

Functional Requirements

Cameras

Resolution: must be able to resolve a minimum of 1 Mpixel

Frame rate: sufficient rate to minimize particle streaking

Light sensitivity: sufficient to image light in the wavelength of the laser in low light environments

Laser

Wavelength: frequency of laser light shall minimize changes in organismal behavior and response

Optical power: should be sufficient to illuminate particles in sheet of 0.5 m²

Sheet thickness: Laser and optics shall generate a sheet thin enough to isolate flows

Sheet area: Laser and optics shall generate a sheet large enough to image the motion of a 10 cm animal

System Design Requirement

Cameras

Resolution: the current ROV cameras are sufficient, a camera upgrade may be proposed for 2016

Frame rate: minimum of 30 Hz with ability to change shutter speed

Light Sensitivity: dependent on camera properties

Laser

Wavelength: 671 nm

Optical power: 1 W

Sheet thickness: 1 mm

Sheet area: 0.5 m²