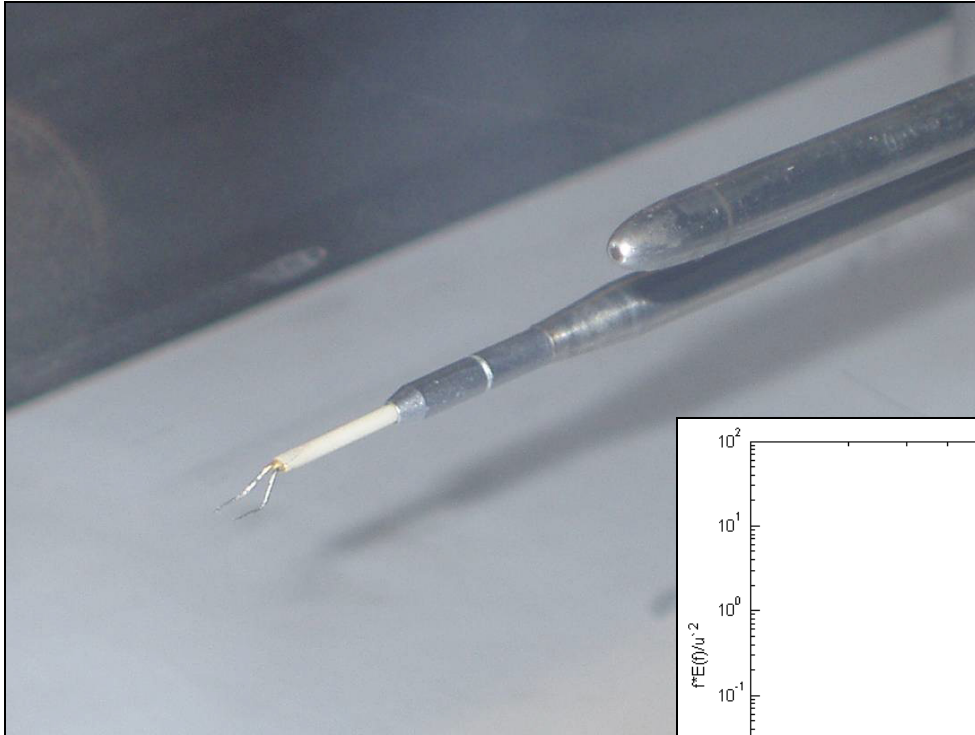
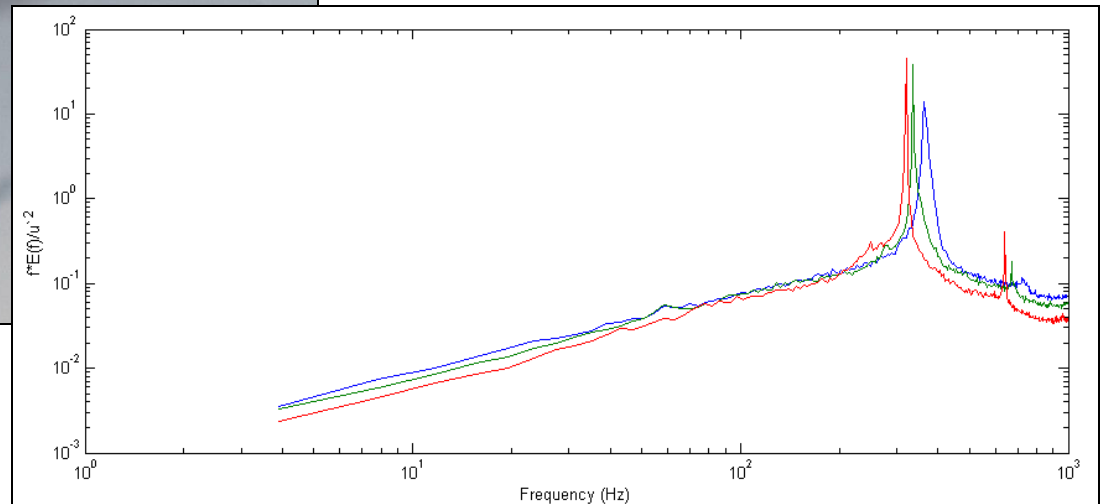


# Data Capturing and Analysis in ThermalPro™



TSI Incorporated



# Acquisition – Probe Table

- For Data Acquisition in ThermalPro, go to **Acquisition >> Probe Table**.
- Then click the “**Add Probe**” Button.
- Select the probe that you would like to acquire data from.
- Click the “**Save Line**” button.
- Click “**Next Screen**.”
- The probe will now go into “Run” mode.

