

The following scatter plots depict the measured pressure drop and relative pressures against distance for various VENCs. For each VENC, five levels of Gaussian noise were introduced, followed by the application of a Gaussian filter. The observed results consistently demonstrate that as the signal-to-noise ratio increases, both pressure drop and relative pressures exhibit a closer resemblance to their respective original data. Furthermore, the applied Gaussian filter effectively reduces noise in both pressure drop and relative pressure measurements.

Pressure drop

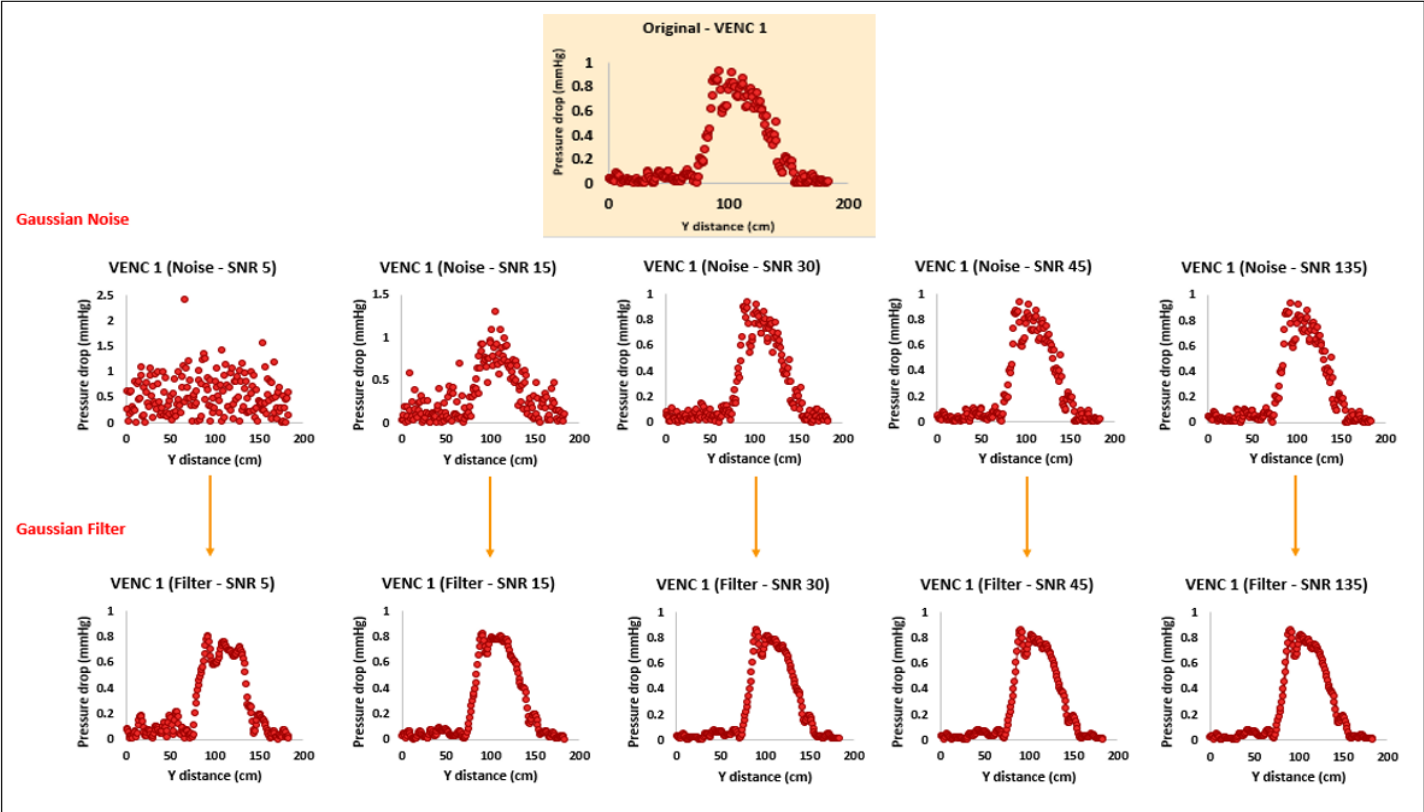


Figure S1. Measured pressure drop against distance, Y, for VENC 1.

