ID 473702

# Team management of over 300 students with Fusion 360

Hiroto Hamane
Kogakuin University

## Learning Objectives

- Team Management with Fusion 360
  - Demonstrates “Team management with Fusion 360”
  - Introducing “Kogakuin University Solar Team”
  - The race: Bridgestone World Solar Challenge

- Solar Vehicle Design SAMPLES
  - Fusion 360 Simulations (FEM)
  - Fusion 360 + CFD
  - Generative Design
  - CAM

## Description

Professor Hamane consolidate class and World solar car team for student org to Fusion Team which can help distant learning platform and collaboration for ME design students over Fusion 360 and Fusion team.

## Speaker

Hiroto Hamane
Professor
Dept. of Mechanical Systems Engineering, Kogakuin University.
Director of Kogakuin University Solar Team.

He founded Kogakuin University solar car team in 2009. The team is winning four consecutive solar car races in Japan. The team has the highest record of driving the longest distance in energy saving in a historic Japanese race for about 30 years. The team also participates in the world's largest solar car race in Australia. In 2015, the team won second place in the cruiser class. In 2019, the team won the Technical Innovation Award from CISRO for the first time in Japan. He is featured in more than 500 media articles per year such as Japanese television and newspapers. The team's vehicles are unique and focused on biomimetics technology.


Fig.1: Kogakuin University Solar Vehicles

## Why do you need Fusion 360 for team management?

The Bridgestone world solar challenge is the most famous solar car race in the world. The race starts from Darwin and travels to Adelaide at Australia. It's 3,000 km distance across the Outback. The race is an adventure, passion and innovation for a sustainable society to the future.

My team is the biggest in the world! About 3 hundred students from all departments of the university are joining the team. I will talk about team management with fusion 360. We have transferred 3D CAD skill education, data management for each group, process management, idea proposals and manufacturing process to Fusion Team.