IFA 300  
IFA 300 Calibration Acquisition Post Analysis

**Acquisition - Probe Table**

Experiment Name: E:\IFA1NT\DATA\EXAMPLE1.PXXXX

A/D Ch	IFA Ch	Probe Type	Serial Number	Cbl Res	Opr Res	Off set	Wire Film	Temp Gain	Probe Number	
*1	1	S	46237	0.31	6.74	1.82	W	6	A	1

Sensor Setup

IFA Channel: 1 [Tag A/D Ch] Serial #: 46237

Cable Resistance: 0.31 [Read Cable] S Single

Probe Resistance: [Read Probe] Curves [Add Probe]

Opr Resistance: 6.74 [Clear Probe]

Offset: 1.82 [Gain] Edit Line

Cable: 5 Meter [Std] Bridge [Save Line]

Temperature Probe: A

Experiment

[Get File] [Rename] [Next Screen] [Close]

# Acquisition – Conditions Setup

- On this screen, you can name your files by clicking the “**Rename**” button.
- Set the Pressure in the “Atm Pressure” field. This should be the current pressure at the time of data collection. Always use units of mmHg.
- You can also enter comments or your current probe position if you desire.
- Standard Mode is “Graphics”
- You can also set the Sampling Rate, and the total size of your acquisition.
- Click “**Next Screen.**”

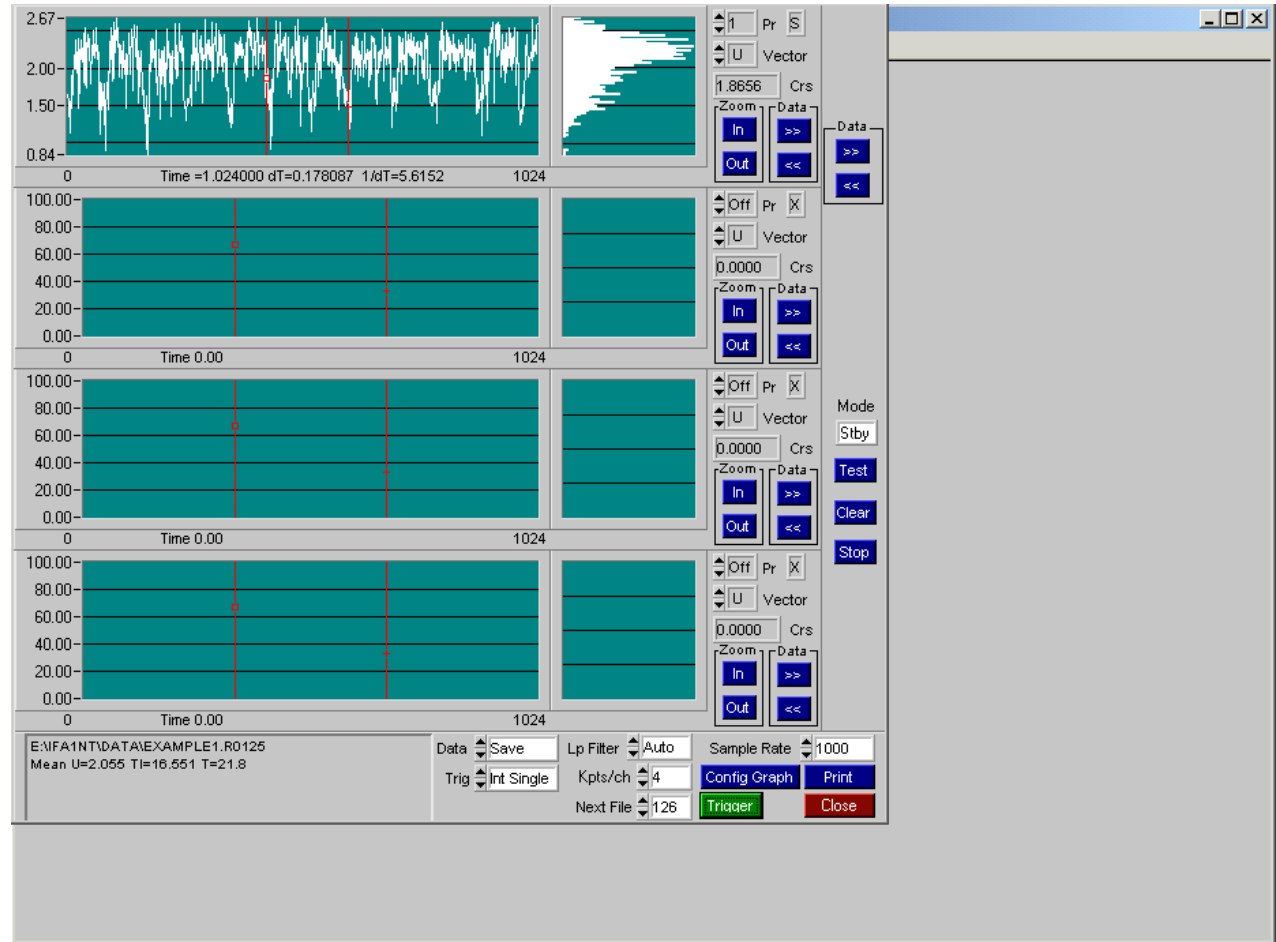
The screenshot shows the 'Acquisition - Conditions Setup' window of the IFA 300 software. The window title bar includes 'IFA 300' and menu options for 'Calibration', 'Acquisition', and 'Post Analysis'. The main area is divided into several sections:

