



# Techspan

## Motorway information signage system

### Challenge

Techspan's variable message sign system (VMS) was developed in response to the Highways Agency requirement for the next-generation motorway signs. Contracts had already been awarded to Techspan competitors and their solutions were patented.

Techspan had won the contract for Wales and needed its own solution. It recognised that the large display area was not practical in a single sheet and that tiled modules might be economic.

To complement Techspan display control and structural fabrication skills it needed a partner for the Display Module that understood high-volume processes, and how to engineer economic polymers for rugged applications. It selected PDD to design and develop the Display Modules that make up the LED colour display.

The Display Module needed to comply with stringent Highways Agency and Welsh Development Agency specifications, which included tightly-defined viewing angles, illumination contrast and reflection resistance. Display Modules also require engineering to withstand 'life in the hard-shoulder' with driving rain, wind loads and high speed impacts from vehicle debris. They must keep cool in the sun and de-mist in the cold.

### Solution

PDD conceived a patented assembly comprising a structural, louvered chassis within a deep front panel. Moulding the chassis provides the thermal management and optical paths, internal reflection and mechanical structure all within a single component. Optical ray tracing, Finite Element Analysis and extensive use of 3D CAD helped to determine this optimal design. Materials were matched for thermal expansion and proof of principle models were made for detailed optical tests.

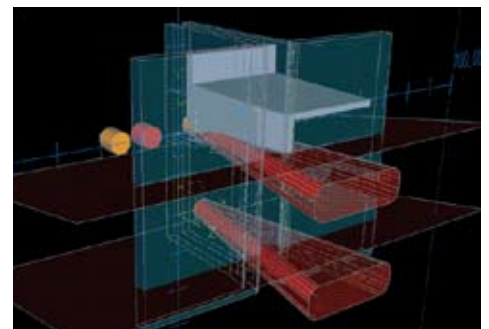
PDD machined the prototype Display Module for tests in-house, prior to external approvals.

The final product withstands:

- cleaning with high-pressure jets (IP66)
- 20J impacts that replicate flying vehicle debris
- 1.5g vibrations over 6 hours
- drop tests imparting 10g.

### Result

Techspan commissioned its first batch of signs in Wales ahead of its rivals in England. The Display Modules met all of the demanding requirements and over 5000 have been produced for signs.



*"The depth of skills offered within PDD and the wealth of experience meant that our concept ideas turned into reality faster than anticipated. This coupled with excellent communication between PDD and ourselves enabled us to meet demanding deadlines and finish the project to budget."*

Techspan

### Building deep relationships that deliver meaningful innovation

For more information email [info@pdd.co.uk](mailto:info@pdd.co.uk) or visit our website

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