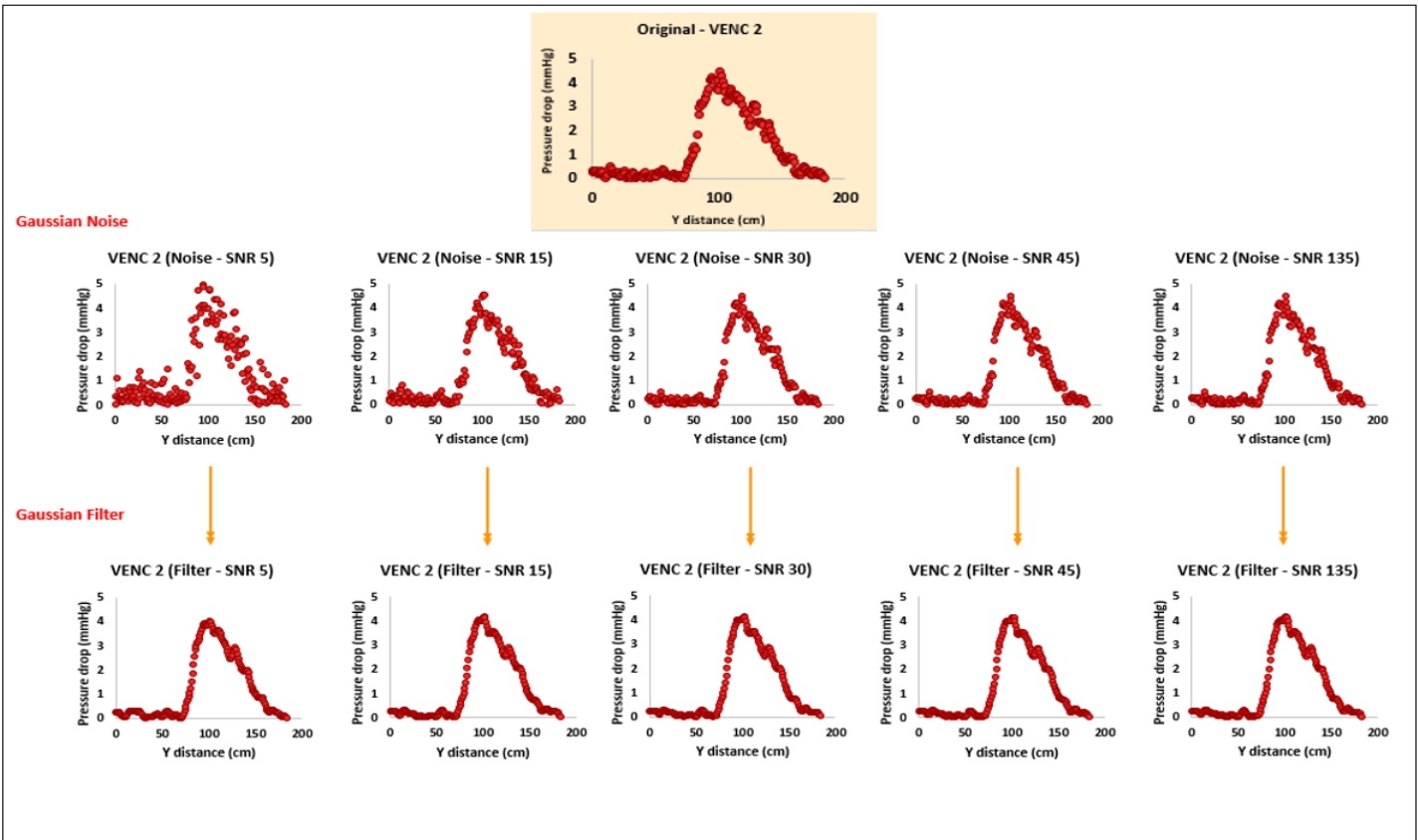


Figure S2. Measured pressure drop against distance, Y, for VENC 2.

