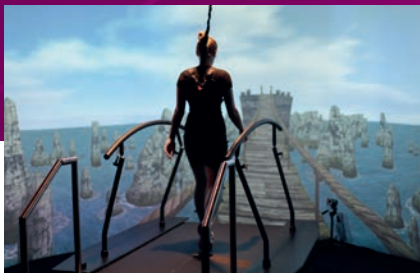


# Virtual Reality and Sound Add-On for M-Gait

Extend the M-Gait's research options by integrating an interactive and dynamic Virtual Reality (VR) system, including a surround sound system. The design of the M-Gait allows an upgrade to integrate VR with the instrumented treadmill. Create real-time interactions between any parameter measured by the system and the VR environment. The surround sound system adds to the immersive experience.



## Generate One Integral Image

The VR set-up can consist of a 180 degree semi-cylindrical or a flat screen projection. Additional vertical projection on the belt is also possible. Depending upon the configuration, the D-Flow software uses up to four projectors to generate one integral image of the VR environment.

## Encourage Interaction

Various default VR scenes are available, but D-Flow can also be used to create your own environment. Create auditory cues, or visual cues on the screen in front of the treadmill to encourage interaction by the subject. Allow VR objects, or even complete scenes, to interact with any data stream in the system to challenge specific movement or actions. Vertical projection on the walking surface enables Augmented Reality application development.

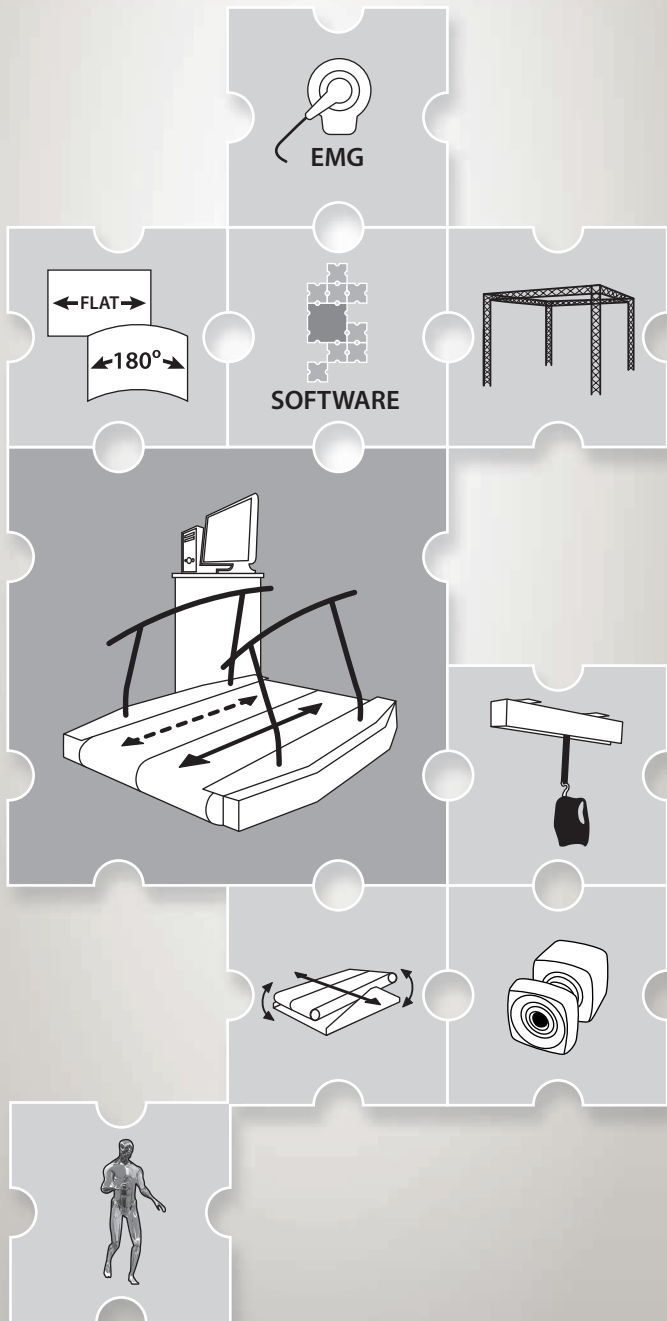
## Use Real-Time Feedback

Use the force data from the treadmill, or other data streams, to respond to, or influence the VR interactions. Real-time feedback on performance measures can be used to develop effective rehabilitation protocols, applied games or advanced research protocols.

## Key Features

- Flat (all sizes possible) or 180 degree semi-cylindrical projection. Vertical projection on the belt is possible as well.
- Surround sound system.
- Real-time rendering of the interactive VR environment.
- Modular system, allowing for enhancements and integration with, for example, 3D motion capture and treadmill pitch / sway.
- D-Flow system control and application development software.

# Modular system

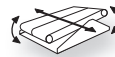


Various system enhancements are possible to increase both the clinical and research possibilities of the M-Gait.



## Treadmill

An instrumented dual-belt treadmill with individually controllable belts measuring 3D ground reaction forces of each leg independently.



## Pitch and/or sway

A pitch and/or sway unit can be added to the treadmill for walking uphill & downhill or to apply medial-lateral perturbations of the walking surface.



## SOFTWARE

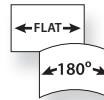
## Software

The D-Flow software provides real-time system control and a VR application development environment using visual programming. Add different modules to the D-Flow software to extend the functionality up to full gait analysis and training, including an offline analysis tool for intuitive data analysis.



## Motion Capture

Integrate a 3D motion capture system to collect motion data for movement analysis or to control real-time feedback applications for training.



## Virtual Reality Environment

Create a high-end Virtual Reality environment with a large flat screen or a truly immersive experience with the 180° projection screen and the surround sound audio system. Enhance even further with a 3D stereoscopic projection.



## Truss

A custom build truss facilitates optimal flexibility for motion capture camera mounting and provides a fully integrated solution for the other system components and cabling.



## Body Weight Support

The light version provides continuous dynamic support. The pro version allows computer guided active support in response to e.g. the phase of the gait cycle or the level of weight distribution.



## EMG

## Electromyography

Add low latency wireless electromyography (EMG) to measure muscle activation for movement analysis or use it to control a real-time biofeedback application for training.



## Human Body Model

Use the musculoskeletal Human Body Model for advanced real-time biomechanical analysis and to visualize joint rotations, joint moments and muscle forces for training.

## Miscellaneous

Various other hardware sensors and systems can be integrated, for example video cameras, accelerometers, electroencephalography (EEG) or functional electro stimulation (FES).