Fig.2: Bridgestone World Solar Challenge

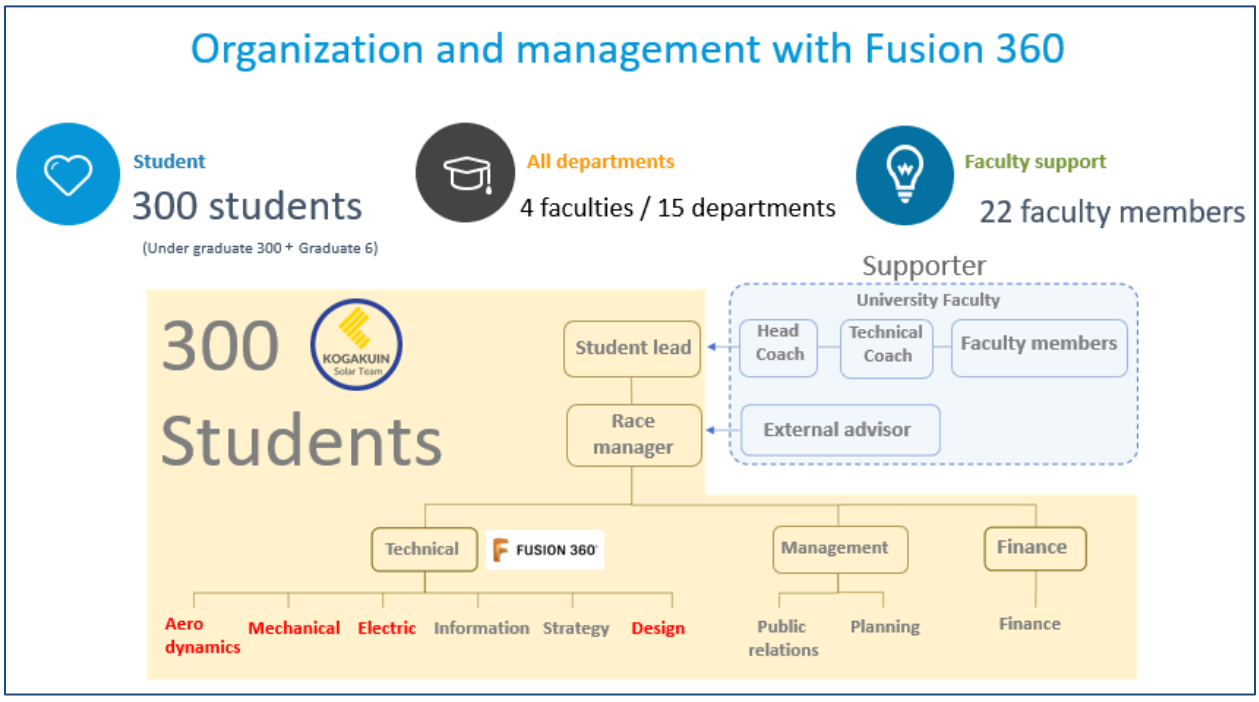



Fig.3: Organization of kogakuin university solar team


Fig.4: Team management with Fusion 360


Fig.5: How to use Fusion 360 for team management
(3D CAD skill education, data management for each group, process management, idea proposals and manufacturing process)

## How can we build a car that will win the race?

I will talk about the Solar Vehicle design samples, using the special function of Fusion 360, Simulations, CFD, Generative Design, CAM.

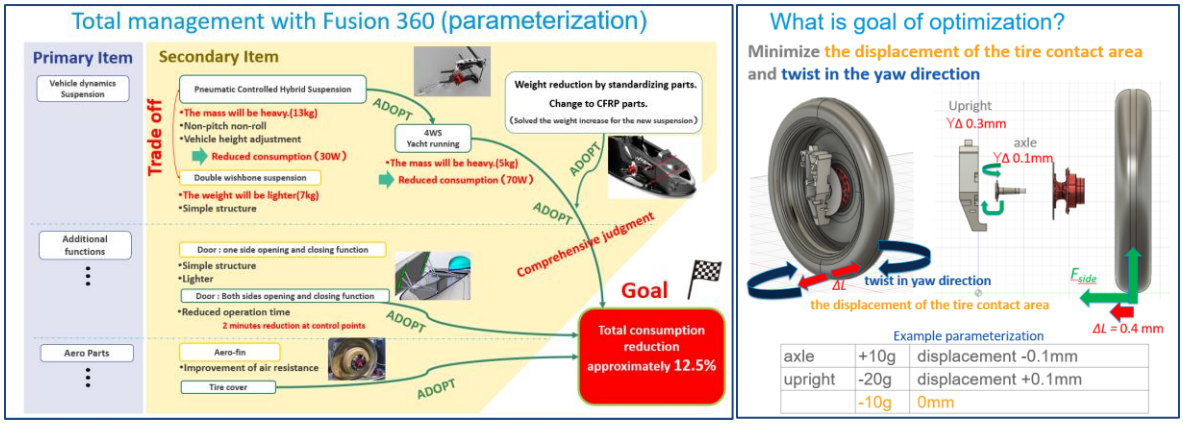



Fig.6: Optimization for solar car design with Fusion 360

### Fusion 360 simulation and CFD

Light weight and high rigidity are required for the production of solar cars. I will show you how to design a carbon laminate for a solar car with a wing by using Fusion 360 and CFD.

