

## Aston Martin stripdown – a Mechanical Dissection Exercise

### Duration

5.36 mins

### Speakers

- Dr Karl Dearn, Lecturer, School of Mechanical Engineering
- Izazi Mosli
- Matt Knights
- Pippi Hornsby
- Peter George
- Greg Carty

**Dr Karl Dearn:** The mechanical dissection exercise takes place at the end of our academic year and it gives our second year students the opportunity to explore the physical embodiment of decisions that are made during the design process and how components relate to one another once they're part of a complex sub-assembly. The unique thing about the exercise that we run here at the university is the partner that we do that with and that is **Aston Martin (<http://www.astonmartin.com/>)**. So in around June time each year we take delivery of two Aston Martin sports cars; these tend to be test beds that have perhaps done something like 200 to 300,000 miles and have reached the end of their useful lives and are waiting to be scrapped and so we spend ten days or so with the students, allowing them to tear into those vehicles. One vehicle's a reference vehicle, the other as a dissection specimen and the students typically spend, as I say, perhaps ten days looking at components, looking for the embodiment if you like of decisions that have been made at the design stage.

**Dr Karl Dearn:** Students will typically split into groups of six and then will look at various aspects of the vehicle, the type of materials used, why they've been used, how the component has been designed, why it's been designed in that particular way, how it interacts with other components. For example in the shaft, why the bearings sit on the shaft the way they do? Perhaps some environmental analysis, what's the embodiment if you like in the components of the area in which it operates within the vehicle, is there some other signs of corrosion and wear? And also to really get an intent, as I've said, for what the designer is trying to embody within that. The good thing about having an Aston Martin is of course you get a real differential between what would be a standard vehicle and a luxury product as well and you can really see and ask the students to explore how that is embodied within the design of the vehicle itself.

**Dr Karl Dearn:** So at the end of the week having spent eight days breaking down their components, the students then formulate and articulate all of their findings into a poster and then they're asked to present that poster to members of the academic staff here at the university and also representatives of Aston Martin. So typically we'll spend maybe an hour looking through the posters, asking the students to explain what they've done and what they've found from their exploration and then at the end of that we'll take a small period to deliberate and then we'll pick a best winning poster. For the winning team, having spent ten days here at the university trashing the Aston Martin, they are then able to go to Aston Martin's headquarters' in Warwickshire – Gaydon – and then spend some time with the engineers at Aston Martin, going through the factory, looking at the design office and seeing how the car is built and then for the afternoon, if you like culmination of their efforts, they then get to spend time on the test track actually in the vehicle doing ridiculous speeds.

**Pippi Hornsby:** Fast.

[laughing]

**Pippi Hornsby:** Yeah, because we went really fast in the car!

**Greg Carty:** Yeah, but exhilarating.

**Izazi Mosli:** Yeah, exhilarating.

**Greg Carty:** They took us out in the different cars. We all ended up in the Rapide didn't we?

**All:** Yeah.

**Greg Carty:** And we went in the Aston Martin Rapide, three at a time, and they took us out onto their proving ground and we did a couple of fast laps.

**Peter George:** In thick fog. You couldn't see where you were going.

**Matt Knights:** So you got to experience the full-on speed and then all the nifty little handling and the ride comfort.

**Izazi Mosli:** Yeah, what it would do on actual roads.

**Pippi Hornsby:** If you were driving really fast!

**Izazi Mosli:** Yeah!

[laughing]

**Matt Knights:** The manufacturing side and the processes that they go through and the techniques that they use are very very applicable to a lot of the stuff we do in our modules.

**Greg Carty:** It was interesting to see on the factory tour the components that we sort of studied during the stripdown, seeing them like in the factory about to be assembled into a car as opposed to on the other side when we were taking it apart to see how it worked. We looked at the engine manifold, the intake, the air intake manifold, and that was really interesting because we hadn't really learnt about that particular part of the car in detail before. It was good to be given the opportunity to sort of take it apart, study it –

**Pippi Hornsby:** Cut it open.

**Greg Carty:** Yeah, gut it basically and yeah, just learn about how this piece of kit works and how it affects the quality and performance of the car and how the car sounds and all these other things that you sort of take for granted really stem from this one little piece of kit that gets the air into the engine.

**Pippi Hornsby:** I liked the factory tour, how everything's like made bit by bit by loads of different people, especially made to everybody's specifications.

**Peter George:** So every one is unique.

**Pippi Hornsby:** Well I want to go into the automotive industry so it's good for me to see how the entire business works together.

**Izazi Mosli:** How production starts.

**Pippi Hornsby:** Yeah, from the very first prototype to the full production and getting the car out to the customers. It was good to see the whole thing.

**Pippi Hornsby:** Oh yeah, we've got badges.

[laughing]

**Pippi Hornsby:** Pete and I are wearing them.

**Greg Carty:** Mine's on my coat.

**Pippi Hornsby:** I told you, you should put it on.

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