Pressure drop

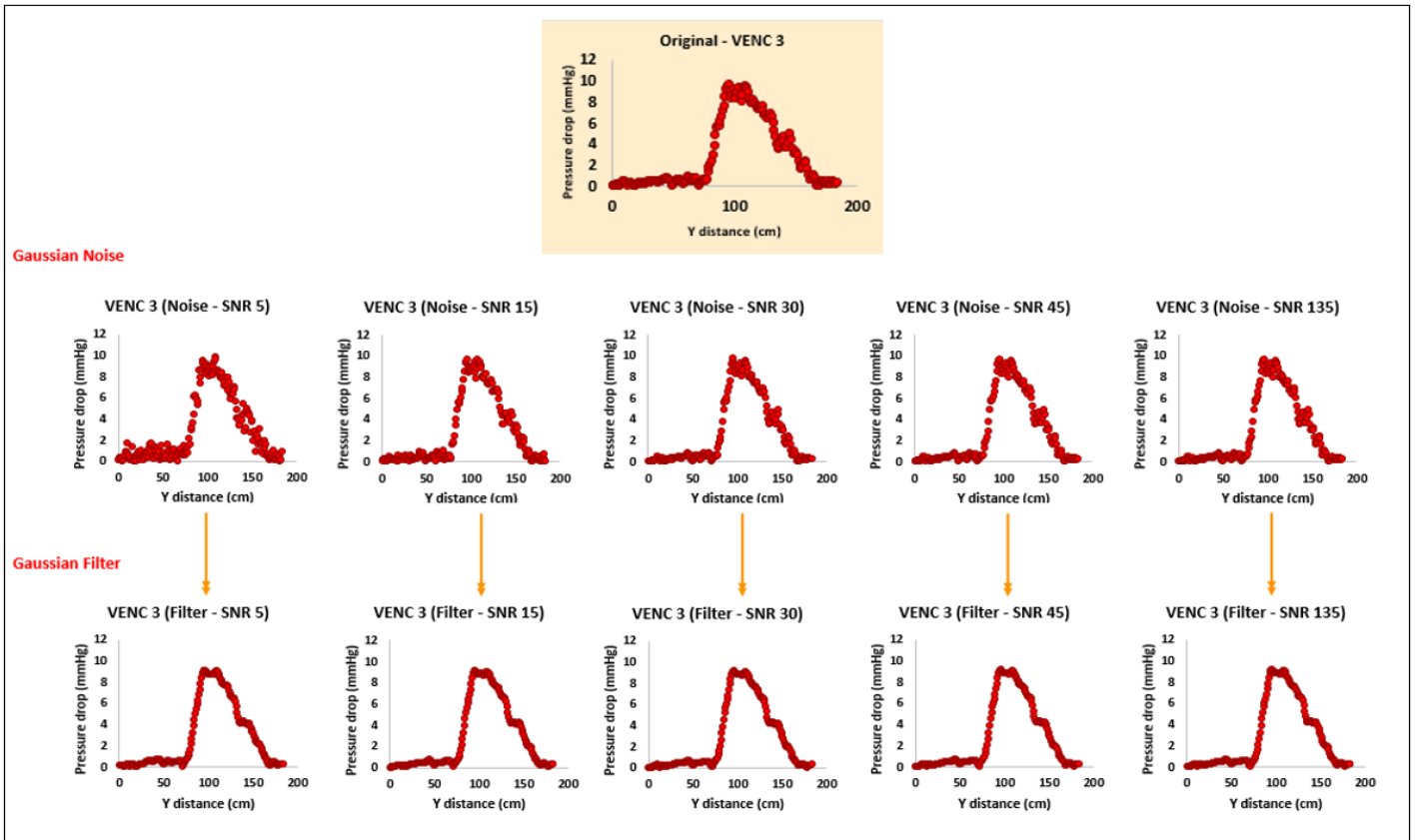


Figure S3. Measured pressure drop against distance, Y, for VENC 3.

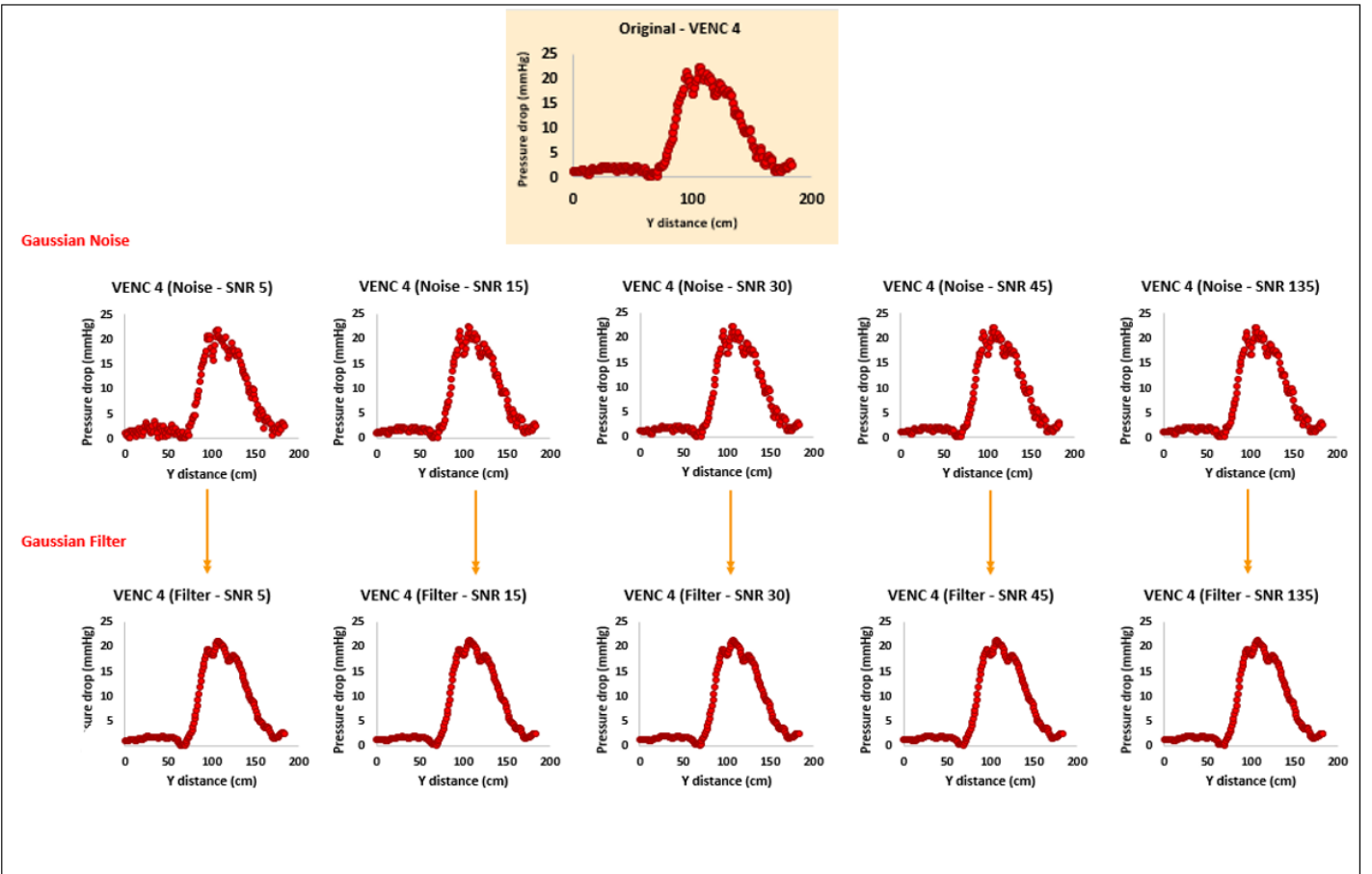


Figure S4. Measured pressure drop against distance, Y, for VENC 4.

