(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)



The purpose of AeroRGIT, the SAE student chapter at Rajiv Gandhi Institute of Technology, is to enhance the knowledge base of its members who are Aeromodelling enthusiasts and to provide to its members access to SAE International programs and services globally, enabling them to practice world class standards in productivity and quality.

SAE International is a professional organisation with over 138,000 members globally. Aside from its standardization efforts, SAE International also devotes resources to projects and programs in STEM education, professional certification, and collegiate design competitions.

SAEINDIA is a membership organization founded in 1994 and in 2003 SAEINDIA became an affiliate of SAE International. Today, the President of SAEINDIA is

Dr.R.K.Malhotra and has a membership count of more than 40,000 members around India.

Website SAE INTERNATIONAL: http://www.sae.org

Website SAEINDIA: http://www.saeindia.org

Faculty Advisor for AeroRGIT: Dr. RAJESH V. KALE





(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

# **SAE Aero Design East Challenge 2020**

Date: 6<sup>th</sup> March 2020 to 8<sup>th</sup> March 2020

Location: Lakeland, Florida, USA



AeroRGIT's **Team AERO-X**, an Aeromodelling team of MCT's Rajiv Gandhi Institute of Technology, Mumbai-53, comprising 25 enthusiastic team members participated in SAE Aero Design East Challenge 2020, held in Lakeland, Florida, USA from 6<sup>th</sup> March 2020 to 8<sup>th</sup> March 2020. This competition tests the student teams in terms of the analytical thinking, designing and manufacturing of RC aircraft depending on the given problem statement. Followed by successful registration on 14<sup>th</sup> October 2019 for competition and having problem statement, team started working on designing and modelling RC aircraft according to given problem statement and rules determined by SAE in late October 2019. After completion of designing and modelling process, the manufacturing of fully functional prototype of our RC plane started in December 2019. We had a test flight of our plane's prototype on 20<sup>th</sup> December 2020, to determine the flaws in present design and rectify the Submission of detailed **Design Report** followed by rectification was done in January 2020.

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

Then we started manufacturing our final, rectified RC aircraft in February 2020 and tested it for its performance with a successful flight. The aircraft was sent to USA for competition in March 2020 and it was a great success for our team to achieve 5<sup>th</sup> rank in Asia and 22<sup>nd</sup> rank all over world in first attempt, where 80+ teams participated.

The actual competition in March 2020 was an intense 3 days affair in Florida, USA with following schedule of activities:

## > <u>6<sup>th</sup> March 2020 (Day 01) :</u>





#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

On the very first day of competition, static events were planned in **Florida Air Museum**. The team undergone registration process for static events and had briefing about basis of Technical Inspection. Also in the mean time we interacted with other teams from overall world. We successfully passed the **Technical Inspection** of our plane where the organizers ensured the plane was adhering to norms specified by SAE International named '**GLYRA**'. Followed by Technical Inspection all teams are advised to prepare for Technical Presentation. We gave a good **Technical Presentation** with the comprehensive explanation of our RC aircraft design and how it is a good solution for supporting the given problem statement. The oral presentation was followed by question and answer session by judges. The day concluded with a welcome ceremony organized by SAE for all teams.

### > <u>7<sup>th</sup> March 2020 (Day 02):</u>



(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)



The second day began with everyone gathering on **Paradise Field** for **Flight Rounds**. A brief information about Pilot's Safety, Flight line workers, Flight Stewards was given to allteams. SAE appointed their qualified, experienced **Pilot** to our team for having better controlon aircraft during flight rounds. The teams were standing in a queue with their aircrafts for flight rounds. All teams were getting three chances to complete without payload flight roundif they encounter any technical problem during first attempt. We successfully completed our**without payload flight round** in our second attempt on this day. SAE provided lunch to every team in between flight rounds.

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

## > <u>8<sup>th</sup> March 2020 (Day 03):</u>





#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

The third day being the final day of competition was very important for all teams. On this day, judges gave some instructions regarding the with payload flight rounds. Everyone in our team geared up to give their best for this day's flight rounds. We successfully completed **with payload flight round** and **unloading of payload** in our first attempt. After completion of flight rounds of all teams of all categories, **Award Ceremony** was held announcing the scores of design report, flight rounds of all teams of all categories and winners of the same.

