

OMC preview of enhanced pipe analysis software

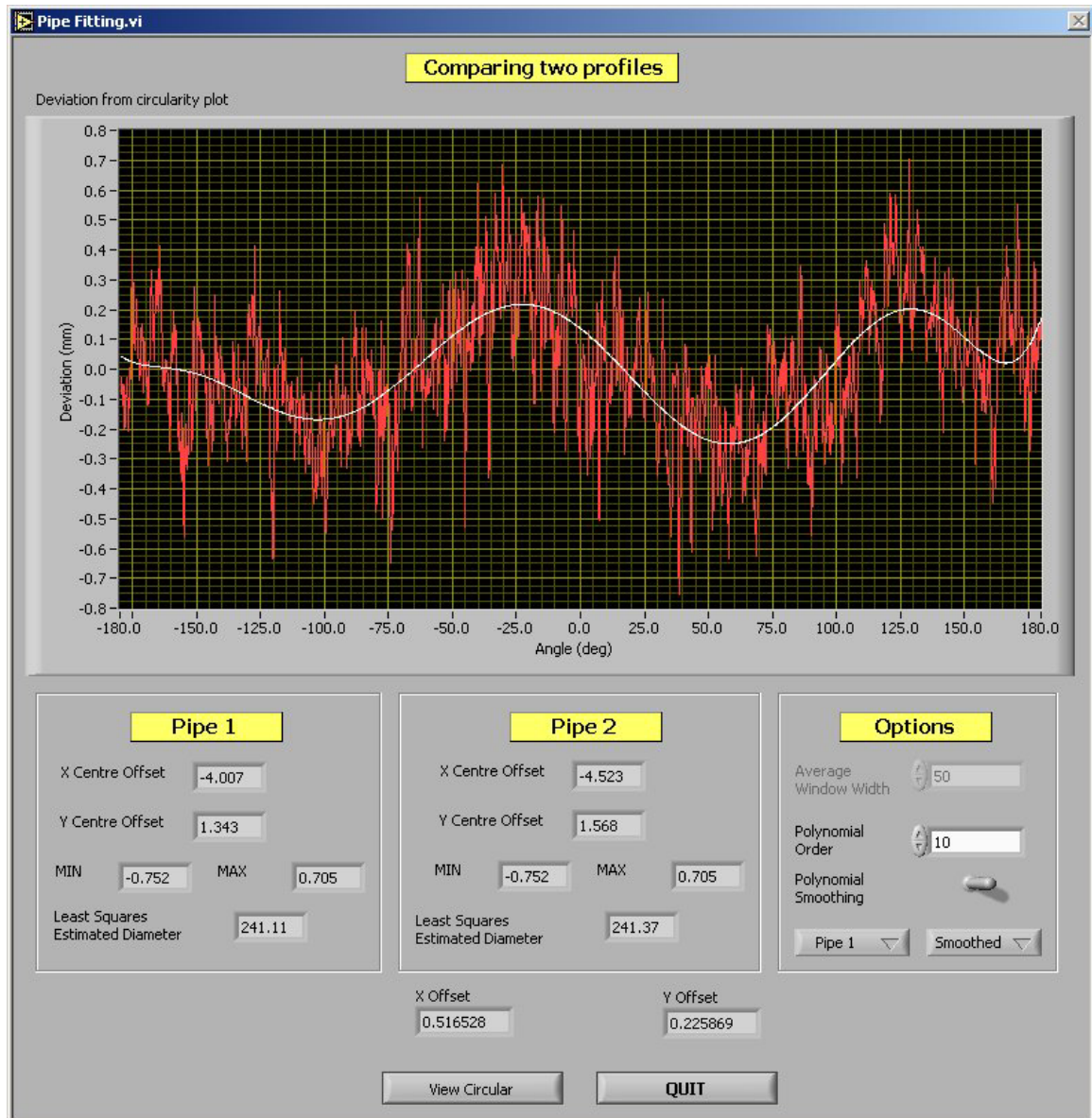
For those who are involved in pipe applications OMC are in the process of developing some enhanced software for analyzing pipe profile data.

