi |

Tabulka 6 Rychlostní rekordy na uznané dráze kategorie Aeroplane [2]

| Výkon | Datum | Pilot |
|-------------|-------------|-------------------------|
| C-1a/o | | |
| 70,95 km/h | 29. 8. 1998 | Lyle Johnson (CAN) |
| C-1a | | |
| 139,90 km/h | 8. 10. 1992 | Victor Davies (GBR) |
| 137,49 km/h | 26. 6. 1996 | C. Nelson Gain (CAN) |
| 136,95 km/h | 4. 10. 1992 | Victor Davies (GBR) |

Tabulka 7 Rychlostní rekordy na uznané dráze tam a zpět kategorie Aeroplane [2]

| Výkon | Datum | Pilot | Letoun |
|-------------|--------------|------------------------------|------------------------|
| C-1a/o | | | |
| 329,10 km/h | 1. 12. 2010 | Gúnar Armin Halboth (BRA) | CEA-308 |
| 292,15 km/h | 19. 2. 1989 | Brian Dempsey (USA) | Monnett Sonerai |
| 227,64 km/h | 7. 6. 1988 | Yves Duval (FRA) | - |
| C-1a | | | |
| 454,77 km/h | 31. 10. 1998 | Jon M. Sharp (USA) | Sharp DR 90 Nemesis |
| 398,34 km/h | 19. 7. 1986 | Kirk D. Hanna (USA) | - |
| 377,53 km/h | 16. 10. 1982 | Paul Musso (USA) | - |

Tabulka 8 Rychlostní rekordy na rovném úseku o délce 15/25 km kategorie Aeroplane [2]

Příloha 2 Statistika typově podobných letounů

| | Cassutt III Racing Model [8] | Pottier P.70S [9] | Bede BD-5B [10] | Monnett Sonerai [11], [12] | Rutan VariEze [13] | Pottier P.80S [14] |
|---------------------------|---|----------------------------------|--------------------------------|---|-----------------------------------|-----------------------------------|
| Země | USA | FRA | USA | USA | USA | FRA |
| První let | 1954 | 1970 | 1971 | 1971 | 1975 | 1977 |
| FAI kategorie | C-1a | C-1a/o, C-1a | C-1a/o | C-1a/o, C-1a | C-1a | C-1a |
| MTOW [kg] | 386 | 325 | 299 | 340 | 476 | 470 |
| l [m] | 4,572 | 5,850 | 6,553 | 5,080 | 6,770 | 6,500 |
| S [m ²] | 6,271 | 7,200 | 4,404 | 6,968 | 4,980 | 7,800 |
| λ [–] | 3,333 | 4,753 | 9,751 | 3,704 | 9,203 | 5,417 |
| Pohonná jednotka | Continental O-200 | VW | Hirth 2706 | GPT 1 FD 2180 cc | Continental O-200 | VW |
| P_{max} [kW] | 75 | 30 | 52 | 56 | 75 | 67 |
| v_{max} [km/h] | 370 | 180 | 373 | 362 | 314 | 230 |
| v_{s0} [km/h] | 109 | - | 89 | 89 | 89 | - |
| v_{ymax} [m/s] | 7,62 | 0,70 | 9,75 | 5,08 | 8,13 | 1,70 |
| G/S [N/m ²] | 604 | 443 | 666 | 479 | 937 | 591 |
| P_{max}/G [kW/N] | 0,0198 | 0,0094 | 0,0177 | 0,0168 | 0,0161 | 0,0145 |
| $c_{L\ v_{max}}$ [–] | 0,093 | 0,289 | 0,101 | 0,077 | 0,201 | 0,236 |
| $c_{L\ max}$ [–] | 1,075 | - | 1,779 | 1,278 | 2,504 | - |