Relative pressures

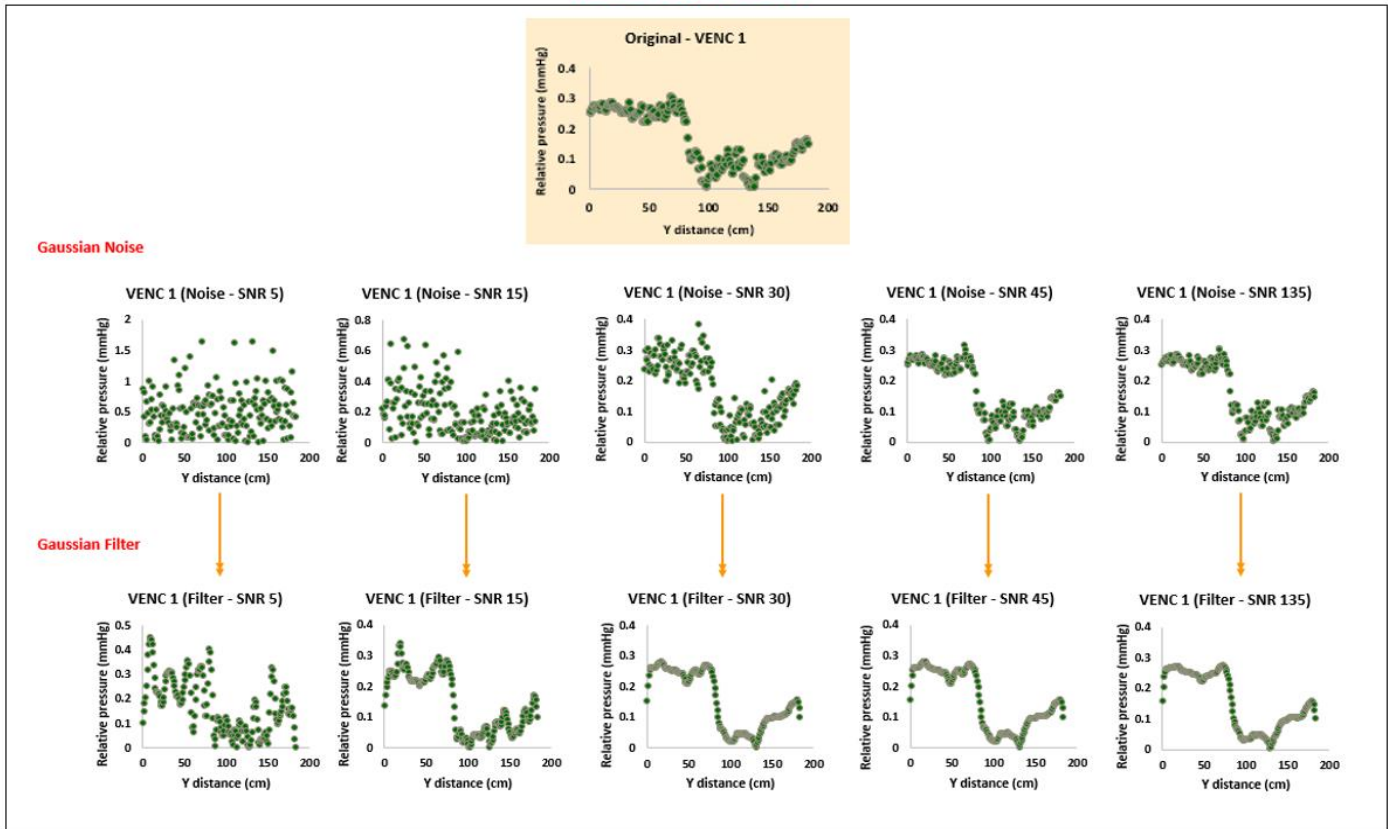


Figure S5. Measured relative pressures against distance, Y, for VENC 1.

