

LABORATORY EXPERIMENT 5

UNDERSTANDING THE BEHAVIOR OF DIFFERENT TEST SUBJECTS

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OBJECTIVES

After completing the experiment, the student will be able to:

1. Differentiate the different effects of test subjects on the airflow.
2. Determine the test subject with highest efficiency/ better characteristic for flight base from the data collected.

OVERVIEW

The aim of wind tunnel tests is the simulation of the flow around bodies or their scaled models. In aeronautical applications, the measurement of aerodynamic loads in a wind tunnel, forces and momentums, is a very difficult task due to the required accuracy. The wind tunnel balances, comprised by several hardware and software components, provides directly the pursued measurements, with high accuracy and reliability. For these reasons, among others, wind tunnel balances have become a common tool in testing facilities. During the test, the model is placed in the test section of the tunnel and air is made to flow past the model. Flow visualization techniques are used to provide diagnostic information about the flow around the model. We will be using the smoke technique for our experiment.

EQUIPMENT

SUBSONIC WIND TUNNEL

COMPONENTS

Fan Speed Controller

Balance Indicator

2/3 Component Balance

Smoke Generator Control Unit

PROCEDURES

1. Collate all the data from Experiment No. 1-4.
2. Provide the data sheet of each test subject on Table A-1

SUPPLEMENTARY QUESTIONS FOR EXPERIMENT

1. Differentiate the characteristic/trait of the airflow around the test subject? Which test subject has the most efficient characteristic among the other test subjects?
2. Describe the advantage/disadvantage of each test subject.
3. What is the importance of using the wind tunnel?
4. What have you learned from the experiments?

Table A-1

[illegible]

