Lab Test Report
February 13, 2007

Company:

Turbidity/Percent Solids Online Testing

Sample Identity-

Animal Cells, average size of 6 microns

Requirement:
- **Particle Size**
- **Turbidity**

Equipment:
   Microflow – MN#MIC-LG1K11B11GZ, SN#30405

Method:
- Run samples on above described equipment online.
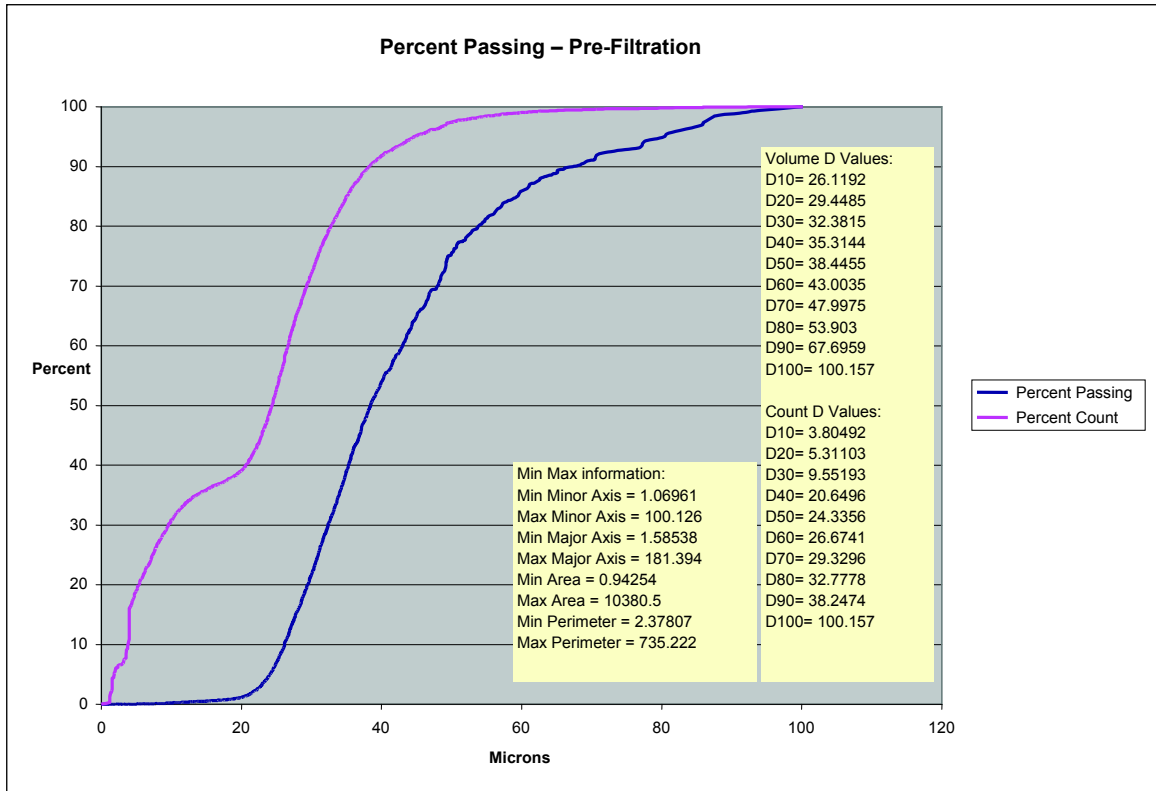- Provide detection results

Results:

Particle Size Results:

Image of cells before filtration

Percent Passing - After Filtration

Volume D Values:
D10= 21.8387
D20= 24.8112
D30= 27.3082
D40= 28.9729
D50= 30.3205
D60= 31.8266
D70= 33.0156
D80= 36.2656
D90= 39.9913
D100= 52.6347

Count D Values:
D10= 1.70429
D20= 3.56711
D30= 4.32017
D40= 6.14336
D50= 8.20436
D60= 12.8812
D70= 21.4423
D80= 25.7228
D90= 30.1223
D100= 52.6347

Min Max information:
Min Minor Axis = 1.23712
Max Minor Axis = 52.6345
Min Major Axis = 1.58538
Max Major Axis = 122.079
Min Area = 1.5709
Max Area = 2842.39
Min Perimeter = 3.56711
Max Perimeter = 453.023