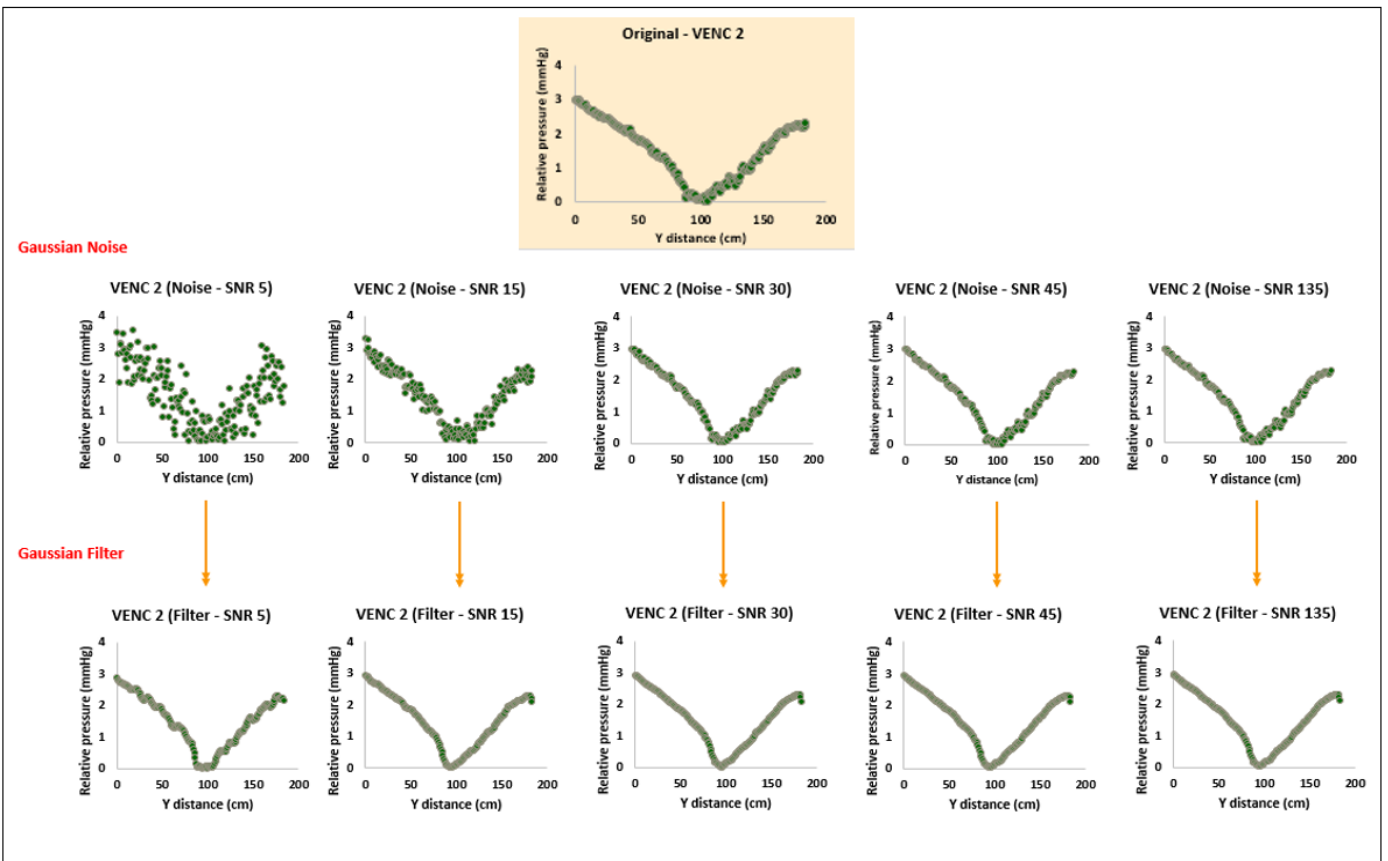


Figure S6. Measured relative pressures against distance, Y, for VENC 2.

Relative pressures

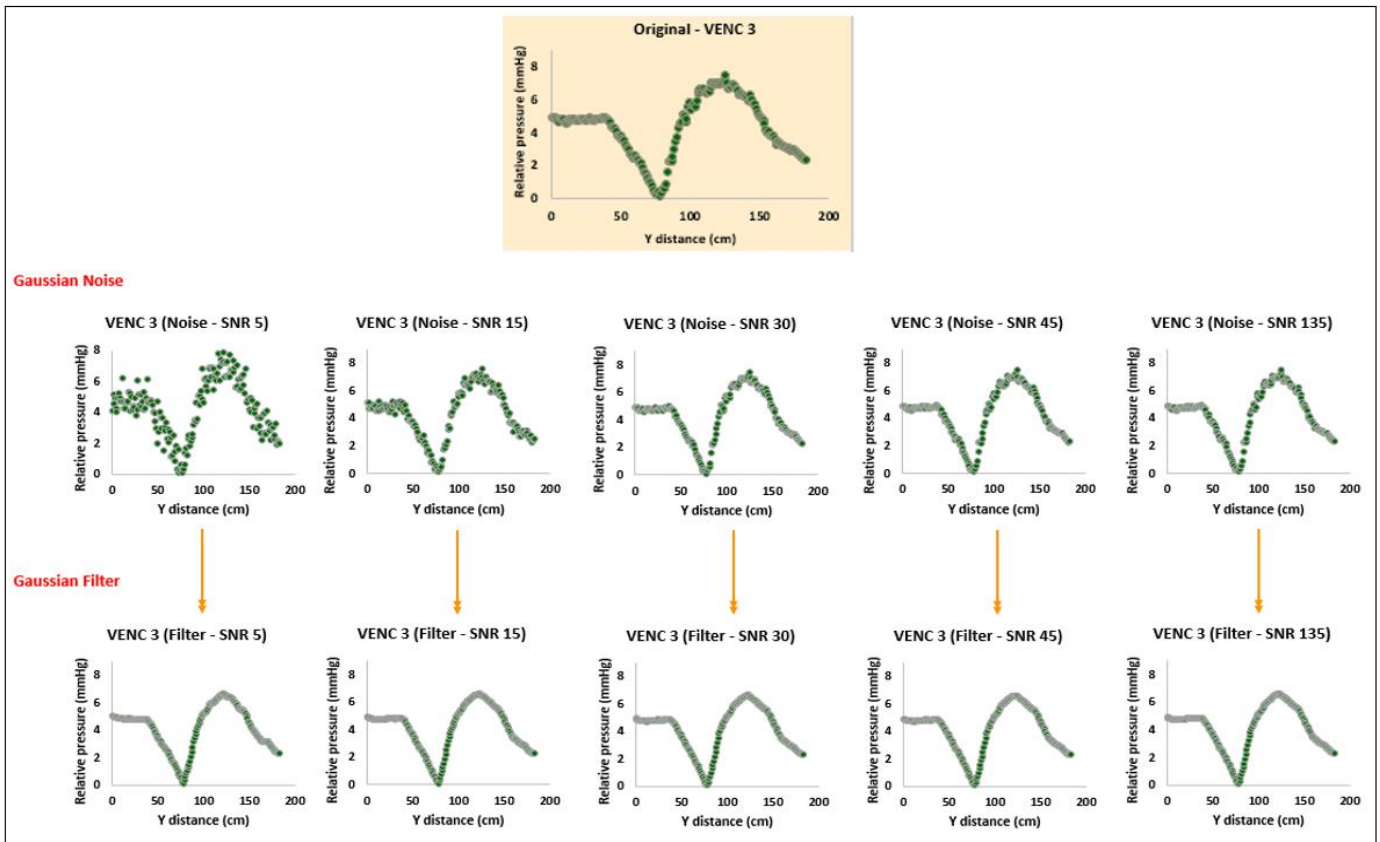


Figure S7. Measured relative pressures against distance, Y, for VENC 3.

