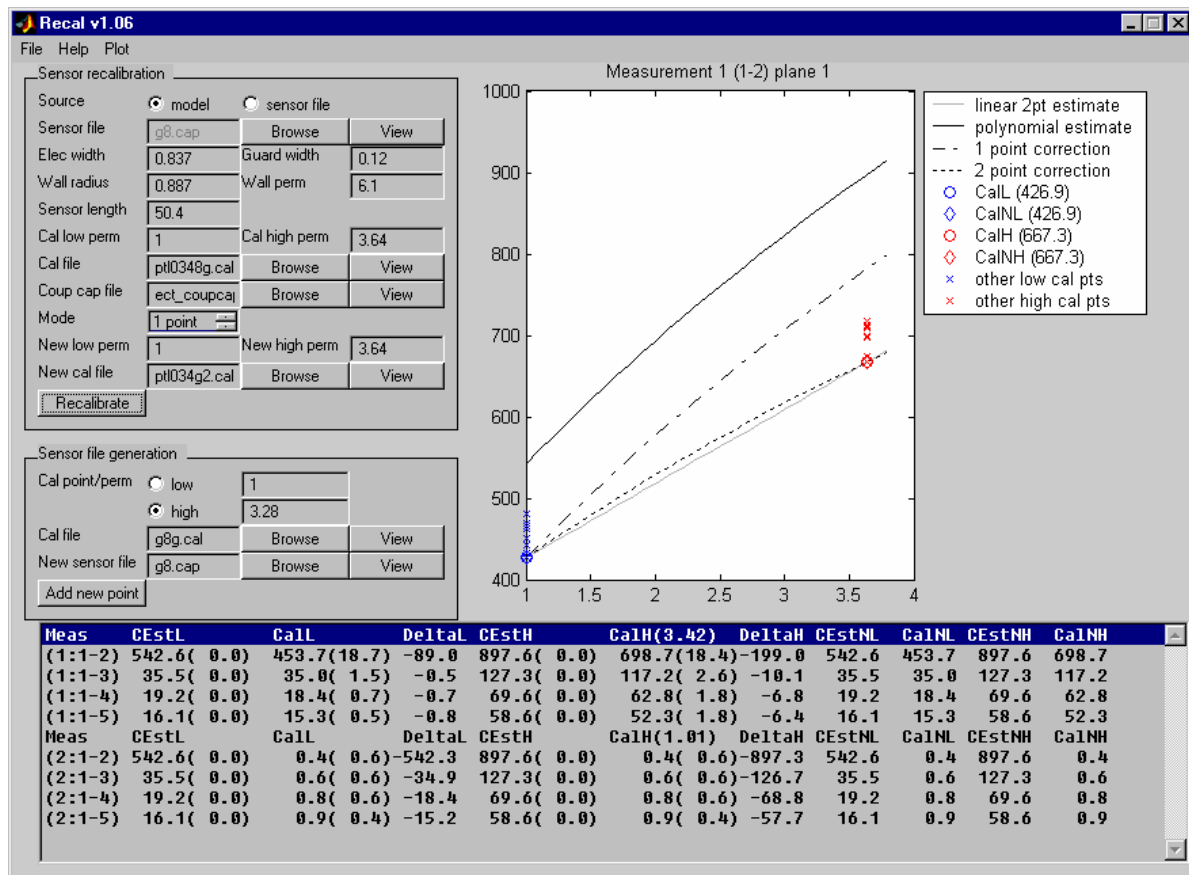


## ENHANCED CALIBRATION SOFTWARE Recal FOR ELECTRICAL CAPACITANCE TOMOGRAPHY

The **PTL Recal** software provides a number of additional calibration options compared with those included with the standard **PTL ECT32** operating software. These include the ability to create a single point calibration file (where a physical calibration is carried out with the sensor containing air or any other suitable dielectric material only). In this case the upper calibration point values are predicted from either a **theoretical sensor model** or from a measured **sensor permittivity file**. This option is useful for generating a calibration file for a sensor in cases where it is difficult to completely fill the sensor with the second dielectric fluid, or for situations where there is no physical fluid, such as a flame or plasma. The **Recal** program also allows the permittivity measurement range to be modified following the initial calibration.



