



AIAA Design Build Fly Competition Summary 2020-21

Beechcraft

Cessna

Jawker

TEXTRON AVIATION

Raytheon
Missiles & Defense

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The 2020-21 AIAA/Textron Aviation/Raytheon Missiles & Defense Design/Build/Fly Competition concluded with a scored video presentation in place of the competition fly-off due to the Coronavirus pandemic and the award ceremony on May 14, 2021. This was the 25th year for the competition. Of the 117 proposals submitted and judged, 115 teams were invited to submit a formal report for the next phase of the competition. Ninety-two (92) teams submitted design reports to be judged and were invited to submit a video presentation of their design with demonstrated flight missions for scoring in place of the cancelled fly-off. Sixty-eight (68) teams submitted video presentations that were then scored by the members of the DBF Organizing Committee. The final scores for each team were then computed using both report and video scores.

The contest theme this year was UAV with Sensor Suite. The aircraft was limited to a maximum five foot wing span. Each aircraft was required to transport the sensor deployment system along with multiple sensors in shipping containers and then be configured with the deployment and recovery mechanism and one sensor and deploy the sensor after take-off and recover the sensor before landing. The sensor was required to contain LEDs in a pattern detectable by the Flight Director from the ground and turned on and off from the pilot or observer remotely. The teams were required to complete three flight missions, each with a maximum take-off distance of 100 feet. The first mission was a Staging Flight with no payload for three laps within five minutes. The second mission was a Delivery Flight with the deployment and recovery device and sensors in shipping containers as payload and the score based on the number of sensors in shipping containers carried. The final mission was a Sensor Flight which required deployment, operation and recovery of the sensor during flight with a score based on number of laps flown in 10 minutes plus sensor weight. Teams were also required to complete a timed ground mission demonstrating the requirements for the Delivery and Sensor Flights as well as robustness of the sensor shipping container. More details on the mission requirements can be found at the competition website: <http://www.aiaadbf.org>.

For this year, the teams were invited to submit a video in place of the competition fly-off. The video required a presentation of the teams design and supporting analysis as well as demonstration of the flight and ground missions. The final competition score was a product of the report score and video score. More details on the mission requirements can be found at the competition website: <http://www.aiaadbf.org>.

First Place went to the Dayananda Sagar College of Engineering, Second Place went to the University of Central Florida and Third Place went to Embry-Riddle Aeronautical University Daytona Beach. A full listing of the results is included below. The Best Paper Award, sponsored by the Design Engineering TC for the highest report score, went to the University of Michigan -- Ann Arbor with a score of 91.67.

We owe our thanks for the success of the DBF competition to the efforts of many volunteers from Textron Aviation, Raytheon Missiles & Defense, and the AIAA sponsoring technical committees: Applied Aerodynamics, Aircraft Design, Flight Test, and Design Engineering. These volunteers collectively set the rules for the contest, publicize the event, gather entries, judge the written reports, and organize the flyoff. Thanks also go to the Premier Sponsors: Raytheon Missiles & Defense and



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Textron Aviation, and also to the AIAA Foundation for their financial support as well as our Gold sponsor this year – Mathworks.

Finally, this event would not be nearly as successful without the hard work and enthusiasm from all the students and advisors. If it weren't for you, we wouldn't keep doing it.

Matt Angiulo
For the DBF Organizing Committee



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2021 Design/Build/Fly Competition Final Results

Place	University	Report Score	Video Score	Total Score
1	Dayananda Sagar College of Engineering	90.33	9.83	20.52*
2	University of Central Florida	90.33	9.83	20.52
3	Embry-Riddle Aeronautical University Daytona Beach	87.15	9.88	20.28
4	The Ohio State University	87.57	9.75	20.06
5	Georgia Institute of Technology	88.37	9.67	19.99
6	The George Washington University	85.33	9.83	19.97
7	University of Notre Dame	87.90	9.67	19.94
8	Embry-Riddle Aeronautical University: Prescott Campus	86.32	9.75	19.93
9	FH JOANNEUM, University of Applied Sciences	83.17	9.82	19.72
10	University of Nevada, Las Vegas	84.58	9.73	19.71
11	University of Maryland - College Park	87.40	9.49	19.54
12	University of Ljubljana	83.43	9.67	19.46
13	The University of Oklahoma	80.33	9.83	19.45
14	Arizona State University	77.57	9.98	19.43
15	Clarkson University	87.88	9.39	19.40
16	North Carolina State University	85.47	9.48	19.31
17	Oregon State University	81.42	9.65	19.22
18	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	81.60	9.60	19.15
19	The University of Michigan -- Ann Arbor	91.67	8.92	18.83
20	University of Maryland, Baltimore County	77.10	9.65	18.77
21	San Diego State University	80.83	9.39	18.67
22	University of Kansas	80.67	9.31	18.50
23	University of Tennessee, Knoxville	72.82	9.74	18.48
24	University of Akron	71.75	9.73	18.34
25	Missouri University of Science and Technology	86.68	8.83	18.19
26	University of Southern California	86.50	8.83	18.17
27	University of California San Diego	80.77	9.07	18.06
28	University of California, Los Angeles	86.73	8.74	18.01
29	University of Maribor	87.00	8.72	17.99
30	Virginia Polytechnic Institute and State University	87.00	8.67	17.89
31	University of Florida	78.87	9.05	17.84
32	The University of Hong Kong	81.88	8.58	17.25
33	University of Alabama at Birmingham	85.70	8.18	16.82
34	Trine University	75.83	8.63	16.77
35	Dordt University	63.62	9.21	16.60
36	City College of New York (CCNY) The City University of New York	83.00	8.02	16.28
37	Pennsylvania State University	68.40	8.63	16.08
38	University of Petroleum and Energy Studies	88.88	7.51	15.79
39	University of Arkansas	83.63	7.48	15.31
40	North Dakota State University	58.90	8.47	14.91
41	Alfred University	56.65	8.33	14.48
42	National University of Singapore	72.30	7.50	14.42
43	University of Washington, Seattle	83.93	6.50	13.45
44	Univeristy of South Alabama	50.70	7.99	13.41
45	Brigham Young University	50.60	7.97	13.36
46	University of Nebraska - Lincoln	73.25	6.82	13.26