Tabulka 9 Typově podobné letouny

| | Mitchell U-2 Superwing [15] | Monnett Moni [16] | Janowski J-5 Marco [17], [18] | Monnett Monex [19] | Facet Opal [20] | Sharp DR 90 Nemesis [21] |
|---------------------------|--|----------------------------------|--|-----------------------------------|--------------------------------|---|
| Země | USA | USA | POL | USA | AUS | USA |
| První let | 1980 | 1981 | 1983 | 1985 | 1988 | 1991 |
| FAI kategorie | C-1a/o | C-1a/o | C-1a/o | C-1a/o | C-1a/o | C-1a |
| MTOW [kg] | 249 | 227 | 290 | 295 | 320 | 350 |
| l [m] | 10,363 | 8,382 | 8,077 | 5,080 | 6,600 | 6,248 |
| S [m ²] | 12,635 | 6,968 | 6,271 | 4,274 | 10,000 | 6,132 |
| λ [–] | 8,500 | 10,083 | 10,403 | 6,038 | 4,356 | 6,366 |
| Pohonná jednotka | Cuyuna 430R | IAME KFM 107 | IAME KFM 107 Maxi ER | VW 2180cc | Rotax 447 | Continental O-200 |
| P_{max} [kW] | 22 | 16 | 22 | 45 | 37 | 75 |
| v_{max} [km/h] | 161 | 193 | 217 | 354 | 280 | 470 |
| v_{s0} [km/h] | 60 | 61 | 77 | - | - | 167 |
| v_{ymax} [m/s] | 3,81 | 2,54 | 3,03 | 10,16 | - | - |
| G/S [N/m ²] | 193 | 319 | 454 | 677 | 314 | 560 |
| P_{max}/G [kW/N] | 0,0090 | 0,0073 | 0,0078 | 0,0156 | 0,0117 | 0,0219 |
| $c_{L\ v_{max}}$ [–] | 0,158 | 0,181 | 0,204 | 0,114 | 0,085 | 0,054 |
| $c_{L\ max}$ [–] | 1,136 | 1,817 | 1,619 | - | - | 0,425 |

Tabulka 10 Typově podobné letouny

| | Sonex-B Waix-B [22], [23] | CEA-308 [24],[25], [26] | Sharp Nemesis NXT [27] | B612 [28] | Shark [29] | Onex [30] | SEA Risen [31] |
|---------------------------|--|--|---------------------------------------|----------------------|-----------------------|----------------------|-------------------------------|
| Země | USA | BRA | USA | ČR | SK | USA | CH |
| První let | 2000 | 2002 | 2004 | 2004 | 2009 | 2011 | 2012 |
| FAI kategorie | C-1a | C-1a/o | C-1b, C-1c | RAL1T | RAL2T | C-1a | RAL2T |
| MTOW [kg] | 431 | 300 | 1179 | 300 | 480 | 431 | 600 |
| l [m] | 6,706 | 5,760 | 7,315 | 6,850 | 7,900 | 6,096 | 9,000 |
| S [m ²] | 9,104 | 4,740 | 6,503 | 6,850 | 9,500 | 7,841 | 9,700 |
| λ [–] | 4,940 | 7,000 | 8,228 | 6,850 | 6,569 | 4,739 | 8,351 |
| Pohonná jednotka | Jabiru 3300 | Rotax 532 | Lycoming TIO-540 NXT | Rotax 447 | Rotax 912 S | AeroVee 2.1 | Rotax 914 |
| P_{max} [kW] | 90 | 48 | 257 | 30 | 74 | 59 | 85 |
| v_{max} [km/h] | 264 | 353 | 668 | 194 | 300 | 291 | 330 |
| v_{s0} [km/h] | 64 | 100 | 145 | 62 | 64 | 72 | 55 |
| v_{ymax} [m/s] | 10,16 | 6,70 | 15,24 | 5,00 | 7,20 | 4,57 | 8,50 |
| G/S [N/m ²] | 464 | 621 | 1778 | 430 | 496 | 539 | 607 |
| P_{max}/G [kW/N] | 0,0213 | 0,0163 | 0,0223 | 0,0102 | 0,0157 | 0,0139 | 0,0144 |
| $c_{L vmax}$ [–] | 0,141 | 0,105 | 0,084 | 0,241 | 0,116 | 0,135 | 0,118 |
| $c_{L max}$ [–] | 2,398 | 1,313 | 1,789 | 2,364 | 2,560 | 2,200 | 4,243 |