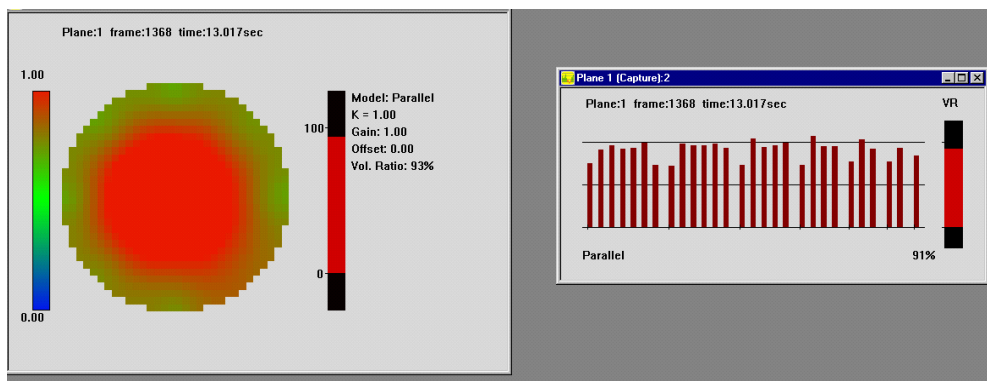
The Recal program window

The **Recal** program uses either a **file of measured capacitance/permittivity data** for the sensor (**sensor permittivity file**) or a **theoretical model** of the sensor to achieve these objectives. The **sensor permittivity file** can be generated from one or more standard calibration files. However, if these files are not available, (eg because the sensor size or access problems preclude filling the sensor with known dielectric materials), then a **theoretical model** of the **sensor capacitance/permittivity** characteristics, corrected using a **standard sensor calibration file** can be used instead.

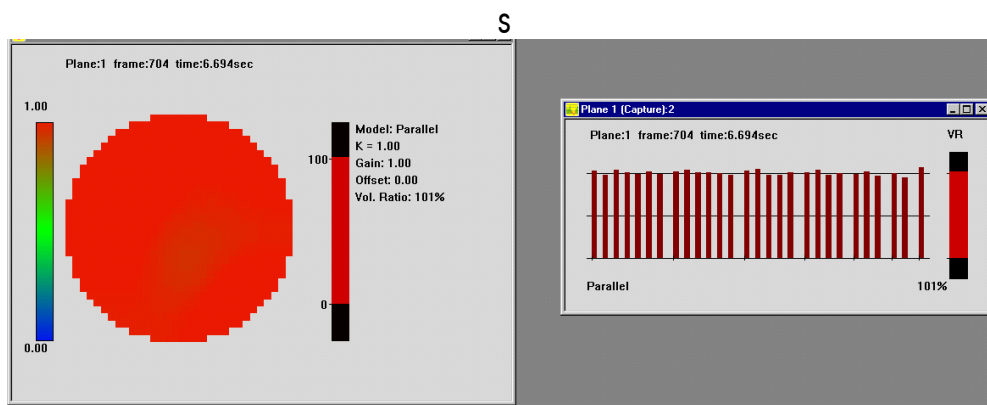
A further option allows a calibration file to be generated when the sensor has been calibrated containing air only. In this case the accuracy of measured permittivity values remote from the low permittivity calibration point will be limited as shown in the first example overleaf.

## Calibration examples

The two figures below show the upper level calibration capacitances and permittivity images calculated using the **Recal** software. The first figure displays results obtained using the **single point calibration method based on the theoretical sensor model** (the least accurate option) which, as can be seen, gives erroneous values of normalised capacitances for adjacent electrodes). The improved results in the second figure were obtained using a **measured sensor permittivity file** corrected at two permittivity values.



Single point calibration results at upper permittivity level using theoretical model



Upper permittivity calibration results from measured sensor permittivity file corrected at 2 points.

The **Recal** program is supplied as a stand-alone program file and also as a **Matlab m file**.

## FURTHER INFORMATION

For further information, please contact our sales department at the address below or email us at [enquiries@tomography.com](mailto:enquiries@tomography.com)

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