

»»Stereo PIV««

# Flownizer 2D3C

Two-dimension and three-component fluid analysis software

<Stereo PIV>Flownizer2D3C is the two-dimension and three-component fluid analysis software to measure the velocity in the depth direction (Z) in addition to two-dimensional velocity information (X and Y).

Velocity of three components within a laser sheet side is computed by processing the particle image obtained by two sets of the stereo cameras arranged with an angle.

In addition to the intelligible operativity by a tree structure, data collection became very efficient by the high-speed processing corresponding to multi-core CPU, 64bitOS, and a SSE2/SSSE3 extension command.

It can be used in three-component fluid measurement in various fields, including a wind tunnel experiment and a tank experiment.

It corresponds to not only the stereo PIV, but the conventional products' two-dimensional mode for single cameras (PIV, PTV).

Physical quantity calculation like vorticity, turbulent energy, Reynolds stress, etc. is also equipped standardly as well as vector calculation, a streamline, streakline, pathline, and a uniform line display.

Correspondence in  
**64-bitOS**  
and **SSE**

- INTELLIGIBLE SCREEN OPERATION AND A TREE STRUCTURE
- THREE MODES STEREO PIV, TWO DIMENSION PIV, AND TWO DIMENSION PTV ARE SUPPORTED
- VARIOUS FUNCTIONS, SUCH AS A CORRELATION MAP, MASKING, PHYSICAL QUANTITY CALCULATION

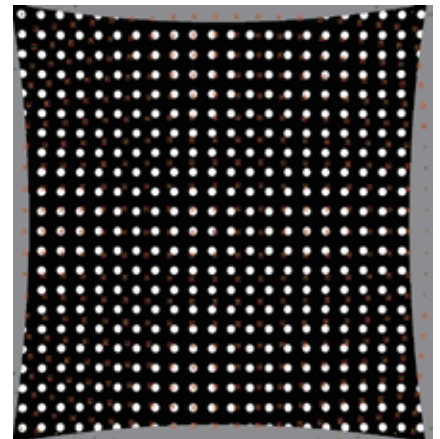
# It is the two-dimension and three-component fluid analysis software which evaluates various flows by many functions.

## Calibration

- By supporting a grid calibration, it is possible to also perform correction of lens distortion and two-dimensional projection conversion, and to obtain a more highly precise calculation result.
- In use of a single plane calibration plate, the picture of each two cameras which carried out parallel translation of the plate for the direction of a z axis (a total of four sheets) is required.
- In use of a double plane calibration plate (right photograph), the picture of each one camera (a total of two sheets) is required.



Calibration plate (double plane)



## Scheinmpfug Photographing



- In case of the stereo PIV, since each camera is not correct position to the laser sheet side (measurement plane) in the usual photography, in the usual photography, a focus is not carried out to the whole particle of a measurement plane, and a vector may be unable to be computed correctly. A Scheinmpfug adapter (left photograph) is the optimal tool for such stereo PIV photography. By shifting an optic axis, a focus becomes possible at the whole plane with depth, and it realizes more highly precise PIV measurement.

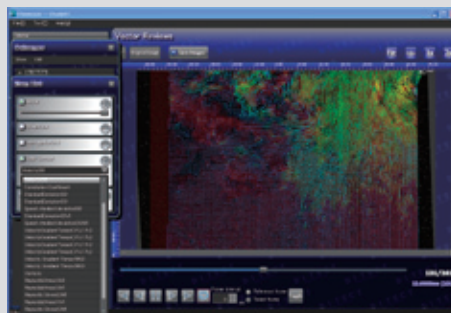
## Preprocessing function

- It is possible to specify a part not to calculate vector by masking specification before proceeding.
- In a former picture, when highly precise measurement was difficult, the measurement situation may be improved by equipped various image processing (Background difference, various filter, and convex part extraction, operation between pictures).



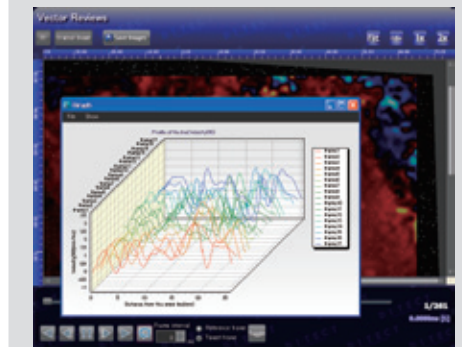
## Display result

- An analysis item such as raw vector, a mean vector, an angle, a streamline, vorticity, turbulent energy, Reynolds stress, RMS speed, velocity standard deviation, the velocity gradient tensor, etc. can be easily displayed by intuitive operation. Display result can be exported.



## Measurement result

- A graphical representation is possible for the migration length or velocity of various ingredients by specifying simply with a mouse about the point on a screen, a line, and area. Since the computed graph data can be exported by CSV, it can conduct original analysis with spreadsheet software etc.



## Main spec

Measurement item	PIV/PTV with two ingredients of two dimensions
Calculation method	The direct cross-correlation method (PIV), the binarizing correlational method (PTV)
Correspondence format	AVI, WMV, JPG, BMP, TIFF, consecutive PNG
Data format	Project form, Csv form
Vector item	XY composition, X, Y, Correlation coefficient Average
Analysis item	Streamline, Streakline, Path line, Vorticity, Turbulent energy, Velocity standard deviation, Reynolds stress, Velocity gradient tensor
Graph representation	Specification point/Line/Area (Migration length, Velocity)

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