In-spite of being the participants at SAE International for the very first time, we successfully completed design report, technical inspection, and technical presentation, with payload and without payload flight test without any damage, failure to our RC plane where approximately 50% of all flights by other teams ended in a crash. We had two flight rounds with safe landings, with the judges appreciating the use of the unconventional **'Tail Dragger'** design. With heavy cross-winds of 40 kilometers per hour, the plane performed exceedingly well in the bad weather. We were awarded **5<sup>th</sup> in Asia and 22<sup>nd</sup> overall world amongst 80+ teams** 



This is a great success and everyone appreciated us a lot for achieving this success. It was honored to represent **INDIA** at International level and becoming the first team of our institute to participate in a competition at international level. Our team members gained a great learning experience through this competition.

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

#### Accomplishments at SAE Aero Design East Challenge 2020

➢ 5<sup>th</sup> Rank - Asia Pacific

➢ 22<sup>nd</sup> Rank - Worldwide

# **Aara Education Consultancy's Webinar on Career Opportunities after Engineering in India & Abroad**

Date: 16th August 2020

Time: 4:30 PM - 6:00 PM

Platform: YouTube

Speaker: Vinni Shah Modani

AeroRGIT, an Aeromodelling committee of MCT's Rajiv Gandhi Institute of Technology Mumbai (53), had organized a webinar on Career Opportunities after Engineering in India & Abroad for engineering students of RGIT and foreign colleges. The speaker was Vinni Shah Modani, Head Counselor at Aara Education Consultancy, CA & CFP.

Aara Education Consultancy is Indian as well as Abroad Education Consultancy catering to various countries like USA, UK, Canada, Australia, etc. It is headed by Vinni Shah (CA, CFP) & Arpan Modani (CA, CFA). Aara Consultancy was formed with the whole intention of providing genuine, unbiased recommendations and guidance to students from all fields and age. Vinni is the head counselor and has assisted over 1000+ students across the globe by helping them choose the correct path in their educational and professional careers.

The counselor explained students about various ways of education after bachelor's degree, which includes masters, M.B.A, Ph.D. programs. Students were made aware about choosing the right path for their educational and professional careers.

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

Vinni explained how Aara Consultancy helps students to choose correct program, country, etc.

The session wastelecasted live on YouTube. The live session crossed 400+ views and students asked their doubts, questions on YouTube live chat.

Vinni answered all questions and cleared doubts of all students. She provided the contact details of Aara Consultancy so that anyone attending this webinar can have their first one to one counselling with them free of cost.

Overall the webinar was so informative and helpful for students of all field. Everyone got their doubts solved and gave us a good feedback for arranging such a good webinar.

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

# **ANSYS WORKSHOP**

Date: 26<sup>th</sup> & 27<sup>th</sup> September 2020

Time: 12:00 PM - 2:00 PM

Platform: Google Meet

Speaker: Mr. Kartik Patil



AeroRGIT, an Aeromodelling committee of MCT's Rajiv Gandhi Institute of Technology Mumbai(53), had organized two days ANSYS Workshop on 26<sup>th</sup> and 27<sup>th</sup> September 2020, for students of RGIT and foreign colleges aiming to provide them a good platform for understanding simulation environment, various analysis techniques & types, enhance their analysis skills. The uses of ANSYS are numerous in numbers, but finally all of them leads to one single concept called profitability of an organization. The workshop was conducted for two hours each day. The entries flooded in, with the total 50 number of participants. Thecost of the workshop was Rs.150 per participants. The workshop was conducted by Mr. Kartik Patil, team member of AeroRGIT, student of RGIT, Mumbai.

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

#### > Topics Covered in the Workshop are

- 1. Basic Introduction of ANSYS
- 2. Static Structural Analysis
- 3. Modal Analysis
- 4. Thermal Analysis
- 5. Explicit Dynamic Analysis

## **26th September 2020 (Day 01):**

The workshop began with a welcome speech by our President Ms. Pallavi Mehta in which the participants were informed about AeroRGIT committee and its achievements. Then, our designing team member and speaker of the workshop Mr. Kartik Patil took over the control of the workshop. He explained the basics of ANSYS software briefly to give an overview of the software to students followed by introduction of four important types of analysis in the ANSYS software.



**Knuckle Joint** 

**Hook-Eyebolt** 

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

**Static Structural Analysis:** Structural analysis is the determination of the effects of loadson physical structures and their components. It employs the fields of applied mechanics, material science and applied mathematics. Kartik explained the steps involved in static structural analysis by performing analysis on pre-designed models of Knuckle Joint and Hook-Eyebolt.