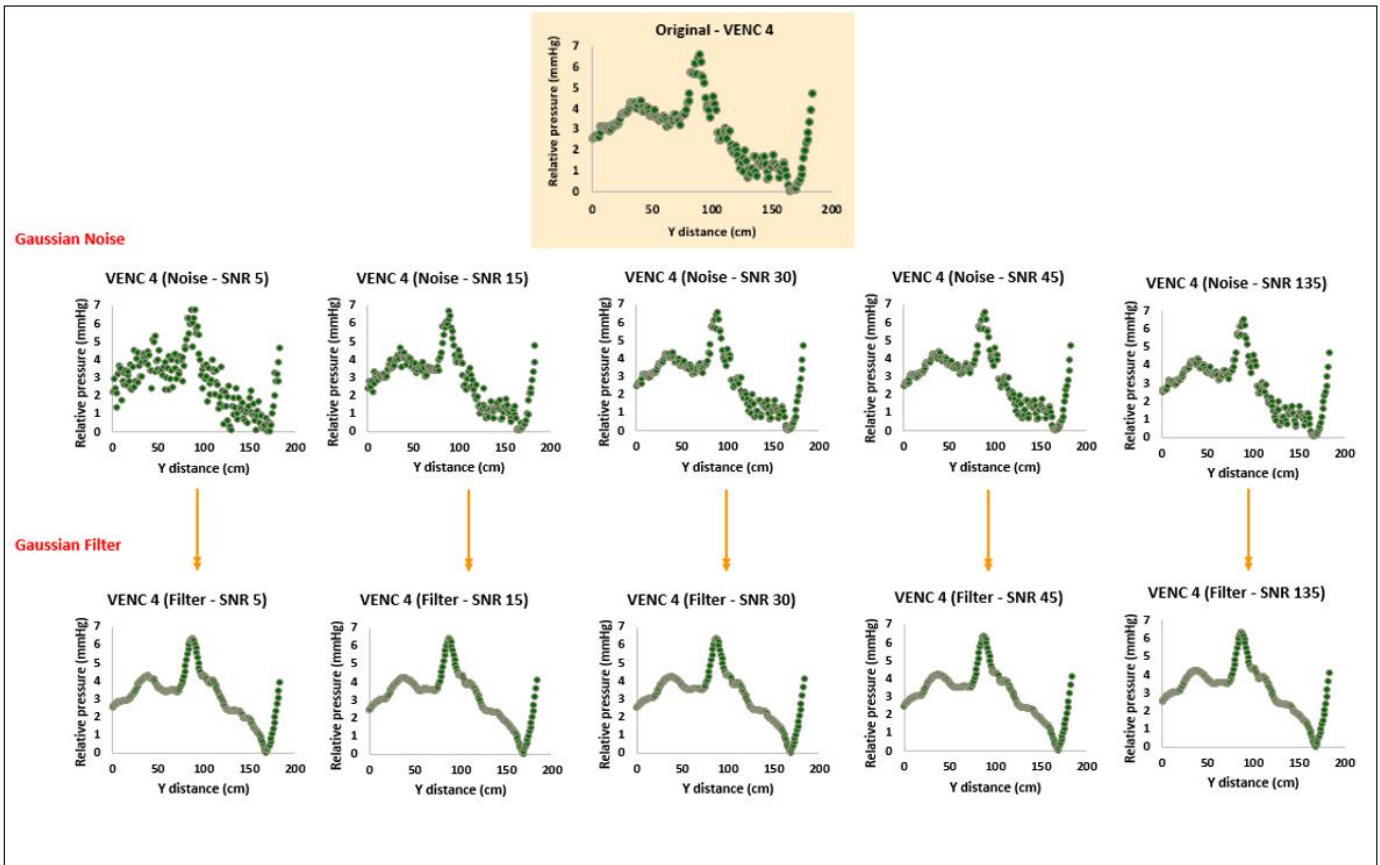


Figure S8. Measured relative pressures against distance, Y, for VENC 4.

The following Bland-Altman plots were employed for each VENC to evaluate the discrepancies between the original pressure data and data with all five Gaussian noise levels, as well as between the original pressure data and data with the Gaussian filter applied. The insets within the plots represent zoomed regions, providing a closer examination of specific areas of interest.

