ROBOFINIST

Air Race

RoboFinist competition rules

Version 5.0 dated February 10, 2025

1. General Provisions

The run is held by each team independently. One team plays one robot.

1.1. Task Description

The robot must fly the maximum number of laps following the specified trajectory in the allotted time.

1.2. Restrictions

A team must meet the following requirements, unless otherwise specified by the Organizing Committee of a particular Event:

- the number of participants in the team is 2 or less (the number of coaches/team managers is not limited)
- the oldest member of the team is 22 years old or less in the year of the competition.

2. Requirements for the Robot

The robot must be autonomous.

The robot must be a flying vehicle. It is allowed to use mass-made robots.

The following requirements apply to robots (see Table 1):

Table 1. Requirements for the Robot

Parameter	**Type of flying vehicle**			
	plane	propellerdriven	airship	other
Weight	≤ 500 g	≤ 1 kg	≤ 2 kg	≤ 2 kg
Length	≤ 1 m	≤ 1 m	≤ 2 m	≤ 1 m
Width	≤ 1 m	≤ 1 m	≤ 1 m	≤ 1 m
Height	≤ 1 m	≤ 1 m	≤ 1 m	≤ 1 m

Only electric motors are allowed.

Each team must have a duplicate manual control with the ability to be activated instantly.

3. Specifications of the field

The field is a space in the form of a rectangular parallelepiped, bounded from above and around the perimeter by a protective net, with two poles inside and a track on the bottom surface.

Field Specifications:

- length - not less than 4000 mm;
- width - not less than 3000 mm;
- height - not less than 3000 mm.

The poles are fixed and fastened securely on the longitudinal axis of the field.

Poles Specifications:

- distance between the poles is 2000 mm;
- distance to the nearest end border of the field - 1000 mm;
- height - 3000 mm;
- diameter - 110 +/- 10 mm;
- material - plastic (optionally plumbing pipe)

The track is a figure-eight line (see Fig. 1).

Line specifications:

- line type - dashed;
- semicircle curvature radius - 500 +/- 250 mm;
- center of curvature - in the center of the pole;
- line width - 50 mm;
- dash length - 300 mm;
- distance between dashes - 100 mm.

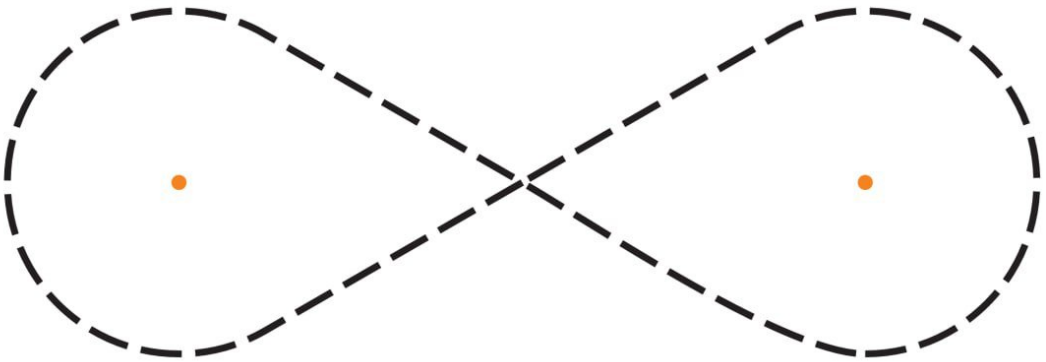

Figure 1. Field scheme

It is allowed to use additional navigation equipment (active or passive beacons, marks) placing it on the floor and/or on the protective net of the field. Additional equipment must be powered from autonomous batteries with total voltage of up to 9 V and must not interfere with the free movement of robots.

4. Contest Procedure

Competitions are held according to one-by-one system (see the “General Competition Rules”).

4.1. Preparation

Before the start of the race, the team is given 3 minutes to prepare. At the end of preparation or on the expiry of 3 minutes, the judge starts the countdown of the race flight time.

During preparation, the operator can install additional navigation equipment. This equipment must be removed as soon as the attempt is over.

The operator must place the robot on the surface of the field.

At the end of preparation, the operator must leave the field.

4.2. Run

Robots are given 5 minutes to complete the task.

After the launch, the robot should fly as many laps as possible, performing the complete figure "eight".

During the entire flight the robot must be at a height of 1-2 meters above the ground.

The flight is interrupted, time does not stop, the robot returns to starting point and restarts in the following cases:

- robot touched the ground, the poles or the protective net;
- the operator interrupted the flight.

The number of restarts is unlimited. The operator may enter the flight area to relaunch the robot with the permission of the judge.

Race stops when the run time expires.

5. Disqualification

In the following cases the robot will be disqualified:

- the robot is non-autonomous (the human is in control of the robot).

6. Scoring

The team is scored a number of points equal to the arithmetic mean of the number of laps completed: the total number of laps completed during the race divided by the number of launches, taking into account the first one.

The attempt with the best score is counted. If the points are equal, the attempt with the minimum flying time of the first-performed figure “eight” is counted.

7. Procedure for Determining the Winner

The winner is the team with the highest score.

If the points are equal, the team with the minimum number of restarts gets the advantage. If the points and the number of restarts are equal, the team with the minimum flying time of the first-performed figure “eight” gets the advantage.