- Experiment Name:** E:\IFA1NT\DATA\EXAMPLE1.RXXXX
- Experiment Section:** Name: EXAMPLE1.Rxxxx, Next File: 107, and a 'Rename' button.
- Conditions Setup Section:** Atm Pressure: 740 mm Hg, Velocity Units: m/s, Temp Units: C.
- Comment Section:** A text input field.
- Position Section:** X: 0.00, Y: 0.00, Z: 0.00, and a unit selector set to 'Inches'.
- Acquisition Control Section:** Mode: Graphics, Low Pass: Auto.
- Sample Rate Section:** Actual: 1000, Rate: 1000 Hz, Size: 128 Kpts/ch, Time: 131.0720 Sec.

At the bottom, there are buttons for 'Test', 'Trig' (set to 'Internal Single'), 'Next Screen', and 'Close'.

# Acquisition Graphics Screen

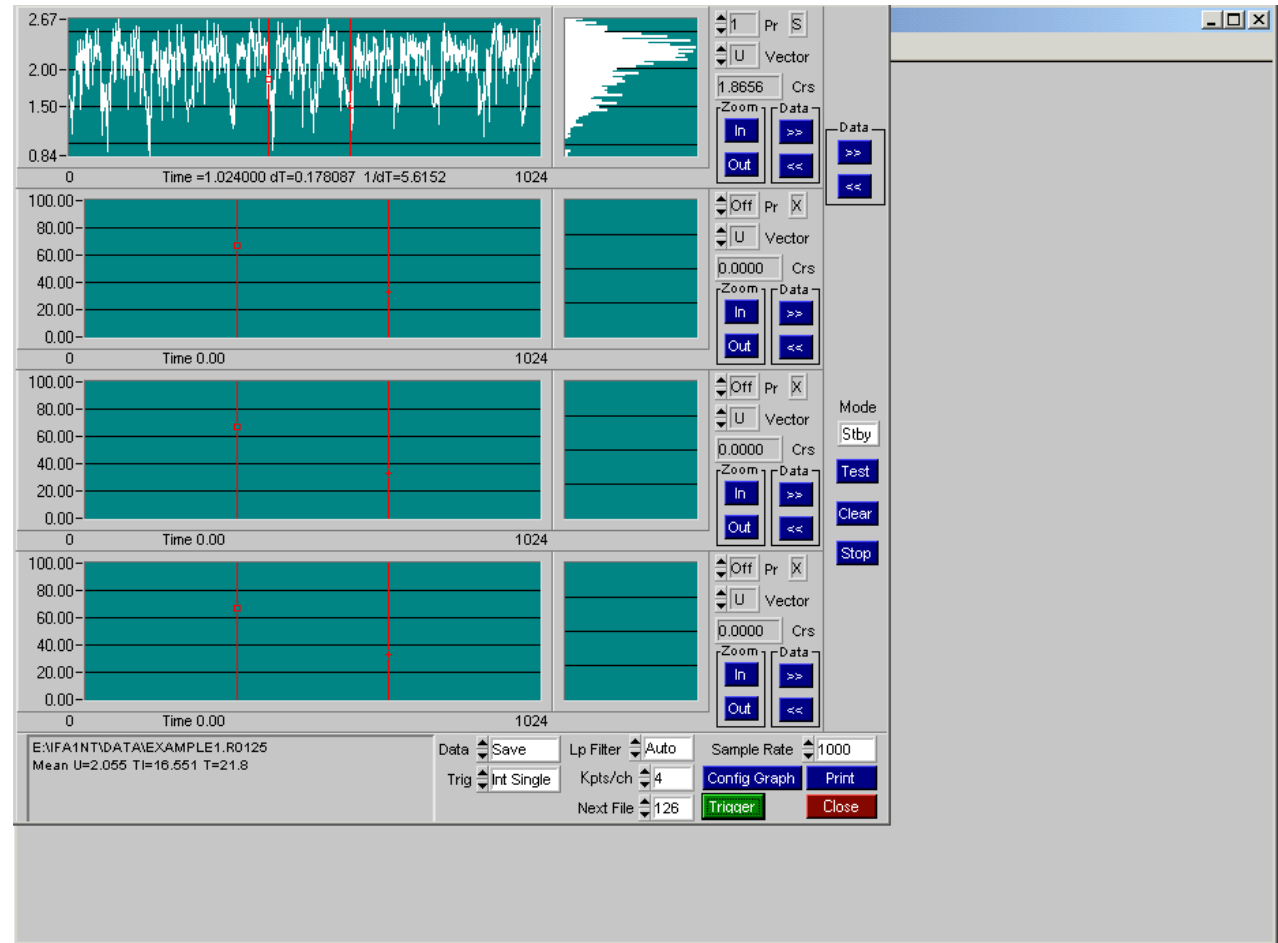
- This is the screen where you actually collect and save data.
- To start the data acquisition, click “trigger.”
- An hourglass appears until the acquisition is complete. At which time, the mean velocity, turbulence intensity, and temperature (measured from your thermocouple) shows in the lower left box.



