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# Can-do technology that could revolutionise cars

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**C**ars made from recycled cans, lightweight engine technology and practices borrowed from the motor racing and aerospace industries could help cement future success for the region's automotive sector.

That was the message from West Midlands vehicle technology innovators ahead of a Birmingham event looking at research developments in the automotive industry.

The Science Capital event brought together car firms, engineers, academics and investors in a bid to strengthen links between the key drivers in the West Midlands sector.

Speakers included representatives of firms like Jaguar Land Rover and turbo-charger specialists Aeristech, who gave an insight into the world-leading research happening in the region.

At Jaguar Land Rover (JLR), the firm is working on making vehicles lighter and more efficient and is pioneering research into materials – aluminium in particular.

JLR materials engineering manager Andrew Haggie said: "The car industry has been driven by targets driven by European legislation.

"One of the solutions is to throw in electric vehicles and hybrids, but one of the easiest and most tangible solutions is to make the vehicles lighter. That's what we are doing with aluminium technology and specifically on the Jaguar XJ."

He said aluminium offered many advantages over vehicles with a traditional steel structure.

"Steel cars are normally spot welded so you have these images of car assembly plants with sparks flying everywhere,

whereas aluminium technology is more like aerospace – it's how they make aeroplanes where the aluminium sheet is glued and riveted together," he said.

"That gives a strong and stiff structure compared with a steel vehicle, which helps with the good handling and performance that you need from a sporting saloon."

Mr Haggie said the firm was also working with the Technology Strategy Board on a project looking at recycled aluminium, where items like discarded drinks cans could be melted down for reuse in the automotive sector.

"With virgin aluminium you have to put lots of electricity in to convert it, whereas if you use recycled aluminium all you have to do is melt it down and tune a bit of the chemistry to get it back to the right composition

and then you can use it again," he said.

"You save 95 per cent of the energy costs of the material manufacture if you use recycled material.

"We're looking at drinks cans. In theory you could melt those down and turn them into a car that gives further efficiency savings."

In Kenilworth, Aeristech is also blazing a trail in the sector, working on turbo-charger technology which will bring down CO<sub>2</sub> emissions by paving the way for smaller engines.

Product designer Tim Richardson said the firm's technology enabled engines to be downsized by 30 to 50 per cent without any loss of performance.

"You can effectively have a 1.4-litre engine performing like a 2-litre engine," he said. "You get the efficiency benefits of having a smaller engine which weighs less. And by putting our turbo technology on the engine you are still able to achieve the power and the response that you would get from a larger engine."

Since its creation in 2007, Aeristech has successfully secured invest-

ment and scooped industry prizes for its technology.

But Mr Richardson acknowledged the demise of Coventry electric vehicle firm Modec showed it was not always plain sailing for small technology-based firms in the current climate.

Aeristech, which has been backed by investors including Birmingham-based Midven, praised the involvement of regional development agency Advantage West Midlands (AWM), which is being scrapped by the coalition Government.

"We've benefited hugely from the regional development agency – both AWM and we've also had a facility in Wales which has used the Welsh Development Agency.

"That's made a huge difference in getting the product off the ground.

"We've had to rely in the last 12 months on significant private funding coming into the business.

"With the disbanding of the regional development agencies there hasn't really been a replacement."

In the related sector of motor racing, an academic project is producing research that could feed into the automotive sector in the West Midlands.

Dr Kerry Kirwan, associate professor at Warwick Manufacturing Group, University of Warwick, is one of the team working on the WorldF3rstm Formula 3 racing concept, a fully functional racing car built almost entirely from waste and recycled materials and fuelled by biodiesel derived from waste food products such as chocolate, beef fat and residues from the cheese industry.

He said: "The car was a demonstrator of sustainable environmentally friendly materials in a challenging engineering application.

"There's a misconception that green materials are somehow inferior and we want to dispel that myth.



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"We also wanted to show that green could be fun and sexy."

He said there were lots of opportunities for innovations from the world of motor racing to transfer into the West Midland automotive sector.

"That gives the racing industry societal relevance.

"With the price of fuel going up and environmental concerns – how long can you continue hooning round a track and still be seen as socially acceptable?"

The Science Capital event at Hotel du Vin on March 16, organised by Professor Michael Overduin, also heard from Dr Bruno Pollet from the University of Birmingham, talking about hydrogen fuel cell vehicles and Barry Shrier, chief executive officer of Liberty Electric Cars.



The Jaguar XJ

