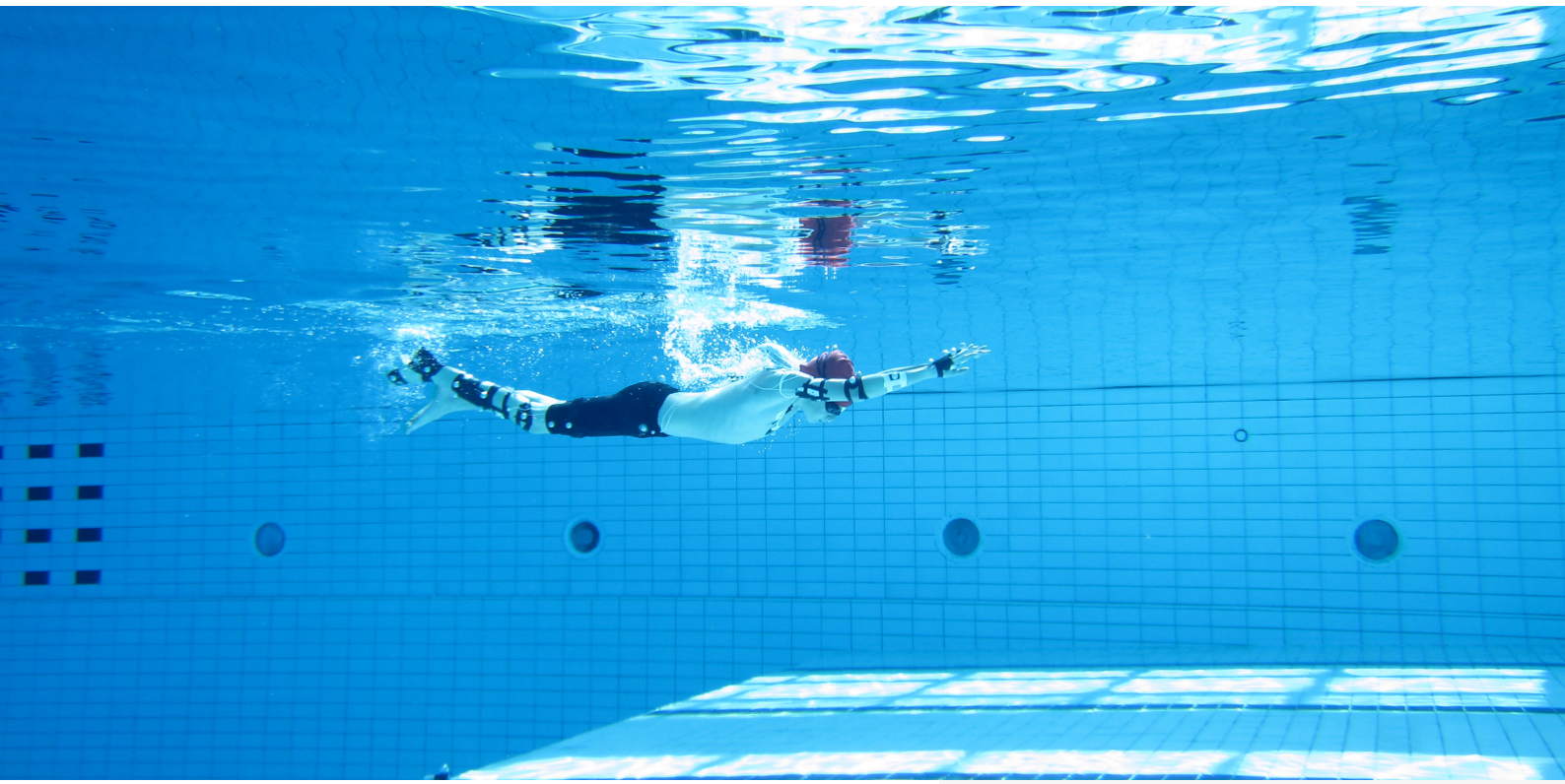
QUALISYS
Motion Capture Systems



Underwater Biomechanics

Whether it is used to measure the performance of a swimmer, analyze an individual's gait for rehabilitation purposes, or record realistic underwater animations, Qualisys provides the solutions for in-water biomechanical measurements using motion capture.

