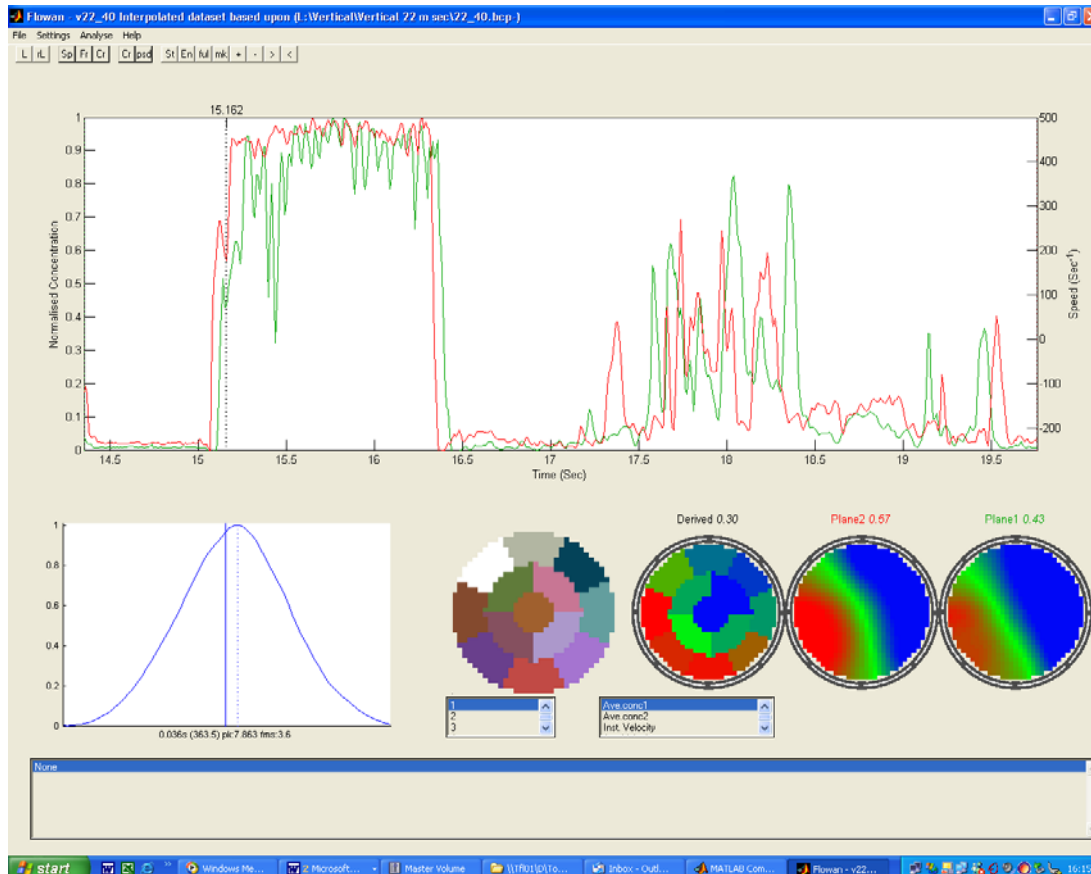


Flowan*

Flowan is a software package for off-line analysis of tomographic measurements. Flowan is particularly suitable for analysis of Electrical Capacitance Tomography (ECT) results from PTL300-TP-G systems but may be used on other tomographic data with suitable data converters. Flowan may be supplied as part of a Tomoflow flow analysis package or separately.



Data Input:

Flowan takes data from .bcp files written by ECT32**. File size limitations vary with specific computer systems, but typical data sets are up to 100 seconds of data acquired at 200 frames per second.

Software delivery:

Flowan software is supplied as a compiled executable on CD-ROM or by other suitable means.

Minimum System Requirements:

Pentium III 300MHz processor, 128 MB RAM, 5 MB hard disc space, Windows 98 or Windows XP operating system.

Image display:

Images may be reconstructed for each data frame and these images may be scrolled through on the screen. Reconstruction parameters may be varied: gain, truncation and iteration are all available.

Zones:

Each image plane can be divided into a number of zones – arranged appropriately for the flow conditions. Any zone arrangement can be defined by the user up to a maximum limited by the original image pixel grid. Concentration measurements are expressed as average values within a volume defined by the zone cross-section and the electrode length. Design of measurement sensor and zone arrangement will enable the concentration at chosen locations to be measured.

Time series plots:

Values of average concentration within each zone are displayed against time. The time series may be zoomed in or out. Data from any single zone for both planes may be displayed at one time.

Velocity Estimation:

Transit velocities are estimated by correlating the average concentration from one zone with the corresponding zone in the axially separated plane. Transit time estimation is made from the peak of the correlogram by a choice of user-accessible methods. Correlation parameters (resolution, sampling parameters, normalisation etc) may be chosen by the user. Standard apodisation functions are also available.

System performance:

Flowan software is capable of measuring flow structures within the limitations of the base tomography system. Data acquisition rates, flow dispersion characteristics and the length and spacing of the electrodes limit the velocity estimation accuracy, but have little effect on average concentration measurement. Data acquisition rates of 200 frames per second allow good velocity estimation at flow velocities of up to about 5 metres per second. At higher velocities flow information will still be available but at reduced resolution, depending on sensor design.

Fluid types:

The presence of conducting fluids in the flow may seriously limit the quality of information available. No guarantees of performance can be given, but estimates of concentration and flowrate are usually possible for the dispersed phase in a two-phase flow and indicative images of concentration distribution and velocity profile are available in most flow conditions.

Summary

Tomoflow *Flowan** brings a new level of sophistication to multiphase flow structure research. Tomoflow Ltd can either supply *Flowan** software for use with existing PTL twin-plane ECT systems or we can provide complete multiphase flow measurement systems.

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** *ECT32* is a mark of Process Tomography Ltd.