Tabulka 11 Typově podobné letouny

Příloha 3 Statistika motorů

| | UL260iSA [32],[33] | UL350iSA [34],[35] | UL390iSA [36],[37] | UL520iSA [38],[39] | Rotax 912 ULS [40] | Rotax 915 IS [41],[42],[43] |
|---|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------------------|-------------------------------------|
| Země | BEL | BEL | BEL | BEL | AUT | AUT |
| Koncepce | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt |
| Chlazení | Vzduchem | Vzduchem | Vzduchem | Vzduchem | Válce vzduchem Hlavy vodou | Válce vzduchem Hlavy vodou |
| Příprava směsi | Vstřikování paliva | Vstřikování paliva | Vstřikování paliva | Vstřikování paliva | 2 karburátory | Vstřikování paliva |
| Počet válců | 4 | 4 | 6 | 6 | 4 | 4 |
| Reduktor | ne | ne | ne | ne | 2,43 | 2,5454 |
| Přeplňování | ne | ne | ne | ne | ne | ano |
| V [l] | 2,592 | 3,503 | 3,900 | 5,254 | 1,352 | 1,352 |
| DW [kg] | 60,1 | 66,1 | 85,3 | 93,3 | 56,6 | 84,6 |
| M_k [Nm] | 240 při 2800 ot/min | 320 při 2400 ot/min | 370 při 2800 ot/min | 465 při 2800 ot/min | 128 při 5100 ot/min | - |
| P_{max} [kW] | 79 při 3300 ot/min | 96 při 3300 ot/min | 118 při 3300 ot/min | 147 při 3300 ot/min | 74 při 5800 ot/min | 104 při 5800 ot/min |
| P_{con} [kW] | 68 při 2800 ot/min | 90 při 2800 ot/min | 107 při 2800 ot/min | 136 při 2800 ot/min | 69 při 5500 ot/min | 99 při 5500 ot/min |
| L_M [mm] | 553 | 553 | 723 | 723 | 554 | 657 |
| W_M [mm] | 655 | 736 | 654 | 736 | 576 | 578 |
| H_M [mm] | 472 | 472 | 472 | 472 | 380 | 702 |
| S_M [m ²] | 0,309 | 0,347 | 0,309 | 0,347 | 0,219 | 0,406 |
| SFC $\left[\frac{kg}{h \cdot kW} \right]$ | 0,306 při 68 kW | 0,289 při 90 kW | 0,295 při 107 kW | 0,280 při 136 kW | 0,279 při 69 kW | 0,325 při 99 kW |
| TBO [h] | 1500 | 1500 | 1500 | 1500 | 2000 | 1200 |
| $\frac{P_{max}}{V} \left[\frac{kW}{l} \right]$ | 30,36 | 27,30 | 30,17 | 28,00 | 54,73 | 76,92 |
| $\frac{P_{max}}{DW} \left[\frac{kW}{kg} \right]$ | 1,309 | 1,447 | 1,380 | 1,577 | 1,307 | 1,229 |