Qualisys motion capture technology allows you to capture biomechanical motion above water, underwater, or in a combination of both. The Qualisys Track Manager (QTM) software provides advanced features to track, reconstruct, solve and analyze the subject's motions. QTM supports streaming and exporting to third party software such as Visual3D for biomechanical analysis or MotionBuilder, Unity, Unreal and more for animation.

Qualisys Underwater cameras are the world's only optical motion capture cameras for underwater use. The 7+u is a high-resolution camera capable of covering large volumes while the Miqus M3u and M5u are smaller cameras with wide field-of-view suitable for smaller volumes in tight spaces.

FEATURES

- Above and underwater tracking
- Track multiple subjects at once
- Large volume coverage
- Site license - no dongles
- Real-time streaming of 3D data
- Real-time skeleton tracking and streaming
- IP68 housing pressure tested to 40m depth
- Automatic Identification of Markers (AIM)
- 3D video overlay
- External hardware/software integration

[1] Optional accessory/feature, not available for all camera models

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IN-WATER GAIT ANALYSIS

Motion capture has been used for decades to facilitate rehabilitation by providing objective data on the subject's motion. With Qualisys underwater cameras, this possibility now also exists for in-water rehabilitation using underwater treadmills. The small and wide-angle Miqus cameras are perfect in small pools with short distances from pool wall to the subject.

Wide angle lens options allow for close captures in small volumes, which is typical for in-water gait analysis.

SWIMMING AND SPORT PERFORMANCE

Qualisys underwater systems are used to study kinematics of a swimmer to improve technique, which can effectively shave off the final tenth of a second that separates a gold and silver finish. Use an underwater camera system to study every detail of the turn or combine an underwater system with an above water system to study all phases of the lap, including start, on-block, flight, the underwater phase, and all the way to the 15m point.

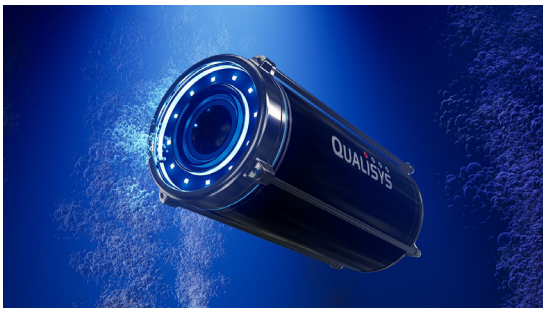
Researchers at Chalmers University in Gothenburg, Sweden analyze start technique using a Qualisys system.

UNDERWATER ANIMATION

With a proficiency in underwater tracking, together with real-time skeleton solving capabilities, the seemingly impossible task to realistically animate underwater motion is made possible thanks to Qualisys Motion Capture. The system supports tracking of multiple subjects tracking and real-time streaming of markers, 6DOF and skeletal data into 3rd party software.

SYNCHRONIZED UNDERWATER VIDEO

Use the Underwater Miqus Video as a standalone video solution, or together with motion capture cameras to enable synchronized 3D video overlay as reference for your captures. Thanks to the multi-camera synchronization of all Qualisys cameras and the embedded MJPEG compression in the Miqus underwater video cameras, it is simple to stream full HD color video at 85 fps from multiple cameras to an ordinary laptop.

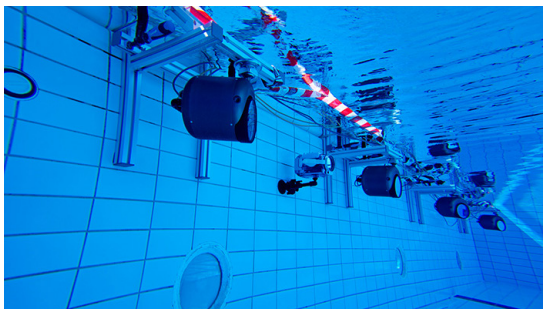


Miqus Underwater cameras are ideal to use in small to medium sized volumes, up to 15m (45ft) range.

CAMERA SELECTION GUIDE FOR UNDERWATER MEASUREMENTS

Requirement	Miqus M3u	Miqus M5u	7+u	Miqus Video u
3D tracking capabilities	✓	✓	✓	✗
Syncronized color video	✗	✗	✗	✓
Distances longer than 15 m	✗	✓	✓	✗
Fast movement, high frame rate	✓	✓	✓	✓
Wide FOV for narrow underwater spaces	✓	✓	✗	✓

Recommended ✓ *Possible* ✓ *Not recommended* ✗



7+u is a high resolution camera for long range measurements.

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