

Attribute development for a modern-day automotive icon

Case study overview

When the London EV Company (LEVC) set about developing a radical new replacement for the iconic 'black cab', it turned to HORIBA MIRA for attribute development, engineering, and test support.

HORIBA MIRA played a lead role on NVH, vehicle dynamics and durability, in addition to providing consultancy and test support on numerous other aspects of the project, including crash safety, pedestrian protection, thermal management and ergonomics.

HORIBA MIRA also carried out the build of more than 20 attribute prototype (AP) vehicles to support the physical testing programme.

Engineering team deployed: Five full-time attribute engineers in the UK, plus extensive use of HORIBA MIRA's in-house test facilities and engineering services.



Vehicle engineering and test validation



Taxi



UK



We employed a flexible approach, with varying levels of support to match LEVC's needs as the programme went forward. We scaled up or down as required as LEVC grew its own engineering team.

Dave Havergill, Senior Manager for Engineering and Programme Management

HORIBA MIRA



Approach

The development of the LEVC TX taxi posed a unique challenge. It brought together a new chassis and body structure, an innovative new powertrain, a new engineering team, and a new factory. Not only that, but it focused on a very specific use case, with long operating hours, typically consisting of numerous short, urban journeys.

A bespoke drive cycle was devised for the vehicle's durability testing, which was carried out at the 750-acre HORIBA MIRA Proving Ground in Warwickshire. Specific test targets were set for structural durability, misuse and powertrain evaluations. HORIBA MIRA led the initial benchmarking for the Vehicle Dynamics development, using objective evaluations and K&C rig testing on the outgoing model and a class-leading MPV to support the creation and cascade of targets.

Other services included more than 30 crash tests carried out at HORIBA MIRA's in-house facilities, benchmarking and target setting for thermal comfort, CFD development of internal and external aerodynamics, and consultancy on cabin ergonomics.

Successes and benefits

The LEVC TX was released to widespread acclaim from customers and the media. Standout achievements include:

- ✓ HORIBA MIRA's **attribute engineering capability** enabled LEVC to re-establish their iconic brand with a modern, heavily electrified product, a clear benefit in a competitive market. This was all delivered in one location which gave them the best use of a limited number of expensive prototypes
- ✓ The new TX required significant improvements to be made in overall NVH performance with a focus on occupant comfort. HORIBA MIRA's NVH team were able to deliver **above the targets**, a fantastic result considering the constraints within the programme due to the powertrain and novel body structure. **Overwhelmingly positive reviews** for the vehicle received, making particular references to its NVH and comfort. Top Gear Magazine noted, "It's far nicer for passengers [than its predecessor]; much more comfortable, quiet, and refined."
- ✓ **Full crash programme** completed
- ✓ **Successful build** and re-build of more than 20 individually unique AP vehicles, closely located to engineering for **rapid issue resolution**
- ✓ Provided LEVC with the **expertise and facilities** to scale up extremely rapidly, with a **flexible** level of support to suit its needs



Deliverables

- ✓ Benchmarking
- ✓ Attribute Eng. development
- ✓ Thermal comfort support
- ✓ Crash and pedestrian tests
- ✓ Climatic testing