<u>Modal Analysis:</u> Modal analysis is the study of dynamic properties of the systems in The frequency domain. This type of analysis is mainly useful for Civil Engineers to test And analyse the bridges to ensure the safety of the bridge. The steps involved in this type Of analysis and final results were explained with the help of 3D Truss Bridge example. This analysis is very important from safety point of view as we can determine the Factor Of Safety for any model.

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

#### 27<sup>th</sup> September 2020 (Day 02):

On the second day, the doubts of all the students regarding the analysis thought on first day was solved and further the workshop moved towards Thermal and Explicit Dynamic Analysis.



Steady State Thermal Analysis of cylinder head of automobile combustion chamber Thermal Analysis on effect of gap between two surfaces

**Thermal Analysis:** With the use of Thermal Analysis, one can determine deformation, thermal stresses, temperature distribution and heat transfer inside a body when kept in a temperature changing environment. It is one of the important analysis for industrial engineers. In thermal analysis, Kartik explained about the cylinder head of the automobile combustion chamber performing steady state thermal analysis and thermal analysis on effect of gap between two surfaces. The use of results obtained was also explained to students.

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)



**Explicit Dynamic Analysis** 

**Explicit Dynamic Analysis:** An explicit dynamic analysis is computationally efficient for the analysis of large models with relatively short dynamic response times and for the analysis of extremely discontinuous events or processes. Transient dynamic analysis is a technique used to determine the dynamic response of a structure under the action of any general time-dependant loads. This type of analysis is mostly used for moving car. The same example of moving car hitting a concrete wall was explained in two cases:

(a) Analysis of a car moving with a certain velocity hitting a thin concrete wall.

(b) Analysis of a car moving with a certain velocity hitting a thick concrete wall.

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)



Moving car hitting a thin concrete wall

Moving car hitting a thick concrete wall

The end-note was delivered by President and Vice-President of the committee. The students actively participated in the whole workshop and willingly helped us to improve by providing a great feedback. ANSYS Workshop was a good success and we hope to come up with more workshops like this. Students were provided with E-certificate and recorded videos of both days' sessions so that they can use them in future. Students gained an insight of ANSYS software and had a great experience.

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

## **AERORGIT STUDENT COMMITTEE 2019-2020**

Sr. No.	Post	Name	Year	Contact
1	President	Pallavi Mehta	TE	9699291234
2	Vice President	Anirudha Mandal	TE	9403698076
3	Treasurer	Abhjit Shah	BE	8655742439
4	Operations Head	Rushikesh Mhatre	BE	9028902802
5	Marketing Head	Rahul More	TE	8080753031

## **AERORGIT STUDENT COMMITTEE 2020-2021**

Sr. No.	Post	Name	Year	Contact
1	President	Pallavi Mehta	BE	9699291234
2	Vice President	Anirudha Mandal	BE	9403698076
3	Treasurer	Soham Parab	BE	9920431984
4	Operations Head	Yash Mhatre	BE	8976540844
5	Documentation Head	Mayuri Ghadigaonkar	TE	7045388474
6	Co-Manufacturing Head	Nilay Shirsat	TE	9969267464
7	Digital Creative	Rugved Raote	SE	9867550858
8	Marketing Head	Yash Mhatre	BE	8976540844

(Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

# TEAM PEGASUS 2020-2021

Sr. No.	Post	Name	Year
1	Captain	Pallavi Mehta	BE
2	Vice Captain	Anirudha Mandal	BE
3	Manufacturing Head	Soham Parab	BE
4	Operations Head	Yash Mhatre	BE
5	Inspection Head	Rahul More	BE
6	Team Member	Jay Mistry	BE
7	Team Member	Kartik Patil	BE
8	Team Member	Pragnesh Patel	BE
9	Team Member	Gaurav Patil	BE
10	Team Member	Nilay Shirsat	TE
11	Team Member	Prachi Bhandari	TE
12	Team Member	Mayuri Ghadigaonkar	TE
13	Team Member	Rugved Raote	SE
14	Team Member	Shubham Kharat	TE
15	Team Member	Prathamesh Parab	SE
16	Team Member	Nikhil Thosar	SE
17	Team Member	Darshan Raikar	SE
18	Team Member	Siddhesh Deshmukh	SE
19	Team Member	Vaibhav Kelkar	SE

#### (Permanently Affiliated to University of Mumbai) DEPARTMENT OF MECHANICAL ENGINEERING (NBA- Accredited UG Program)

20	Team Member	Nitesh Sawant	TE
21	Team Member	Vedant Vernekar	SE