

Scoring New Flying Competition
Period 2015 - 2016
 20151126

Symbol	Meaning
η	Efficiency
Δx	Distance flown during upwind/downwind legs of flight 2
$\overline{V}_{1,appr}$	Average speed during landing approach of flight 1
\overline{V}_2	Average speed during upwind/downwind legs of flight 2
n_1	Counter for a successfully flown 360° left-hand circle
n_2	Counter for a successfully flown 360° right-hand circle
n_3	Counter for a successfully flown looping
S_{team}	Final scoring of a particular team
$S_{flight, team}$	Flight scoring of a particular team
$S_{flight, rel, team}$	Flight scoring of a particular team relative to the best flight scoring of all teams
$S_{flight, best}$	Best flight scoring of all teams during flight tests
$S_{reports, team}$	Average scoring of all design reports incl the science slam of a particular team
$S_{report, jury member}$	Score given by a jury member for the PDR, CDR or FDR, respectively
$S_{slam, jury member}$	Score given by a jury member for the science slam
$S_{science}$	Score given by a jury member with respect to the scientific content
$S_{performance}$	Score given by a jury member with respect to the creativity of the performance
EC	Energy consumption

Final score:

The more points you get in S_{team} the better is your ranking in the competition.

$$S_{team} = S_{flight, rel, team} + S_{reports, team} \quad (1)$$

Flight score:

$$S_{flight, rel, team} = 50 \frac{S_{flight, team}}{S_{flight, best}} \quad (2)$$

$$S_{flight, team} = \frac{n_1 + n_2 + n_3}{3} \eta \left(1 - \frac{0,02}{km/h} \Delta V_{1,appr} - \frac{0,015}{km/h} \Delta V_2 - 0,5 \left| \frac{\eta_{pred}}{\eta} - 1 \right| \right) \quad (3)$$

$$\eta = \frac{\Delta x}{EC} \quad (4)$$

$$n_i = \begin{cases} 1 & , \text{ if manoeuvre was flown} \\ 0 & , \text{ if manoeuvre was not flown} \end{cases} , i = 1 \text{ to } 3 \quad (5)$$

$$\Delta V_{appr} = \begin{cases} \overline{V}_{1,appr} - 30 \text{ km/h} & , \text{if } \overline{V}_{1,appr} > 30 \text{ km/h} \\ 0 \text{ km/h} & , \text{if } \overline{V}_{1,appr} \leq 30 \text{ km/h} \end{cases} \quad (6)$$

$$\Delta V_2 = \begin{cases} 60 \text{ km/h} - \overline{V}_2 & , \text{if } \overline{V}_2 < 60 \text{ km/h} \\ 0 \text{ km/h} & , \text{if } \overline{V}_2 \geq 60 \text{ km/h} \end{cases} \quad (7)$$

$$S_{flight, best} = \max(S_{flight, team}) \quad (8)$$

Report and Science Slam Score

$$S_{reports, team} = 50 \frac{(\overline{S}_{PDR} + \overline{S}_{CDR} + \overline{S}_{FDR} + \overline{S}_{slam})}{4} \quad (9)$$

$$\overline{S}_{PDR/CDR/FDR} = \frac{\sum S_{report, jury member}}{N} \quad , N : \text{number of jury members}$$

$$\overline{S}_{slam} = \frac{\sum S_{slam, jury member}}{N} \quad , N : \text{number of jury members} \quad (10)$$

$$S_{slam, jury member} = 0,7 S_{science} + 0,3 S_{performance}$$

The reports and the science slam are scored according to the following system by each jury member:

Letter grade	Grade	$S_{report, jury member}$	Meaning
A+	0,7	1,05	Outstanding
A	1	1	Very good
A-	1,3	0,95	
B+	1,7	0,88	Good
B	2	0,83	
B-	2,3	0,78	
C+	2,7	0,72	Acceptable
C	3	0,67	
C-	3,3	0,62	
D+	3,7	0,55	Adequate
D	4	0,5	
F	5	0	Failed