



project: syntropy (Germany / KSA / Sweden / Singapore)
creates dvLED- / projection-based visual technologies and solutions for professional simulation and training environments, immersive XR environments, XR-CAVEs, media based attractions and much more.

Project

Two Projection Systems for BMW High-Fidelity and High-Dynamic Driving Simulators

Customer

BMW Group, on behalf of Autonomous Vehicle Simulation

Project

Two immersive 3D Stereo Visual Display Solutions for 360° projection screens for the High-Fidelity and High-Dynamic Driving Simulators in the BMW Driving Simulation Centre, each equipped with 15 WQXGA dual-channel LED-projectors, domeprojection.com autocalibration + domeprojection.com VIRES warp&blend.

Project Details

We have designed and implemented two immersive 360° 15 channel 3D Stereo Visual Display Systems for the BMW High-Fidelity and High-Dynamic Driving Simulators, both being the highlight simulators in the new BMW Driving Simulation Centre in Munich, which houses 14 simulators for every stage of car development. The VDS are equipped with a fully automated calibration system including color calibration from domeprojection.com. It also comprises the domeprojection.com warp&blend solution for the VIRES virtual test drive image generators and dynamic warping capabilities.

The new simulators will help BMW to expand the virtual development process, reducing the number of prototypes to be built. They are used to test new display and operating concepts for future driver assistance systems and automation functionalities and to analyse the risk of driver distraction or the effectiveness of the multimodal control methods.

About the BMW High Fidelity Driving Simulator

The BMW HF Driving Simulator is a 9-degree-of-freedom (9DOF) system and allows long accelerations. It has a lace table as well as X and Y rails of the same length with linear motors for the best performance in all driving situations.

The BMW HF provides a seamless immersive experience, where – in the future – test persons will wear VR-Headsets to experience e.g. a virtual BMW or MINI dealership, with the vehicle parked in front of the dealership ready for the test



Leading Provider of Next Generation Visual Display Systems

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drive and will only remove the headset before entering the real simulator. Complex urban driving situations like braking and accelerating in corners, negotiating a roundabout, and a quick succession of turns can all be recreated with high precision on this installation's motion area.

Specification of the BMW HF Driving Simulator:

- simultaneous longitudinal, transverse and rotational movements
- acceleration of up to 0.65 g
- motion area of nearly 400 square metres
- over ten metres in height
- moving mass of around 83 metric tons
- peak electrical power required: up to 6.5 MW.

About the BMW High Dynamic Driving Simulator

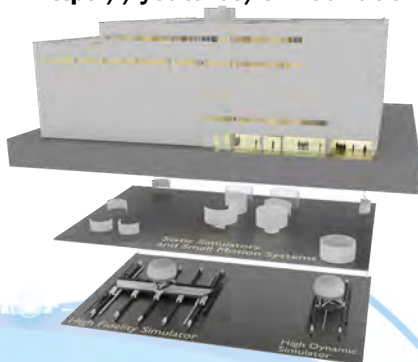
The BMW HD Driving Simulator is a 7-degree-of-freedom (7DOF) system with a lighter structure which allows higher speeds and accelerations. It also has a single axis of movement on the ground and offers the possibility of installing the simulation cockpits in longitudinal or transversal direction to adapt to different driving scenarios.

The BMW HD is capable of generating longitudinal and lateral acceleration forces of up to 1.0 g to replicate highly dynamic evasive action, emergency braking and hard acceleration.

Specification of the BMW HD Driving Simulator:

- highly dynamic longitudinal and lateral acceleration of up to 1.0 g (similar to the BMW iFE.20 Formula E racer)
- sled length of 21 metres
- over nine metres in height
- moving mass of around 23 metric tons
- peak electrical power required: up to 3 MW.

Videolink: <https://youtu.be/o-IKUa4d00k>



project: syntropy's visual display solutions for

- FMS FULL-MISSION-SIMULATORS
- FFS FULL-FLIGHT-SIMULATORS (EASA Level D)
- CT COCKPIT SIMULATORS
- HELICOPTER FLIGHT SIMULATORS
- FNPT / FTD TRAINING SIMULATORS
- COMBAT SIMULATION
- JFST ACTION TRAINERS
- JTAC TRAINERS
- ATM TOWER SIMULATORS
- DRIVING SIMULATORS
- SHIPS BRIDGE SIMULATORS
- INDUSTRIAL SIMULATORS
- RESEARCH SIMULATORS

full-service for S&T visual display solutions

project: syntropy offers turnkey solutions and full-service throughout your entire project:

- CONSULTING
- CONCEPT AND DESIGN
- APPLICATION DEVELOPMENT
- CONSTRUCTION, MANUFACTURING, INSTALLATION
- ADVANCED SOLUTIONS FOR NVG STIMULATION
- FULLDOME SYSTEMS
- tailor-made dvLED-/Projection-based VISUAL DISPLAY SYSTEMS
- AFTER SALES SERVICES
 - training
 - maintenance and support
 - tailored service-level-agreements (SLA)
 - spareparts supply

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