Typical operations that will be possible with the new software are:

- Fitting polynomial curves to profiles
- Improved visualization of profile deviations from circularity
- Two pipe joint mismatch estimation
- Two pipe joint mismatch visualization
- Hi-Lo tolerance estimation
- Pipe end sorting
- Optimum rotation angle estimation for pipe joint welding

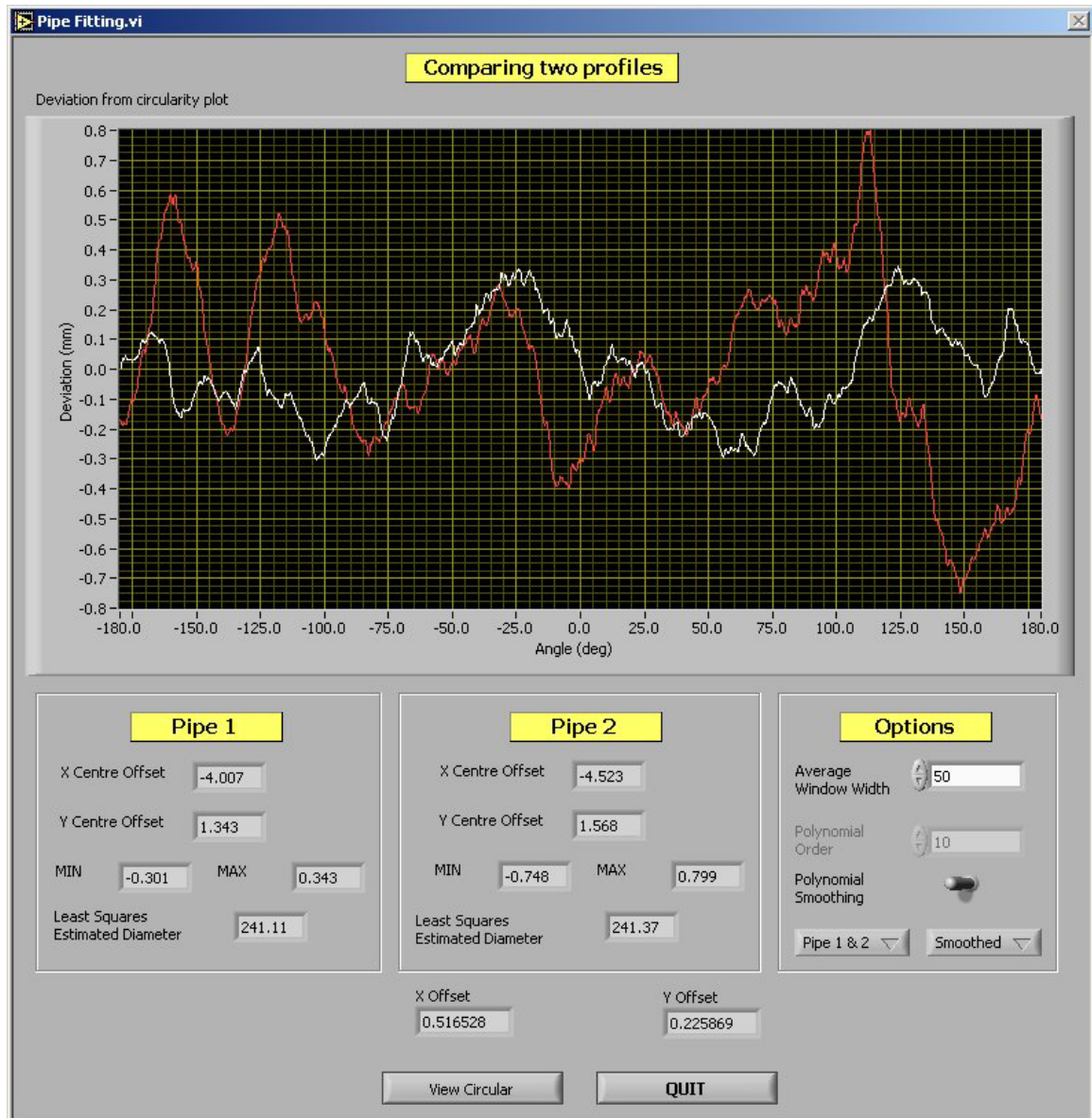
The software interface is still under development. Some preliminary screens are illustrated in the following figures. The profiles being analysed are from two pipes that are butted together such as might occur prior to welding.