Tabulka 12 Statistika motorů

| | MWFly B25D [44] | MWFly B25G [45] | D-Motor LF39 [46] | Verner Motor Scarlett 7Si [47] | Jabiru 2200 [48],[49] | Jabiru 3300 [48],[50] |
|---|------------------------|------------------------|--------------------------|---------------------------------------|------------------------------|------------------------------|
| Země | ITA | ITA | BEL | CZE | AUS | AUS |
| Koncepce | Boxer OHC 4 takt | Boxer OHC 4 takt | Boxer SV 4 takt | Hvězdicový OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt |
| Chlazení | Vodou | Vodou | Vodou | Vzduchem | Vzduchem | Vzduchem |
| Příprava směsi | Vstřikování paliva | Vstřikování paliva | Vstřikování paliva | Vstřikování paliva | Karburátor | Karburátor |
| Počet válců | 4 | 4 | 6 | 7 | 4 | 6 |
| Reduktor | ne | 1,958 | ne | ne | ne | ne |
| Přeplňování | ne | ne | ne | ne | ne | ne |
| V [l] | 2,545 | 2,545 | 3,993 | 5,086 | 2,200 | 3,300 |
| DW [kg] | 79,5 | 84 | 78 | 83 | 61 | 81 |
| M_k [Nm] | 256 při 3800 ot/min | 256 při 3800 ot/min | 285 při 2500 ot/min | 445 při 2200 ot/min | - | - |
| P_{max} [kW] | 118 při 4700 ot/min | 118 při 4700 ot/min | 92 při 3000 ot/min | 101 při 2200 ot/min | 60 při 3300 ot/min | 90 při 3300 ot/min |
| P_{con} [kW] | 97 při 4300 ot/min | 95 při 4400 ot/min | 82 při 2800 ot/min | 82 při 2000 ot/min | - | - |
| L_M [mm] | 568 | 568 | 649 | 602 | 604 | 745 |
| W_M [mm] | 758 | 758 | 556 | 810 | 595 | 596 |
| H_M [mm] | 451 | 451 | 423 | 810 | 479 | 520 |
| S_M [m ²] | 0,342 | 0,342 | 0,235 | 0,515 | 0,285 | 0,310 |
| SFC $\left[\frac{kg}{h \cdot kW} \right]$ | 0,232 při 96 kW | 0,232 při 96 kW | 0,204 při 69 kW | - | 0,247 při 45 kW | 0,274 při 68 kW |
| TBO [h] | 1500 | 1500 | 1500 | 1000 | 2000 | 2000 |
| $\frac{P_{max}}{V} \left[\frac{kW}{l} \right]$ | 46,37 | 46,37 | 23,02 | 19,86 | 27,27 | 27,27 |
| $\frac{P_{max}}{DW} \left[\frac{kW}{kg} \right]$ | 1,484 | 1,405 | 1,179 | 1,217 | 0,984 | 1,111 |

Tabulka 13 Statistika motorů

| | Limbach L2400 DX [51] | Aero Momentum AM15 [52] | Continental O-200-D [53] | Continental TSIO-360- DB [54] | Lycoming IO-233- LSA [55] | Lycoming IO-390- C3B6 [56] |
|---|--------------------------------------|--|---|--|--|---|
| Země | GER | USA | USA | USA | USA | USA |
| Koncepce | Boxer OHV 4 takt | Řadový OHC 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt | Boxer OHV 4 takt |
| Chlazení | Válce vzduchem Hlavy vodou | Vodou | Vzduchem | Vzduchem | Vzduchem | Vzduchem |
| Příprava směsi | Vstřikování paliva | Vstřikování paliva | Karburátor | Vstřikování paliva | Vstřikování paliva | Vstřikování paliva |
| Počet válců | 4 | 4 | 4 | 6 | 4 | 4 |
| Reduktor | ne | 2,588 | ne | ne | ne | ne |
| Přeplňování | ano | ne | ne | ano | ne | ne |
| V [l] | 2,424 | 1,497 | 3,292 | 5,894 | 3,823 | 6,390 |
| DW [kg] | 86 | 84 | 86,1 | 136,1 | 91 | 134 |
| M_k [Nm] | 384 při 3000 ot/min | - | - | - | - | - |
| P_{max} [kW] | 118 při 3000 ot/min | 108 při 6500 ot/min | 75 při 2750 ot/min | 168 při 2800 ot/min | 87 při 2800 ot/min | 160 při 2700 ot/min |
| P_{con} [kW] | - | - | - | - | - | - |
| L_M [mm] | 667 | 671 | 666 | 1461 | 685 | 780 |
| W_M [mm] | 792 | 538 | 798 | 909 | 811 | 870 |
| H_M [mm] | 427 | 633 | 589 | 834 | 523 | 491 |
| S_M [m ²] | 0,338 | 0,341 | 0,470 | 0,758 | 0,424 | 0,427 |
| SFC $\left[\frac{kg}{h \cdot kW} \right]$ | 0,253 při 96 kW | 0,241 při 59 kW | - | - | 0,226 při 65 kW | 0,299 při 104 kW |
| TBO [h] | - | 1500 | 2400 | 1800 | 2400 | - |
| $\frac{P_{max}}{V}$ $\left[\frac{kW}{l} \right]$ | 48,68 | 72,22 | 22,78 | 28,50 | 22,76 | 25,04 |
| $\frac{P_{max}}{DW}$ $\left[\frac{kW}{kg} \right]$ | 1,372 | 1,287 | 0,871 | 1,234 | 0,956 | 1,194 |

