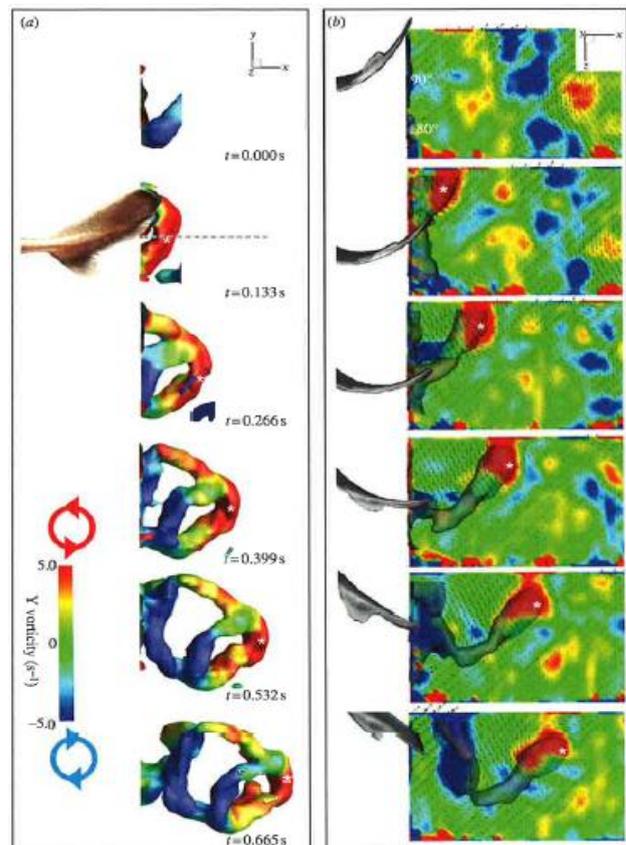


# POWerview PARTICLE IMAGE VELOCIMETRY SYSTEM 4MP-180 CAMERA

APPLICATION NOTE PIV-020 (A4)

The PowerView™ 4MP-180 camera was designed to meet the most challenging flow measurements with time-resolved capability. Its 4 million pixel resolution provides the resolution needed to investigate the small flow structures in turbulent boundary layer flows or the large field of view in wake flow generated from a shark tail as shown in the diagram.



Flammang, B.E., Lauder, G.V., Troolin, D.R., and Strand, T.E. (2011) "Volumetric imaging of shark tail hydrodynamics reveals a three-dimensional dual-ring vortex wake structure". *Proceedings of the Royal Society of London B*. doi:10.1089/rspb.2011

The PowerView™ 4MP-180 camera has 4 million pixel resolution and frame rate of 180 fps at full resolution. With its high quantum efficiency of 55%, the camera is ideal for time-resolved PIV and PLIF measurements. The camera can also be incorporated to the TSI V3V configuration for time-resolved 3D3C measurements.



- High speed 4 million pixel image sensor
- Frame rate up to 180 fps at full pixel resolution for TR-PIV and TR-V3V
- High quantum efficiency and sensitivity for TR-PLIF measurements
- Electronic exposure time control (global shutter mode) for fast interframe time
- Defective pixel correction and background calibration for high SNR image capture
- Gain/offset control for high dynamics range
- LVDS serial communication by CameraLink interface for fast data transfer to host computer

The camera can be configured for TR-PIV and TR-stereo PIV measurements, as well as TR-PLIF with its high frame rate of 180 fps. When the pixel resolution is reduced, the frame rate can be increased further to allow for higher capture capacity when the appropriate illumination system is used. The camera can also be incorporated with the TSI V3V Precision Camera Mount for 3D3C measurements. When configured in V3V, the volume size can be up to 110 mm by 110 mm by 100 mm.

Insight 4G™ and Insight 4G-V3V software is to be used with the camera(s) for PIV/PLIF and V3V, respectively. The Insight 4G software package offers a wide range of PIV, PLIF and sizing measurements.



The frame rate of the camera can be increased by selecting the area of interest (AOI) for capturing. The table below shows the frame rate information at different AOI.

AOI Size (H x V)	2 Tap	4 Tap	8 Tap	10 Tap
2048 x 2048	22 fps	80 fps	135 fps	180
2048 x 1024	79 fps	157 fps	265 fps	354 fps
2048 x 512	157 fps	310 fps	606 fps	689 fps
2048 x 256	308 fps	604 fps	1157 fps	1309 fps
2048 x 128	599 fps	1148 fps	2123 fps	2375 fps



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