Bland-Altman plots: Pressure drop

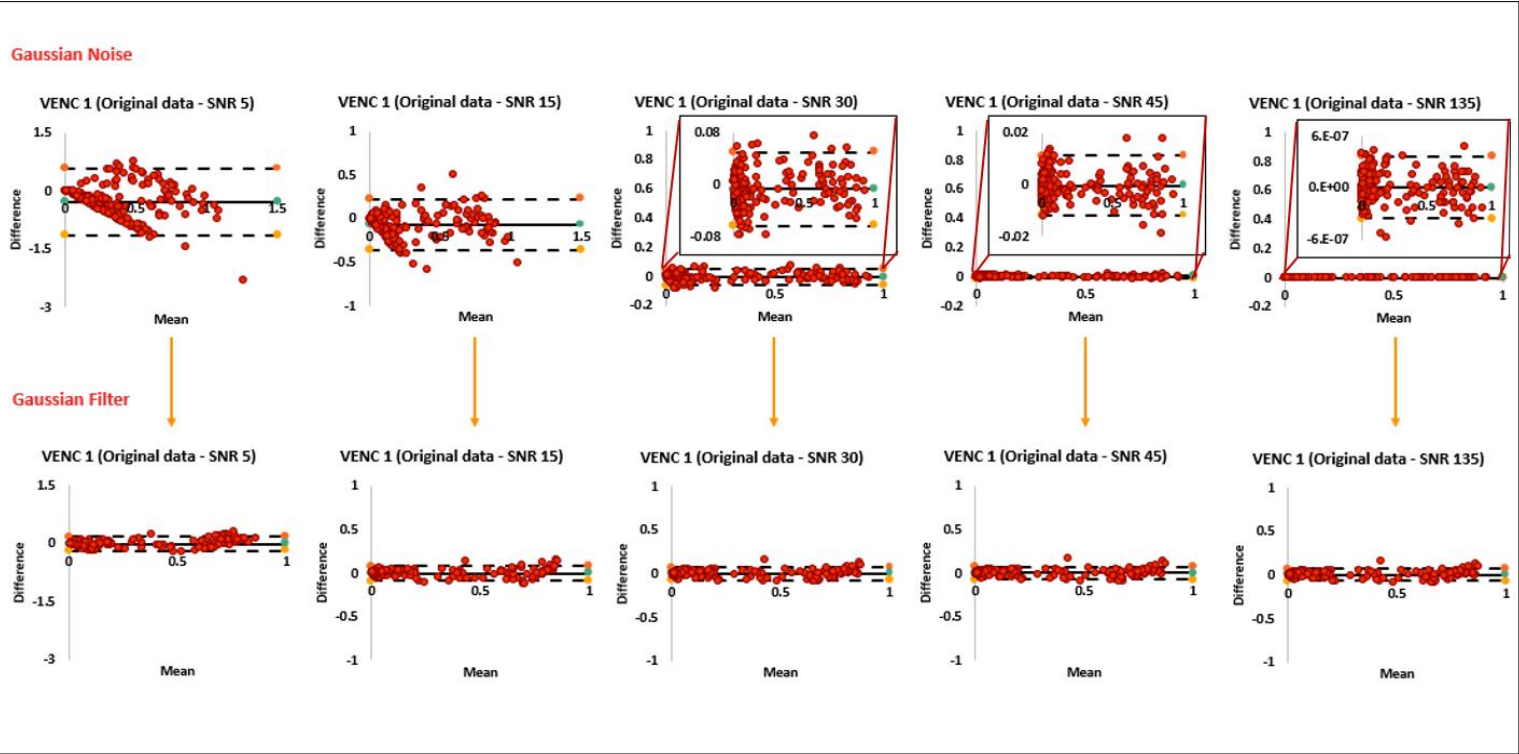


Figure S9. Bland-Altman plots for pressure drop against distance, Y, for VENC 1.