Table A-1

Case No.	Case Name	Case Type	Case Status	Case Date	Case Location	Case Description	Case Details	Case Notes	Case Comments	Case Actions
1	John Doe	Case 1	Open	2023-01-01	New York	Case 1 Description	Case 1 Details	Case 1 Notes	Case 1 Comments	Case 1 Actions
2	Jane Smith	Case 2	Closed	2023-01-02	California	Case 2 Description	Case 2 Details	Case 2 Notes	Case 2 Comments	Case 2 Actions
3	Bob Johnson	Case 3	Pending	2023-01-03	Texas	Case 3 Description	Case 3 Details	Case 3 Notes	Case 3 Comments	Case 3 Actions
4	Alice Brown	Case 4	Open	2023-01-04	Florida	Case 4 Description	Case 4 Details	Case 4 Notes	Case 4 Comments	Case 4 Actions
5	Charlie Davis	Case 5	Closed	2023-01-05	Illinois	Case 5 Description	Case 5 Details	Case 5 Notes	Case 5 Comments	Case 5 Actions
6	Diana Prince	Case 6	Pending	2023-01-06	Washington	Case 6 Description	Case 6 Details	Case 6 Notes	Case 6 Comments	Case 6 Actions
7	Frank Miller	Case 7	Open	2023-01-07	Ohio	Case 7 Description	Case 7 Details	Case 7 Notes	Case 7 Comments	Case 7 Actions
8	Grace Lee	Case 8	Closed	2023-01-08	Georgia	Case 8 Description	Case 8 Details	Case 8 Notes	Case 8 Comments	Case 8 Actions
9	Henry Wilson	Case 9	Pending	2023-01-09	Michigan	Case 9 Description	Case 9 Details	Case 9 Notes	Case 9 Comments	Case 9 Actions
10	Ivy Green	Case 10	Open	2023-01-10	Arizona	Case 10 Description	Case 10 Details	Case 10 Notes	Case 10 Comments	Case 10 Actions
11	Jack White	Case 11	Closed	2023-01-11	Colorado	Case 11 Description	Case 11 Details	Case 11 Notes	Case 11 Comments	Case 11 Actions
12	Karen Black	Case 12	Pending	2023-01-12	Connecticut	Case 12 Description	Case 12 Details	Case 12 Notes	Case 12 Comments	Case 12 Actions
13	Liam King	Case 13	Open	2023-01-13	Delaware	Case 13 Description	Case 13 Details	Case 13 Notes	Case 13 Comments	Case 13 Actions
14	Mia Hall	Case 14	Closed	2023-01-14	Idaho	Case 14 Description	Case 14 Details	Case 14 Notes	Case 14 Comments	Case 14 Actions
15	Noah Scott	Case 15	Pending	2023-01-15	Indiana	Case 15 Description	Case 15 Details	Case 15 Notes	Case 15 Comments	Case 15 Actions
16	Olivia Adams	Case 16	Open	2023-01-16	Iowa	Case 16 Description	Case 16 Details	Case 16 Notes	Case 16 Comments	Case 16 Actions
17	Peter Baker	Case 17	Closed	2023-01-17	Kansas	Case 17 Description	Case 17 Details	Case 17 Notes	Case 17 Comments	Case 17 Actions
18	Quinn Clark	Case 18	Pending	2023-01-18	Kentucky	Case 18 Description	Case 18 Details	Case 18 Notes	Case 18 Comments	Case 18 Actions
19	Rachel Evans	Case 19	Open	2023-01-19	Louisiana	Case 19 Description	Case 19 Details	Case 19 Notes	Case 19 Comments	Case 19 Actions
20	Samuel Foster	Case 20	Closed	2023-01-20	Maine	Case 20 Description	Case 20 Details	Case 20 Notes	Case 20 Comments	Case 20 Actions
21	Tina Green	Case 21	Pending	2023-01-21	Massachusetts	Case 21 Description	Case 21 Details	Case 21 Notes	Case 21 Comments	Case 21 Actions
22	Uma White	Case 22	Open	2023-01-22	Minnesota	Case 22 Description	Case 22 Details	Case 22 Notes	Case 22 Comments	Case 22 Actions
23	Victor Black	Case 23	Closed	2023-01-23	Mississippi	Case 23 Description	Case 23 Details	Case 23 Notes	Case 23 Comments	Case 23 Actions
24	Wendy King	Case 24	Pending	2023-01-24	Montana	Case 24 Description	Case 24 Details	Case 24 Notes	Case 24 Comments	Case 24 Actions
25	Xavier Hall	Case 25	Open	2023-01-25	Nebraska	Case 25 Description	Case 25 Details	Case 25 Notes	Case 25 Comments	Case 25 Actions
26	Yara Scott	Case 26	Closed	2023-01-26	Nevada	Case 26 Description	Case 26 Details	Case 26 Notes	Case 26 Comments	Case 26 Actions
27	Zoe Adams	Case 27	Pending	2023-01-27	New Hampshire	Case 27 Description	Case 27 Details	Case 27 Notes	Case 27 Comments	Case 27 Actions
28	Adam Baker	Case 28	Open	2023-01-28	New Jersey	Case 28 Description	Case 28 Details	Case 28 Notes	Case 28 Comments	Case 28 Actions
29	Bella Clark	Case 29	Closed	2023-01-29	New Mexico	Case 29 Description	Case 29 Details	Case 29 Notes	Case 29 Comments	Case 29 Actions
30	Charlie Evans	Case 30	Pending	2023-01-30	New York	Case 30 Description	Case 30 Details	Case 30 Notes	Case 30 Comments	Case 30 Actions
31	Diana Foster	Case 31	Open	2023-01-31	North Carolina	Case 31 Description	Case 31 Details	Case 31 Notes	Case 31 Comments	Case 31 Actions
32	Frank Green	Case 32	Closed	2023-02-01	North Dakota	Case 32 Description	Case 32 Details	Case 32 Notes	Case 32 Comments	Case 32 Actions
33	Grace King	Case 33	Pending	2023-02-02	Ohio	Case 33 Description	Case 33 Details	Case 33 Notes	Case 33 Comments	Case 33 Actions
34	Henry Hall	Case 34	Open	2023-02-03	Oklahoma	Case 34 Description	Case 34 Details	Case 34 Notes	Case 34 Comments	Case 34 Actions
35	Ivy Scott	Case 35	Closed	2023-02-04	Oregon	Case 35 Description	Case 35 Details	Case 35 Notes	Case 35 Comments	Case 35 Actions
36	Jack Adams	Case 36	Pending	2023-02-05	Pennsylvania	Case 36 Description	Case 36 Details	Case 36 Notes	Case 36 Comments	Case 36 Actions
37	Karen Baker	Case 37	Open	2023-02-06	Rhode Island	Case 37 Description	Case 37 Details	Case 37 Notes	Case 37 Comments	Case 37 Actions
38	Liam Clark	Case 38	Closed	2023-02-07	South Carolina	Case 38 Description	Case 38 Details	Case 38 Notes	Case 38 Comments	Case 38 Actions
39	Mia Evans	Case 39	Pending	2023-02-08	South Dakota	Case 39 Description				