Tabulka 14 Statistika motorů

Příloha 4 Statistika profilů

| NACA | Re = 3·10 ⁶ | | Re = 9·10 ⁶ | | laminární boule | | | | | | C _{m AC} [-] |
|--------|---------------------------|------------------------|---------------------------|------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| | c _{l max} [-] | α _{kr} [°] | c _{d min} [-] | c _{l cd min} [-] | c _{l lb1} [-] | c _{l lb2} [-] | Δc _{l lb} [-] | c _{d lb1} [-] | c _{d lb2} [-] | Δc _{d lb} [-] | |
| 63-206 | 0.98 | 9.7 | 0.0040 | 0.22 | 0.10 | 0.39 | 0.29 | 0.0048 | 0.0052 | 0.0012 | -0.039 |
| 64-206 | 1.00 | 9.8 | 0.0039 | 0.17 | 0.08 | 0.30 | 0.22 | 0.0050 | 0.0053 | 0.0014 | -0.040 |
| 65-206 | 0.99 | 10.0 | 0.0037 | 0.17 | 0.08 | 0.33 | 0.25 | 0.0049 | 0.0052 | 0.0015 | -0.032 |
| 66-206 | 0.95 | 9.5 | 0.0031 | 0.17 | 0.10 | 0.35 | 0.25 | 0.0043 | 0.0052 | 0.0021 | -0.036 |
| 0009 | 1.33 | 12.6 | 0.0053 | 0.00 | - | - | - | - | - | - | 0.000 |
| 63-009 | 1.09 | 10.1 | 0.0042 | 0.00 | -0.22 | 0.22 | 0.44 | 0.0055 | 0.0057 | 0.0015 | 0.000 |
| 64-009 | 1.07 | 10.2 | 0.0040 | 0.00 | -0.23 | 0.22 | 0.45 | 0.0055 | 0.0055 | 0.0015 | 0.000 |
| 65-009 | 1.06 | 10.2 | 0.0041 | 0.00 | -0.20 | 0.17 | 0.37 | 0.0059 | 0.0056 | 0.0015 | 0.000 |
| 66-009 | 0.83 | 10.4 | 0.0031 | 0.00 | -0.12 | 0.10 | 0.22 | 0.0052 | 0.0049 | 0.0018 | 0.000 |
| 63-209 | 1.34 | 11.1 | 0.0046 | 0.10 | -0.06 | 0.49 | 0.55 | 0.0059 | 0.0063 | 0.0017 | -0.032 |
| 64-209 | 1.29 | 11.0 | 0.0040 | 0.18 | -0.01 | 0.35 | 0.36 | 0.0053 | 0.0058 | 0.0018 | -0.040 |
| 65-209 | 1.25 | 10.9 | 0.0038 | 0.20 | -0.04 | 0.35 | 0.39 | 0.0055 | 0.0057 | 0.0019 | -0.033 |
| 66-209 | 0.98 | 10.3 | 0.0032 | 0.14 | 0.08 | 0.37 | 0.29 | 0.0049 | 0.0059 | 0.0027 | -0.033 |
| 64-110 | 1.28 | 11.3 | 0.0042 | 0.10 | -0.12 | 0.32 | 0.44 | 0.0059 | 0.0061 | 0.0019 | -0.021 |
| 65-210 | 1.27 | 10.6 | 0.0036 | 0.19 | -0.03 | 0.42 | 0.45 | 0.0054 | 0.0059 | 0.0023 | -0.035 |
| 66-210 | 1.09 | 9.0 | 0.0031 | 0.18 | 0.02 | 0.36 | 0.34 | 0.0049 | 0.0057 | 0.0026 | -0.034 |
| 1412 | 1.59 | 16.1 | 0.0055 | 0.15 | - | - | - | - | - | - | -0.025 |
| 63-012 | 1.39 | 13.5 | 0.0043 | 0.00 | -0.34 | 0.36 | 0.70 | 0.0061 | 0.0062 | 0.0019 | 0.000 |
| 64-012 | 1.44 | 14.3 | 0.0042 | 0.00 | -0.24 | 0.24 | 0.48 | 0.0055 | 0.0058 | 0.0016 | 0.000 |
| 65-012 | 1.16 | 11.7 | 0.0039 | 0.00 | -0.20 | 0.30 | 0.50 | 0.0058 | 0.0057 | 0.0018 | 0.000 |
| 66-012 | 1.23 | 13.1 | 0.0032 | 0.00 | -0.22 | 0.24 | 0.46 | 0.0058 | 0.0060 | 0.0028 | 0.000 |
| 64-112 | 1.47 | 14.2 | 0.0043 | 0.00 | -0.18 | 0.39 | 0.57 | 0.0061 | 0.0063 | 0.0020 | -0.019 |
| 63-212 | 1.55 | 14.8 | 0.0044 | 0.17 | -0.10 | 0.65 | 0.75 | 0.0061 | 0.0071 | 0.0027 | -0.036 |
| 64-212 | 1.50 | 15.3 | 0.0042 | 0.13 | -0.10 | 0.51 | 0.61 | 0.0059 | 0.0063 | 0.0021 | -0.026 |
| 65-212 | 1.39 | 14.2 | 0.0038 | 0.24 | -0.09 | 0.46 | 0.55 | 0.0058 | 0.0065 | 0.0027 | -0.034 |
| 66-212 | 1.31 | 13.2 | 0.0032 | 0.12 | -0.04 | 0.38 | 0.42 | 0.0053 | 0.0058 | 0.0026 | -0.034 |
| 66-015 | 1.29 | 16.4 | 0.0034 | 0.00 | -0.30 | 0.31 | 0.61 | 0.0066 | 0.0065 | 0.0031 | 0.000 |
| 66-215 | 1.43 | 17.2 | 0.0032 | 0.24 | -0.07 | 0.46 | 0.53 | 0.0057 | 0.0063 | 0.0031 | -0.031 |
| 66-018 | 1.28 | 17.7 | 0.0034 | 0.00 | -0.46 | 0.35 | 0.81 | 0.0068 | 0.0066 | 0.0032 | 0.000 |
| 66-218 | 1.35 | 17.9 | 0.0034 | 0.04 | -0.14 | 0.57 | 0.71 | 0.0064 | 0.0077 | 0.0043 | -0.034 |

