Online Ethics Center
FOR ENGINEERING AND SCIENCE

Ethical Issues in the Design of Ultra-Lightweight Vehicles

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Description

This web-based case study presents the major safety and sustainability points in the ethical debate over ultra-lightweight vehicles and then asks the reader to consider a series of thought-provoking questions for both topics.

Body

A multidisciplinary design team consisting of undergraduate and graduate students from Aerospace Engineering, Applied Earth Sciences, Industrial Design and Mechanical Engineering at the Delft University of Technology in the Netherlands is designing a lightweight, sustainable car.Case description based on "Ethical Considerations in Engineering Design Processes", A. van Gorp and I. van de Poel, IEEE Technology and Society Magazine, volume 20(3), 2001. Their goal is to design a family car with a maximum mass of 400 kg. Mass is an important factor in the fuel consumption of a car, a light car can be very energy efficient. The target mass is less than half of that of normal cars. (European family cars usually weigh about 1200 kg and the average American car weighs 1360 kg). Another requirement is that the

car should be manufactured at affordable mass production costs.See http://www.smartproductsystems.tudelft.nl/, project 3 DutchEVO.

The design of such a unique car presents not only significant technical hurdles, but it also introduces many ethical issues such as minimum safety requirements and the need to incorporate sustainability considerations. This web-based case study will present the major safety and sustainability points in the ethical debate over ultra-lightweight vehicles and then ask the reader to consider a series of thought-provoking questions for both topics. For those using this website for an assignment, you have the option of sending your responses to your professor or teaching assistant.

In addition to reading and responding to the ethical issues in the design of ultra-lightweight vehicles, interested readers can see how the answers to both sets of questions from a sample of students from the United States compared to those of Dutch students. The case study was piloted in a Technology and Ethics class comprised of engineering students from various disciplines at the University of Virginia as well as a group of students in Aerospace Engineering at Delft University of Technology. While many answers were very similar between the two distinctly different student groups, many attitudes are quite different. Educators using this case may want to add an additional question to the assignment that asks students hypothesize why answers between the two groups of engineering students may be similar or different.

Safety Issues

Safety Questions

Safety Responses

Sustainability Issues

Sustainability Questions

Sustainability Responses

Related Links

Notes

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Rights

Resource Type

Case Study / Scenario

Topics

Product Liability
Public Health and Safety
Risk
Safety
Sustainability

Discipline(s)

Engineering