1. Polynomial fitting to raw measurement data.



This dialog box allows the user to view pertinent statistics regarding two profiles that are being compared. The profiler offset to both profiles is provided that allows the difference in the location of the two profiles to be calculated. This is the optimum distance the pipes must be moved to align properly. The user can select between viewing one or two profiles, with or without smoothing by polynomial or averaging. Parameters values that change the averaging window size, or the number of terms required in the polynomial fit, can be input by the user. The following figure illustrates the use of smoothing and the overlay of two residual plots on top of each other.

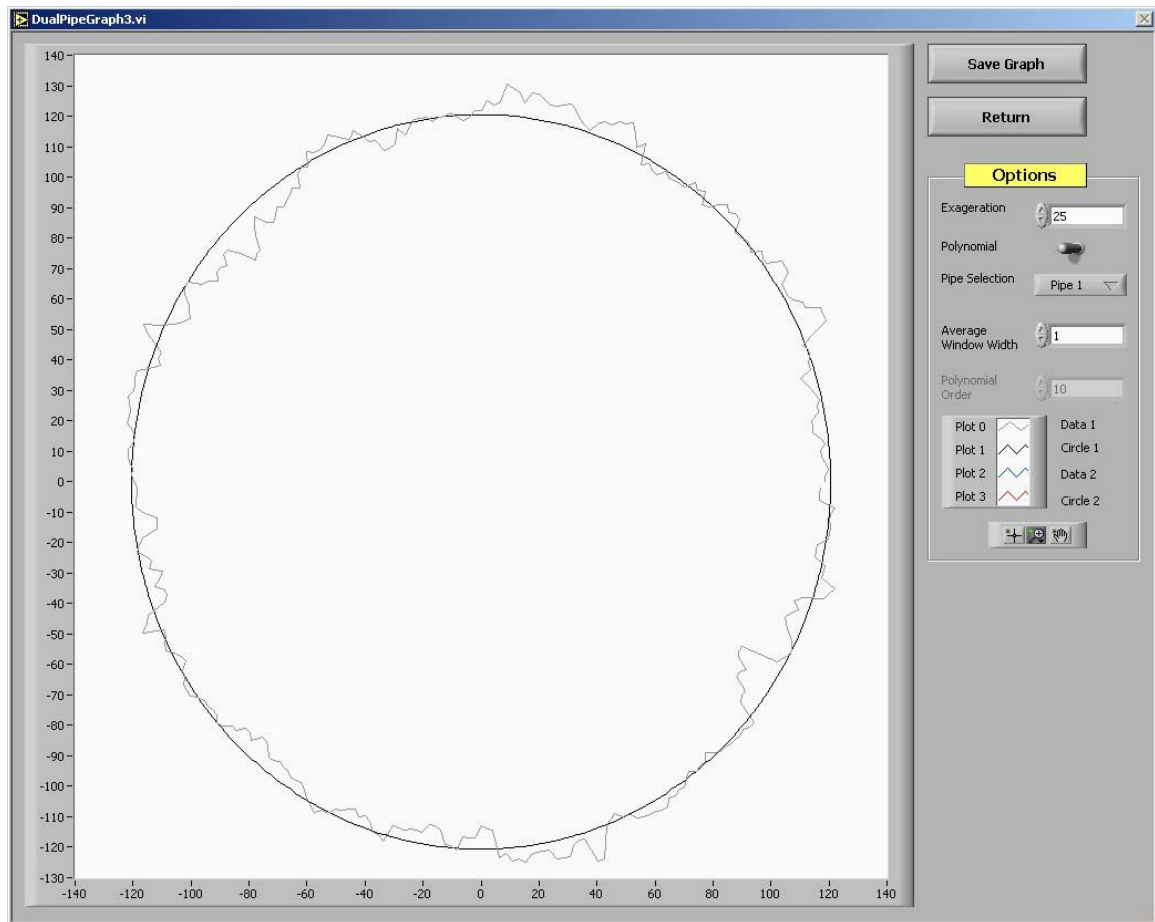
2. Overlay of two smoothed profiles



This view illustrates that there could easily be a rotation of the pipes with respect to each other that could reduce the difference in shape resulting in smaller step gaps.