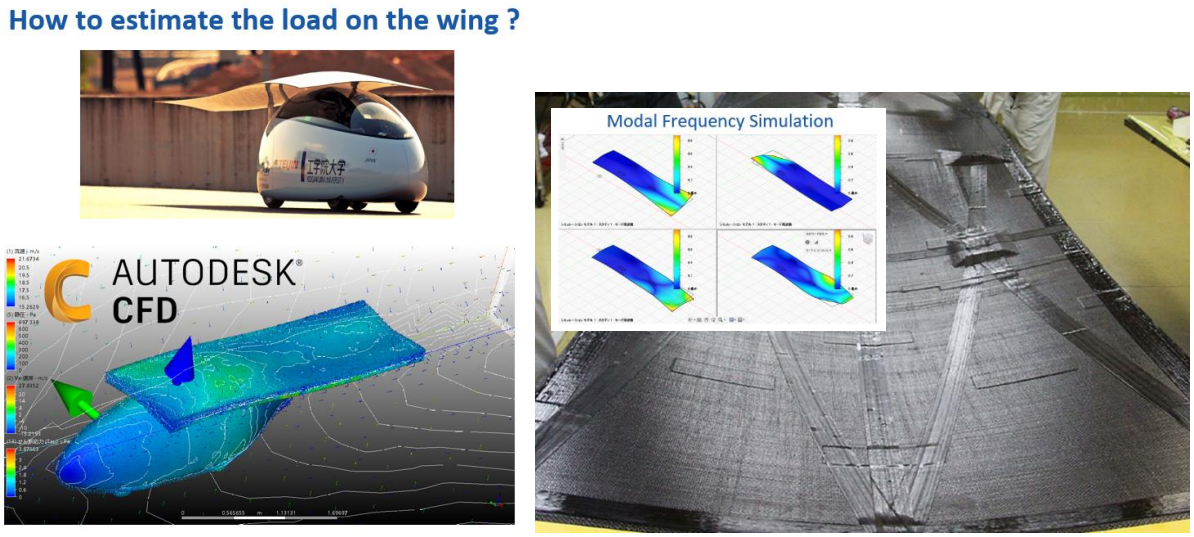



Fig.7: Carbon laminate by using CFD and Fusion360 simulations

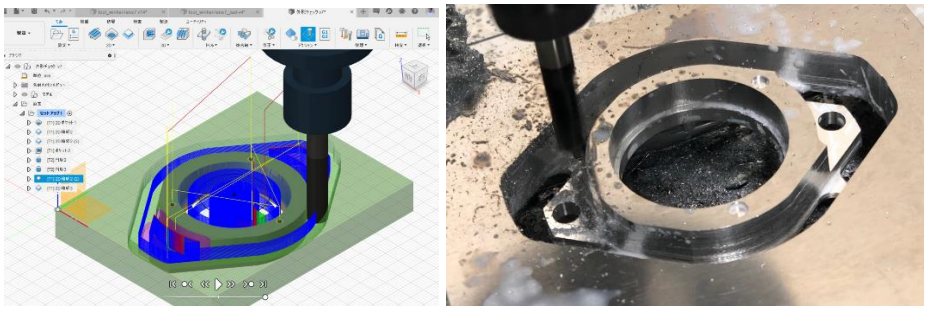
### Generative Design

I will show you examples of weight reduction with Generative design. The generative design calculates a lot of shape candidates. You can compare many candidates for several items such as mass, displacement, rigidity and cutting methods.


Fig.8: Generative Design

## CAM

Fusion360 CAM will reduce machining time and number of workers. The G code created by fusion 360 CAM is used from the cloud on a PC connected to each machine. I will show you a sample of a blinker lens and a driver shoulder guard.



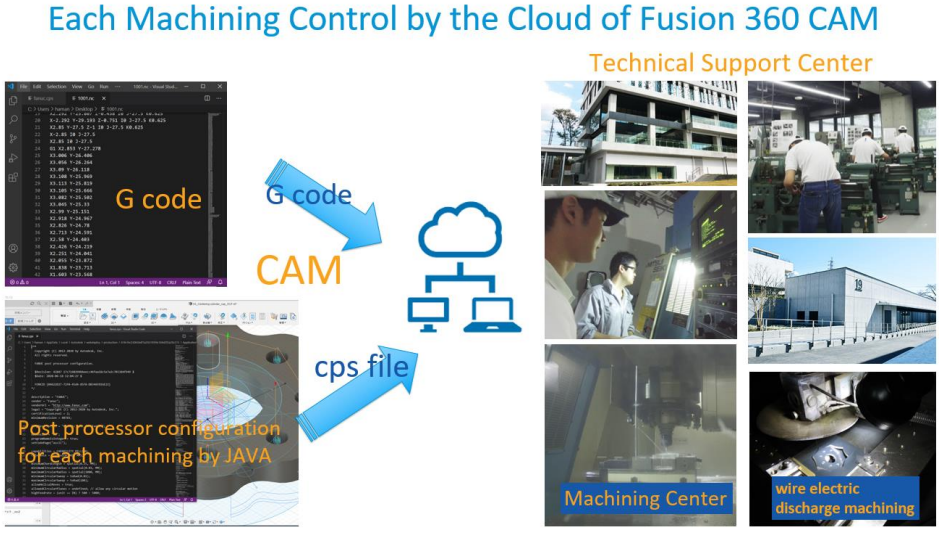



Fig.9: Fusion360 CAM


Fig. 10: People and Data in One Place by Fusion360