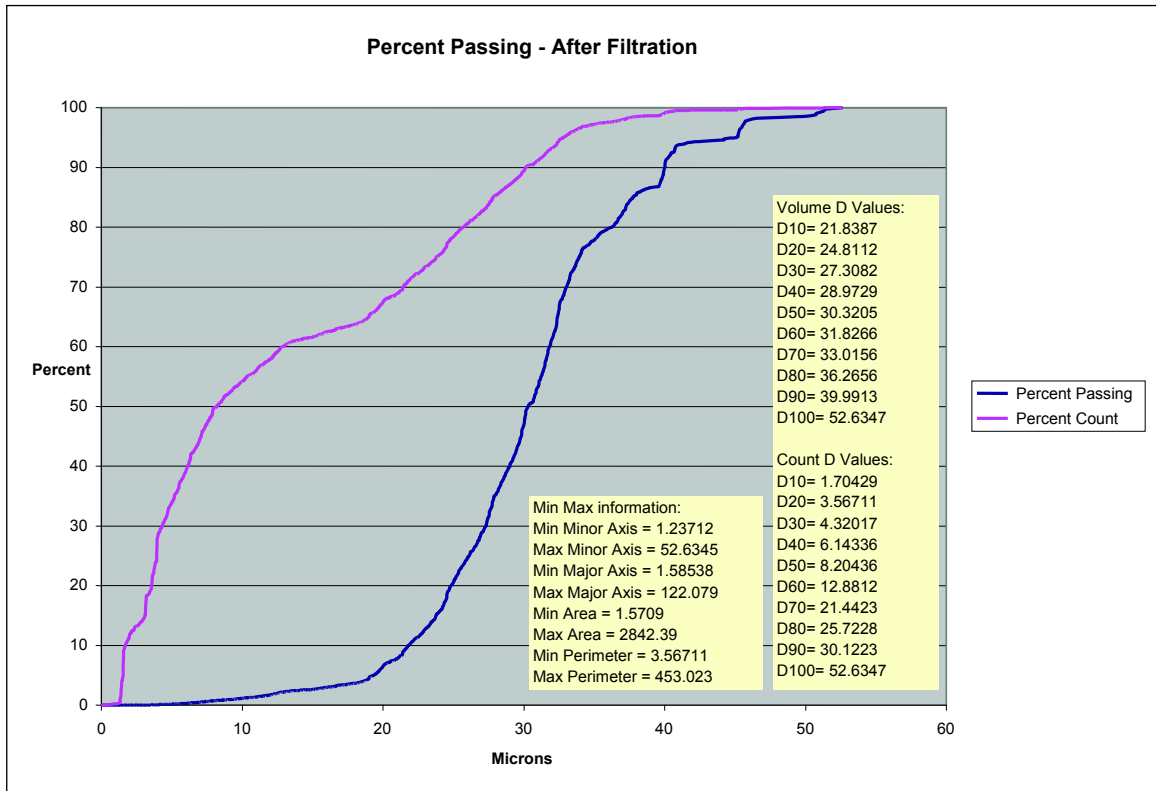Legend: Percent Passing, Percent Count

Axis labels: Percent, Microns

Image of cells after filtration – In this particular image there are few cells compared to the image that was taken before filtration.

Turbidity/Intensity Results:

The systems original calibration to NTU standards was lost due to the changes taken place with both the lighting intensity and camera exposure rates once the on-line sample was run through the Microflow.

Due to limited time the system was not recalibrated to NTU's. Below are the intensity measurements taken from the both the online samples taken before and after filtration of the cells.

Pre-Filtration Average Intensity measurement: 59.02563
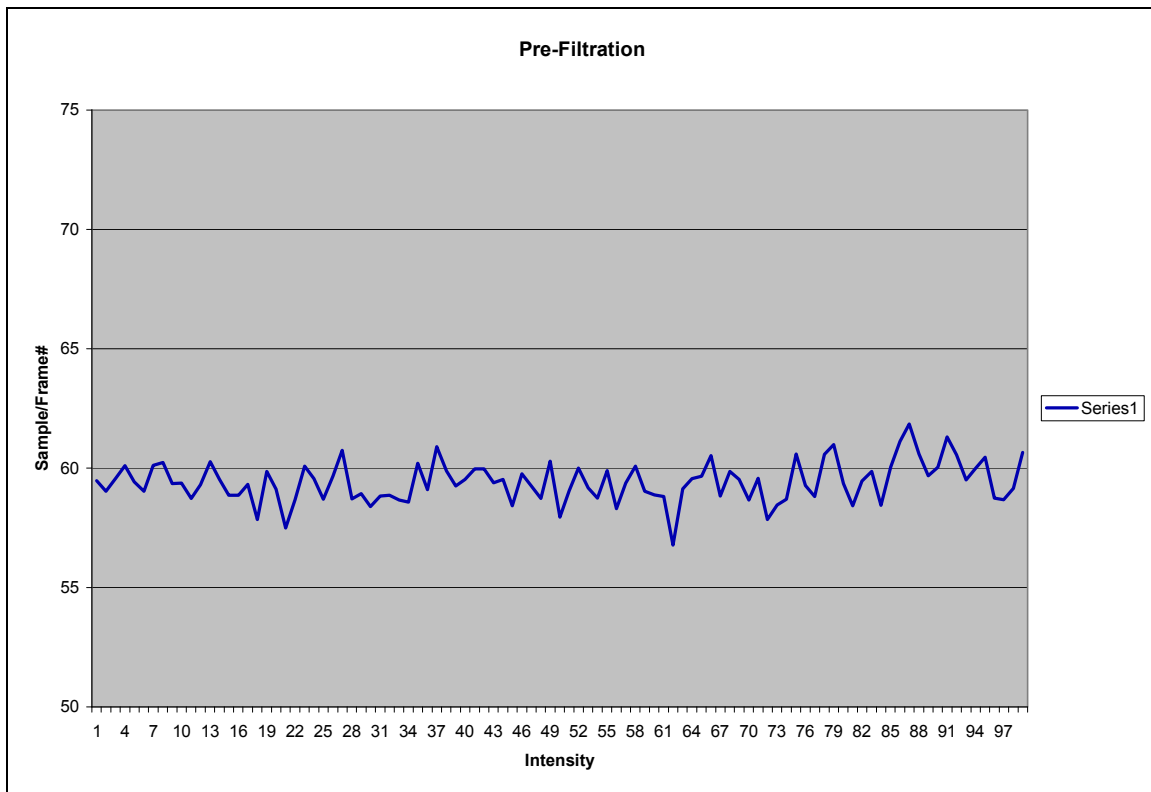
Notice the lines movement due to the detection of individual particles, to smooth the line averaging can be used.