*(continued on next page)*

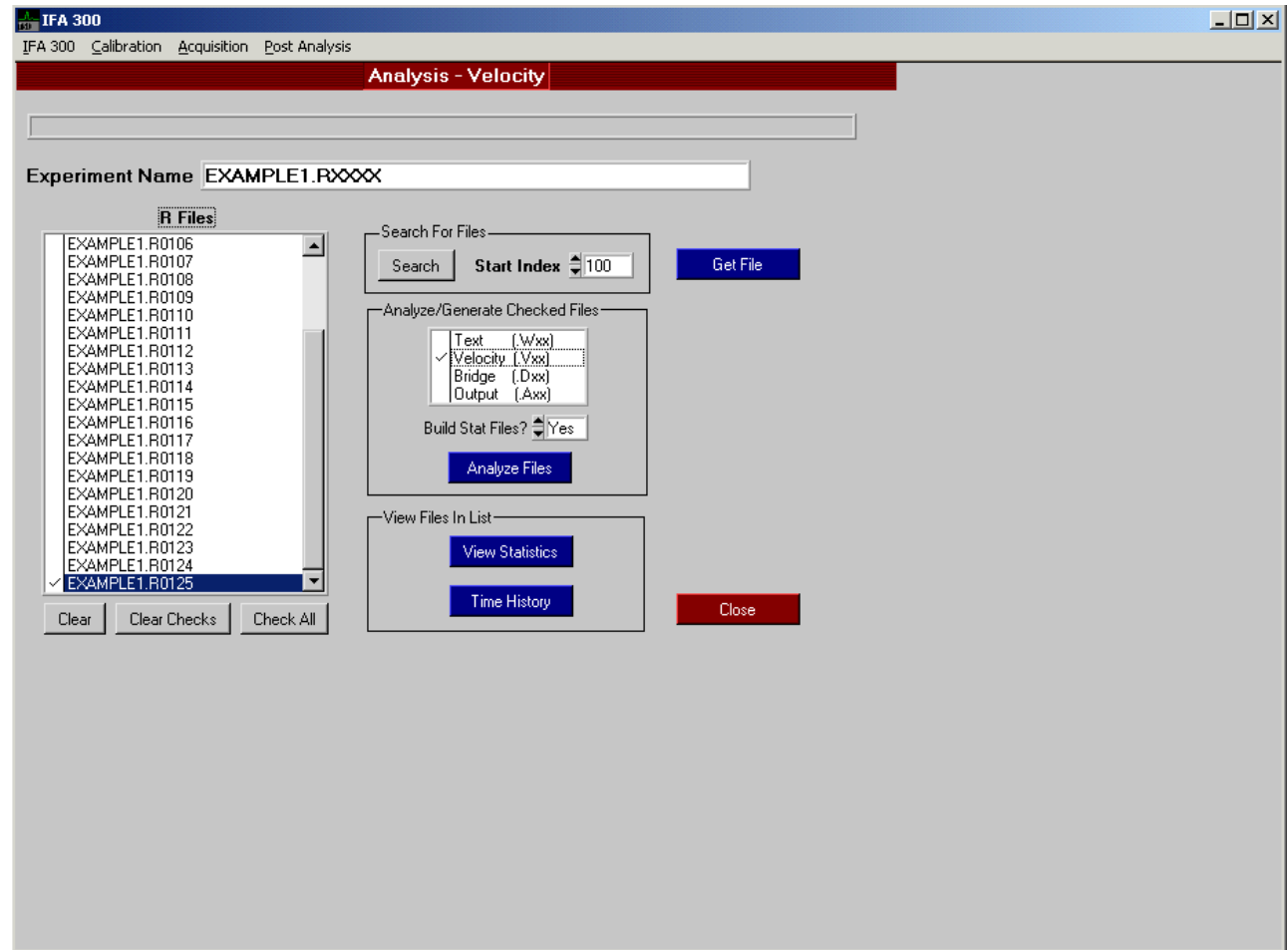
# Acquisition Graphics Screen (*cont.*)

- The file names will automatically increment (e.g., `**R0001`, `**R0002`) as you collect more data points.
- When you are done collecting data, click “Close.” All of the data is automatically saved (unless you do not have “Save” chosen in the “data” field).



