

Use of PIV in DNW Wind Tunnels

Flow visualization in general and flow visualization by means of a laser light sheet in particular has been an important tool at DNW for a long time. In order to quantify the flow field visualization DNW asked DLR to investigate the feasibility of the implementation a Particle Image Velocimetry (PIV) system in the DNW Large Low-speed Facility.

In 1995 the PIV group of DLR delivered a PIV system, which is suited to measure in large wind tunnels. From that time on PIV was applied in various wind tunnel test campaigns. The first measurements have been performed in the frame work of wake vortex investigations by Airbus Industry. Flow field measurements at cars, helicopters, windmills, etc. followed.

In 1999 the PIV system has been up-graded in order to measure 3 components in a plane by means of a stereoscopic set-up of the cameras. In the mean time DNW had become DNWs, German- Dutch Wind Tunnels. Thus, wind tunnels in Braunschweig, Göttingen, Köln and Amsterdam and on the North- East Polder now belong to DNW. The DNW PIV system is used at all these facilities. A PIV supporting team has been defined in order to perform the measurements in the different wind tunnels. The spectrum of wind tunnel models to be measured increased enormously.

Examples of test set-ups as well as measurement results will be shown in the presentation. In addition some historical facts will be presented.

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