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2021 Design/Build Fly Competition Final Results (cont)

Place	University	Report Score	Video Score	Total Score
47	UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN	68.50	6.82	12.91
48	The University of Texas at Austin	70.83	6.13	11.86
49	University of Minnesota-Twin Cities	77.93	5.85	11.82
50	University Of Massachusetts Amherst	65.53	6.10	11.46
51	Utah State University	69.47	5.91	11.39
52	The Hong Kong Polytechnic University	83.87	4.85	10.29
53	Khalifa University	86.42	4.62	9.97
54	Case Western Reserve University	75.33	4.82	9.77
55	SAHYADRI COLLEGE OF ENGINEERING AND MANAGEMENT	51.57	5.43	9.48
56	Wentworth Institute of Technology	88.12	4.15	9.14
57	University of Alaska Fairbanks	71.07	4.09	8.26
58	University of Glasgow	75.02	3.87	8.03
59	Rutgers University - New Brunswick	84.25	2.81	6.39
60	Universidad Pontificia Bolivariana (UPB)	83.17	2.36	5.50
61	Kent State University	56.92	2.28	4.69
62	Cornell University	65.43	2.14	4.67
63	SRM Institute of Science and Technology Kattankulathur	60.00	2.13	4.53
64	University of Kentucky Paducah Campus	55.67	2.09	4.36
65	Lafayette College	34.93	0.95	2.31
66	University of Tennessee at Chattanooga	58.73	0.63	2.04
67	Massachusetts Institute of Technology	73.00	0.48	1.87
68	The University of Texas at Dallas	86.60	0.18	1.36
69	Chulalongkorn University	85.15	--	0.93
70	California Polytechnic State University, San Luis Obispo	84.67	--	0.92
71	Rensselaer Polytechnic Institute	80.15	--	0.87
72	Cairo University	80.00	--	0.87
73	The University of Alabama Tuscaloosa	79.67	--	0.87
74	Texas A&M University	75.83	--	0.83
75	Illinois Institute of Technology	73.78	--	0.80
76	Washington University in St. Louis	72.83	--	0.79
77	West Virginia University	69.93	--	0.76
78	Florida Institute Of Technology	68.32	--	0.75
79	Syracuse University	68.12	--	0.74
80	Western Michigan University	67.45	--	0.74
81	Santa Clara University	63.33	--	0.69
82	University at Buffalo	61.63	--	0.67
83	Rowan University	58.00	--	0.63
84	University of Pennsylvania	57.65	--	0.63
85	California State University, Long Beach	53.15	--	0.58
86	Purdue University	48.55	--	0.53
87	University of Colorado at Boulder	48.27	--	0.53
88	Colorado School of Mines	47.55	--	0.52
89	New Mexico Institute of Mining and Technology	46.47	--	0.51
90	Villanova University	31.53	--	0.34
91	Instituto Tecnológico de Santo Domingo	24.42	--	0.27
92	University of Iowa	20.58	--	0.22



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Past Winners

Year	Team
2021	Dayananda Sagar College of Engineering
2020	University of Southern California
2019	University of Ljubljana
2018	Clarkson University
2017	University of Southern California
2016	San Jose State University
2015	University of Ljubljana
2014	University of Southern California
2013	University of California Irvine
2012	San Jose State University
2011	Georgia Tech University
2010	Oklahoma State University Team Orange
2009	Oklahoma State University Team Black
2008	Oklahoma State University Team Black
2007	Massachusetts Institute of Technology
2006	Oklahoma State University Team Black
2005	Oklahoma State University Team Black
2004	Oklahoma State University Team Black
2003	San Diego State University
2002	University of California San Diego
2001	Oklahoma State University Team Orange
2000	Utah State University
1999	Utah State University
1998	University of Southern California
1997	University of Illinois at Urbana-Champaign



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Team Locations

