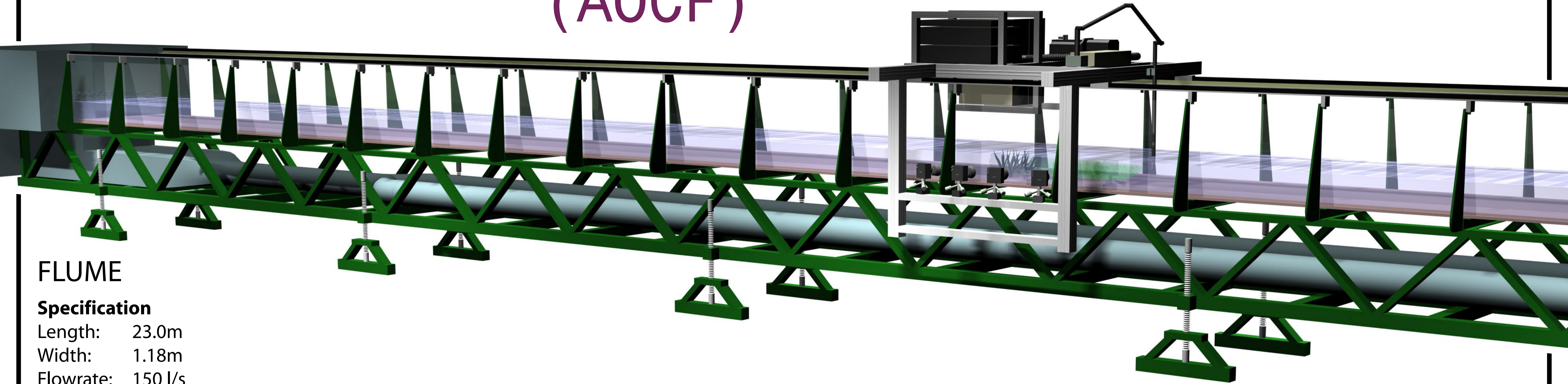


# ABERDEEN OPEN CHANNEL FACILITY (AOCF)



## FLUME

### Specification

Length: 23.0m  
Width: 1.18m  
Flowrate: 150 l/s  
Slope: -0.5 – 2.5 degrees

### Description

The open channel flume has been developed specifically to study smooth- and rough-bed hydrodynamics, sediment transport processes, flow-biota interactions and other aspects of fluvial and eco-hydraulics.

The large width of the flume allows statistically 2-dimensional flow conditions to develop in the central part of the flume which are essential for many studies.

Completed in February 2008 by a dedicated in-house design and construction team, the flume is an important component of the AOCF which also features an array

of computerized control and measurement systems, including an instrumental carriage and an advanced particle image velocimetry system.



## INSTRUMENTAL CARRIAGE

### Specification

Length: 1.8m  
Max. Velocity: 1.1m/s  
Payload: 250kg  
Load out: Data acquisition system  
2 ultrasonic range finders  
3 computers (total of 20 processor cores)  
Particle Image Velocimetry system

### Description

The instrumental carriage system is used for profiling bed and water surface topography, positioning measurement equipment at different points along the flume, and for conducting 'flying' flow field measurements. The ability to make flow field measurements in a frame of reference moving with the mean flow allows the temporal evolution of individual eddies to be studied from their initial development and growth to their decay and eventual dissipation.

## PARTICLE IMAGE VELOCIMETRY

### Specification

Frequency: 100Hz  
Laser: Twin 70mJ/pulse, Nd:YAG  
Cameras: Four × 4 Megapixel, 10bit  
Storage: 90 minutes continuous recording  
Modes: Panoramic, Stereoscopic, 3D-particle tracking, Holographic.

### Description

The modular flow field measurement system can be configured for several operating modes to enable high frequency, high spatial resolution velocity measurements within 2-dimensional measurement areas (Panoramic and Stereoscopic modes) or 3-dimensional measurement volumes (3D-particle tracking and Holographic modes).