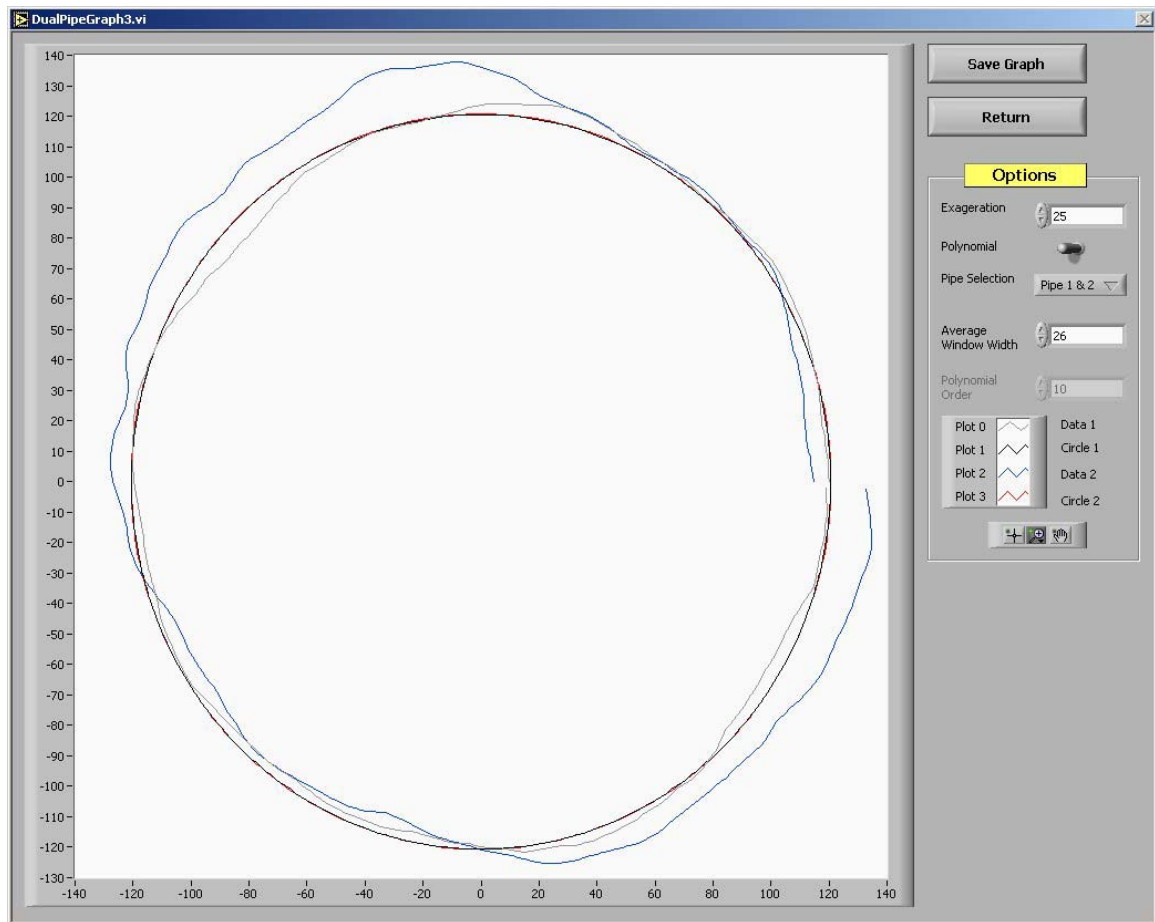
It is sometimes difficult to visualize the difference between a true circle and the measured data. A typical method of viewing such information is to overlay the residuals from the circle fit onto a plotted circle. The scale of the residual can be exaggerated as required. This scheme is illustrated in the following figure.

3. Exaggerated residuals overlaid on a circle (no smoothing).



The user can select the desired averaging window width and whether a single or two profiles are displayed. An example of two smoothed profiles being overlaid is provided in the following figure.

4. Overlay of two smoothed profiles



In this case the profiles are overlaid in their correct geometric locations, this ensures that the gap between the two profiles is revealed.

Further advances to the OMC software are envisaged depending on user feedback and demand.