# Processing Data - Velocity

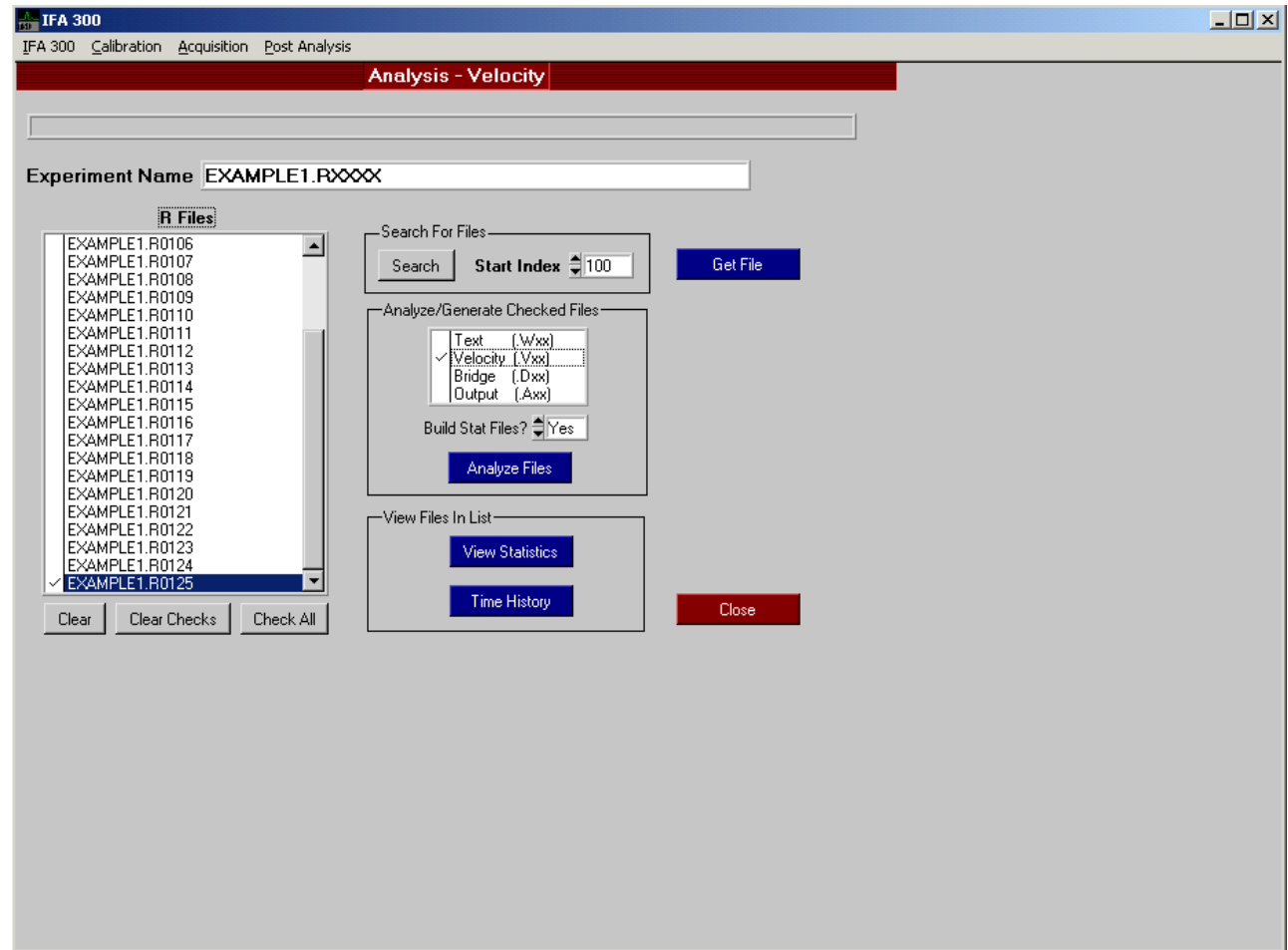
- Your data is currently in **\*\*R0001** type files. These cannot be easily read, so a simple processing step should be done to view the data in a useful way. Go to **Post Analysis >> Velocity**
- Click **“Get File,”** and choose the first file in the sequence (e.g., **\*\*R0001**).
- Put checkmarks next to each file that you want to process.