Tabulka 15 Statistika profilů [57]

Příloha 5 Hmotové konfigurace

| m_{ew} [kg] | m_{Fsn} [kg] | m_{FW} [kg] | m_p [kg] | M [kg] | x_{CG} [mm] | \bar{x}_{CG} [-] | y_{CG} [mm] |
|---------------|----------------|---------------|------------|----------|---------------|--------------------|---------------|
| 190.3 | 0 | 0.0 | 60 | 250.3 | 2543 | 0.187 | 1980 |
| 190.3 | 2 | 0.0 | 60 | 252.3 | 2540 | 0.183 | 1981 |
| 190.3 | 2 | 92.7 | 60 | 345.0 | 2563 | 0.212 | 2017 |
| 190.3 | 0 | 0.0 | 70 | 260.3 | 2577 | 0.231 | 1982 |
| 190.3 | 2 | 0.0 | 70 | 262.3 | 2574 | 0.227 | 1983 |
| 190.3 | 2 | 82.7 | 70 | 345.0 | 2586 | 0.242 | 2015 |
| 190.3 | 0 | 0.0 | 80 | 270.3 | 2609 | 0.271 | 1984 |
| 190.3 | 2 | 0.0 | 80 | 272.3 | 2605 | 0.266 | 1985 |
| 190.3 | 2 | 72.7 | 80 | 345.0 | 2610 | 0.272 | 2012 |
| 190.3 | 0 | 0.0 | 110 | 300.3 | 2691 | 0.375 | 1989 |
| 190.3 | 2 | 0.0 | 110 | 302.3 | 2687 | 0.370 | 1989 |
| 190.3 | 2 | 42.7 | 110 | 345.0 | 2679 | 0.360 | 2005 |
| 190.3 | 2 | 27.7 | 80 | 300.0 | 2607 | 0.269 | 1997 |