Post-Filtration average intensity measurement: 62.85703

Post-Filtration Intensity
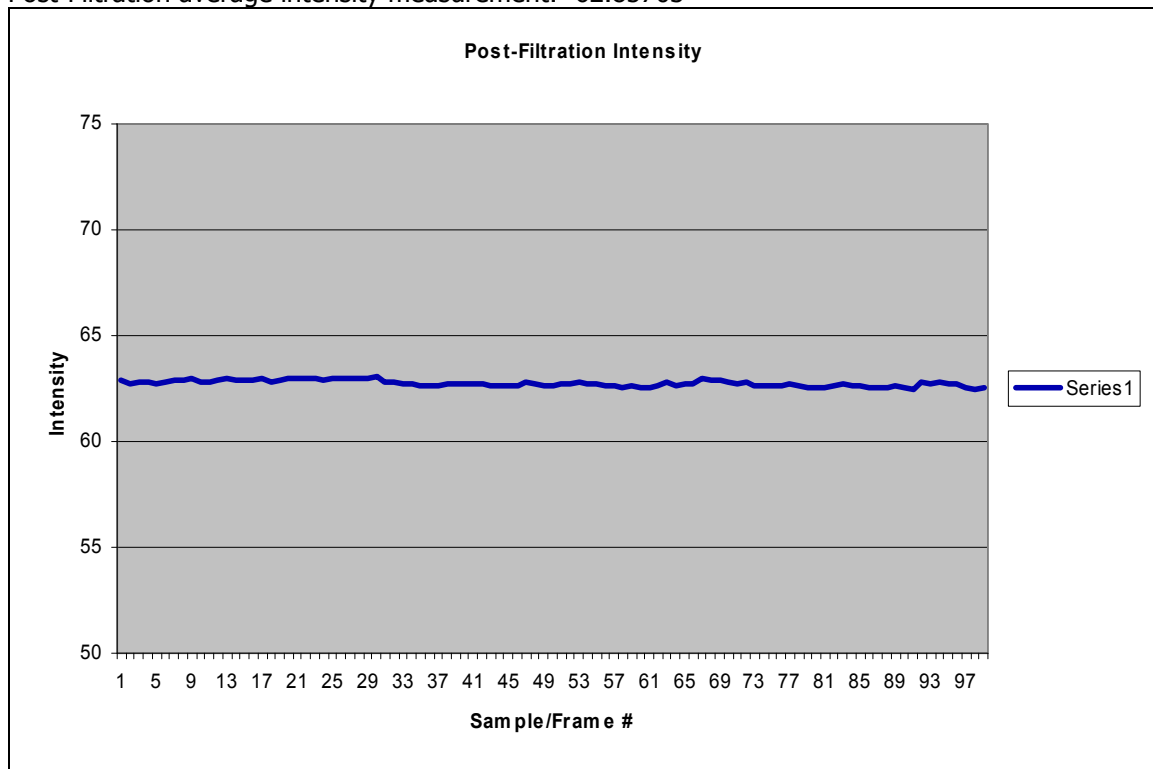
Conclusion:

Particle Size:
The Canty Particle sizing software was able to accurately detect cells and other particles within both before and after the filtration process. The particles measured after (Count D50=8.20436um) the filtration process are much smaller and then the sample before filtration (Count D50=24.3356um). The particles after filtration are sparse compared to pre-filtration. This coincides with the predictions that are given with this application.

The intensity seen at the pre-filtered stage of the sample is significantly lower then that of the post-filtered sample. An average difference of 3.83140 intensity points. This shows that Canty, with a proper calibration to NTU's, can successfully measure turbidity differences seen in the samples.