*(continued on next page)*

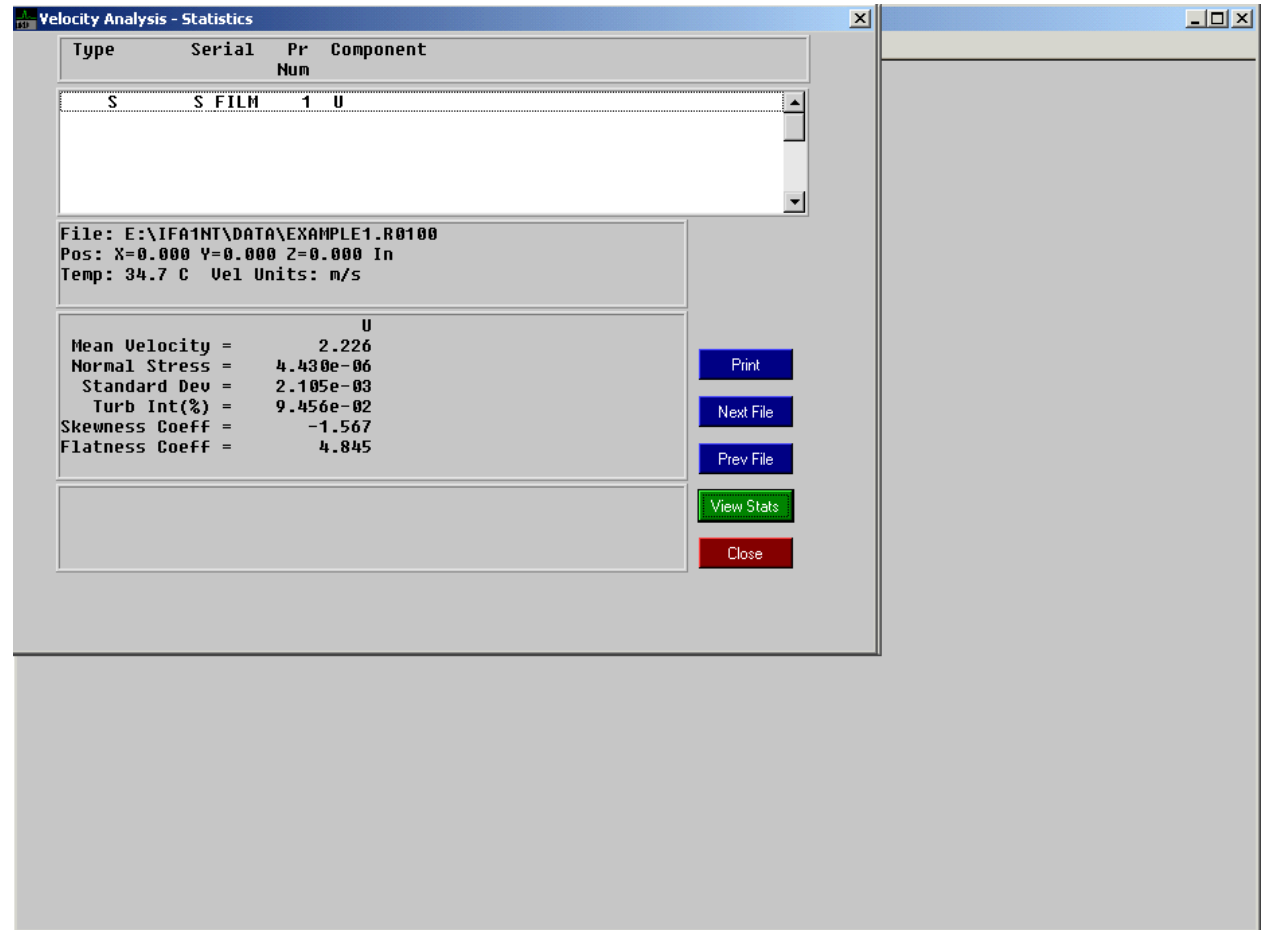
# Processing Data – Velocity (*cont.*)

- In the Analysis/Generate Checked Files, you can select the types of files you would like to create. Typically you only need the Velocity file, but occasionally it is nice to have the Text file, so that you can read the velocity data into another program like “Matlab.”
- Click “**Analyze Files**”
- This may take a bit of time, depending on how large the files are.



# Processing Data - Statistics

- Click on the “**View Statistics**” Button to get a summary of the velocity statistics, such as Mean velocity, normal stress, standard deviation, turbulence intensity, etc (equations for these are in the manual).



The screenshot shows a software window titled "Velocity Analysis - Statistics". It contains a table with the following data:

Type	Serial	Pr	Component
S	S FILM	1	U

Below the table, the following file and position information is displayed:

File: E:\IFA1NT\DATA\EXAMPLE1.R0100  
Pos: X=0.000 Y=0.000 Z=0.000 In  
Temp: 34.7 C Uel Units: m/s

The statistical results are as follows:

Mean Velocity =	U	2.226
Normal Stress =		4.430e-06
Standard Dev =		2.105e-03
Turb Int(%) =		9.456e-02
Skewness Coeff =		-1.567
Flatness Coeff =		4.845

On the right side of the window, there are five buttons: "Print", "Next File", "Prev File", "View Stats", and "Close".



# Processing Data - Spectra

- For Spectrum Analysis, go to Analysis >> Spectra
- Here you can select your velocity files that you have just processed (e.g., \*\*.V0001)
- Click “**Plot**” to see the Spectra.
- Various parameters can be changed here as well. To save the spectra, click “**Save Data**.” This will be a tab delimited file that can easily be read by other programs (Excel®, Matlab®, etc.)
- It will have the form \*\*.X0001.