Tabulka 16 Letové konfigurace letounu

| m_{ew} [kg] | m_{Fsn} [kg] | m_{FW} [kg] | m_p [kg] | M [kg] | x_{CG} [mm] | \bar{x}_{CG} [-] | y_{CG} [mm] |
|---------------|----------------|---------------|------------|----------|---------------|--------------------|---------------|
| 190.3 | 0 | 0.0 | 0 | 190.3 | 2264 | -0.168 | 1965 |
| 190.3 | 0 | 42.7 | 0 | 233.0 | 2330 | -0.083 | 1992 |
| 190.3 | 0 | 92.7 | 0 | 283.0 | 2382 | -0.017 | 2014 |
| 190.3 | 2 | 0.0 | 0 | 192.3 | 2263 | -0.169 | 1966 |
| 190.3 | 2 | 42.7 | 0 | 235.0 | 2329 | -0.085 | 1993 |
| 190.3 | 2 | 92.7 | 0 | 285.0 | 2381 | -0.019 | 2015 |

Tabulka 17 Neletové konfigurace letounu

Příloha 6 Matlab skript výpočtu tahové křivky

Iterační výpočet tahové křivky pro maximální trvalý výkon motoru.

```
close all
clear all
clc

D_pr=1.727; %m
A=pi*D_pr^2/4; %m^2
rho=1.225; %kg/m^3

P=90*1000; %W
eta_v=0.85;

vmin=10;
vmax=500;
dv=5;

v=(vmin:dv:vmax);

imax=(vmax-vmin)/dv+1;

for i=1:1:imax
    v(i)=v(i)/3.6;

    eta_p(i)=0.5;

    T(i)=eta_p(i)*P/v(i);
    w(i)=1/2*(-v(i)+(v(i)^2+2*T(i)/(rho*A))^(1/2));
    eta_i(i)=1/(1+w(i)/v(i));
    eta_pnew(i)=eta_v*eta_i(i);
    delta(i)=abs(eta_p(i)-eta_pnew(i));

    eta_p(i)=eta_pnew(i);

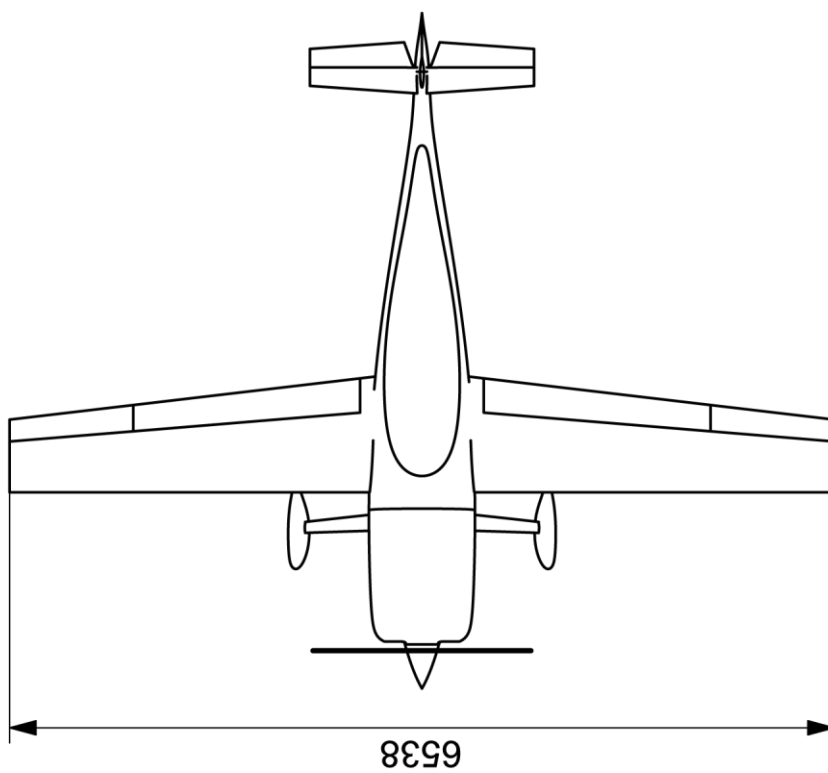
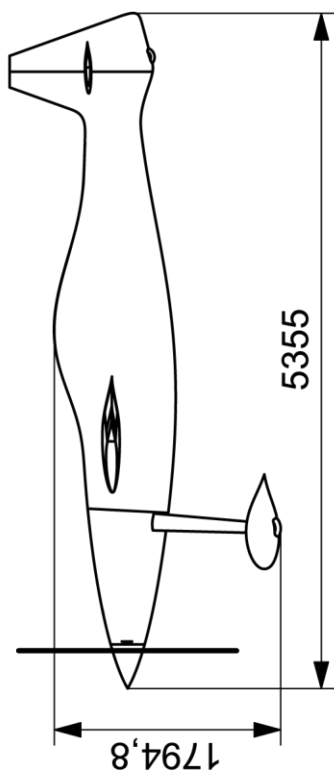
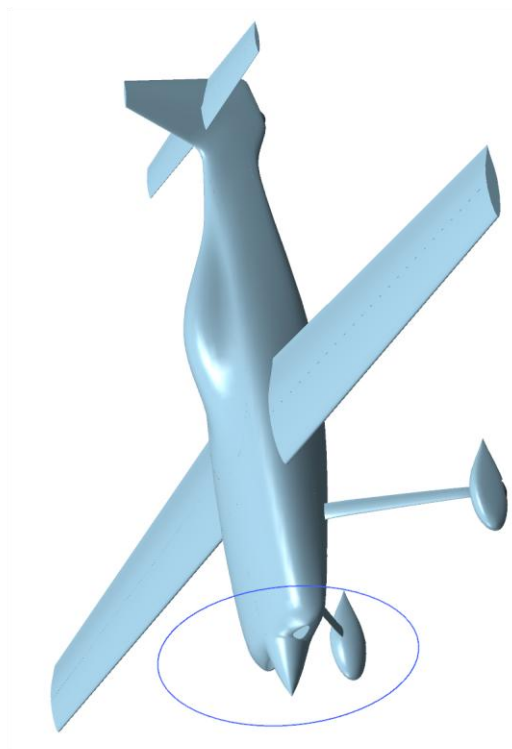
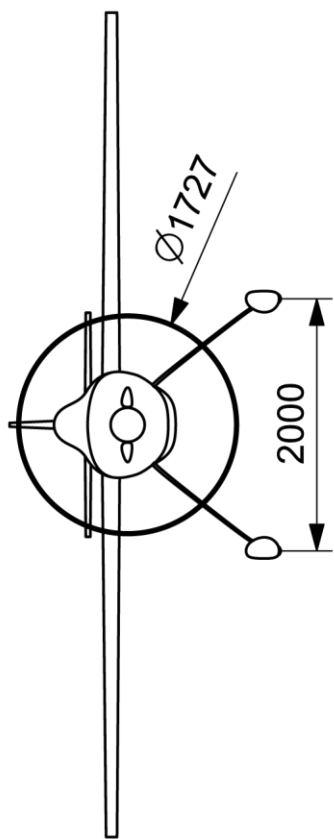
    while delta(i)>0.000001
        T(i)=eta_p(i)*P/v(i);
        w(i)=1/2*(-v(i)+(v(i)^2+2*T(i)/(rho*A))^(1/2));
        eta_i(i)=1/(1+w(i)/v(i));
        eta_pnew(i)=eta_v*eta_i(i);
        delta(i)=abs(eta_p(i)-eta_pnew(i));

        eta_p(i)=eta_pnew(i);
    end
end

plot(v,eta_p)
grid on
xlabel('v [m/s]')
ylabel('\eta_p [-]')

figure
plot(v,T)
grid on
xlabel('v [m/s]')
ylabel('T_p [-]')
```

Příloha 7 Muška letounu



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