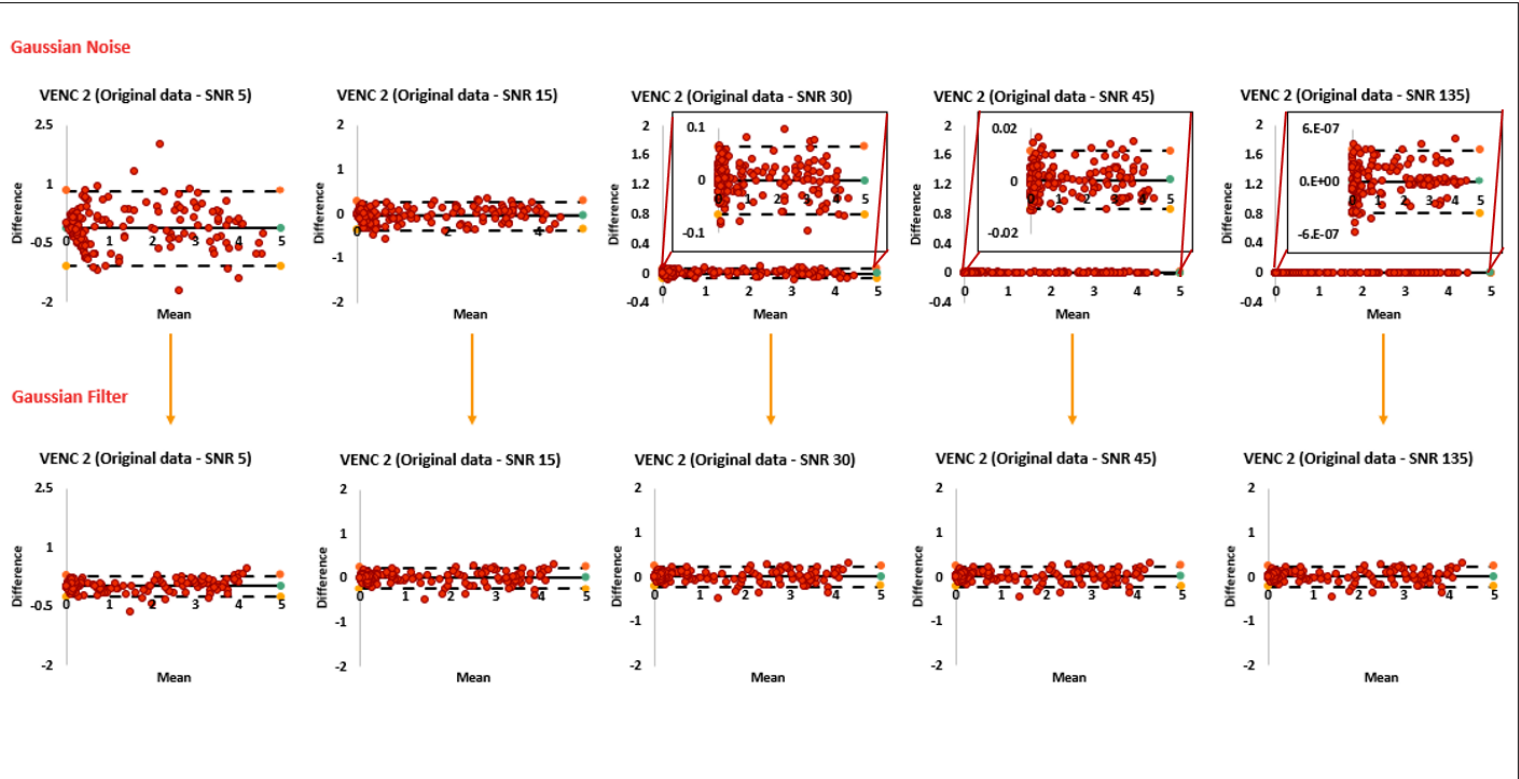


Figure S10. Bland-Altman plots for pressure drop against distance, Y, for VENC 2.

Bland-Altman plots: Pressure drop

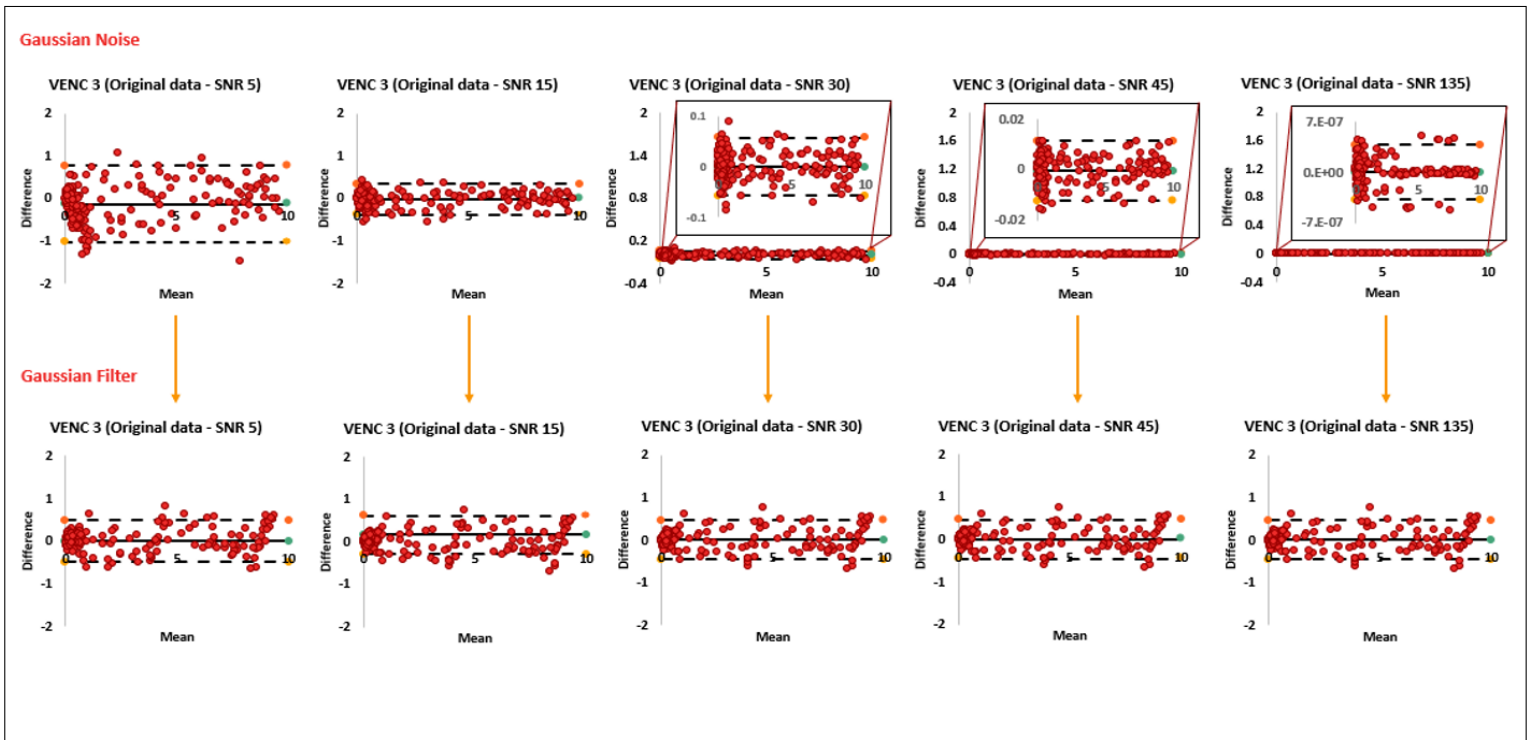


Figure S11. Bland-Altman plots for pressure drop against distance, Y , for VENC 3.

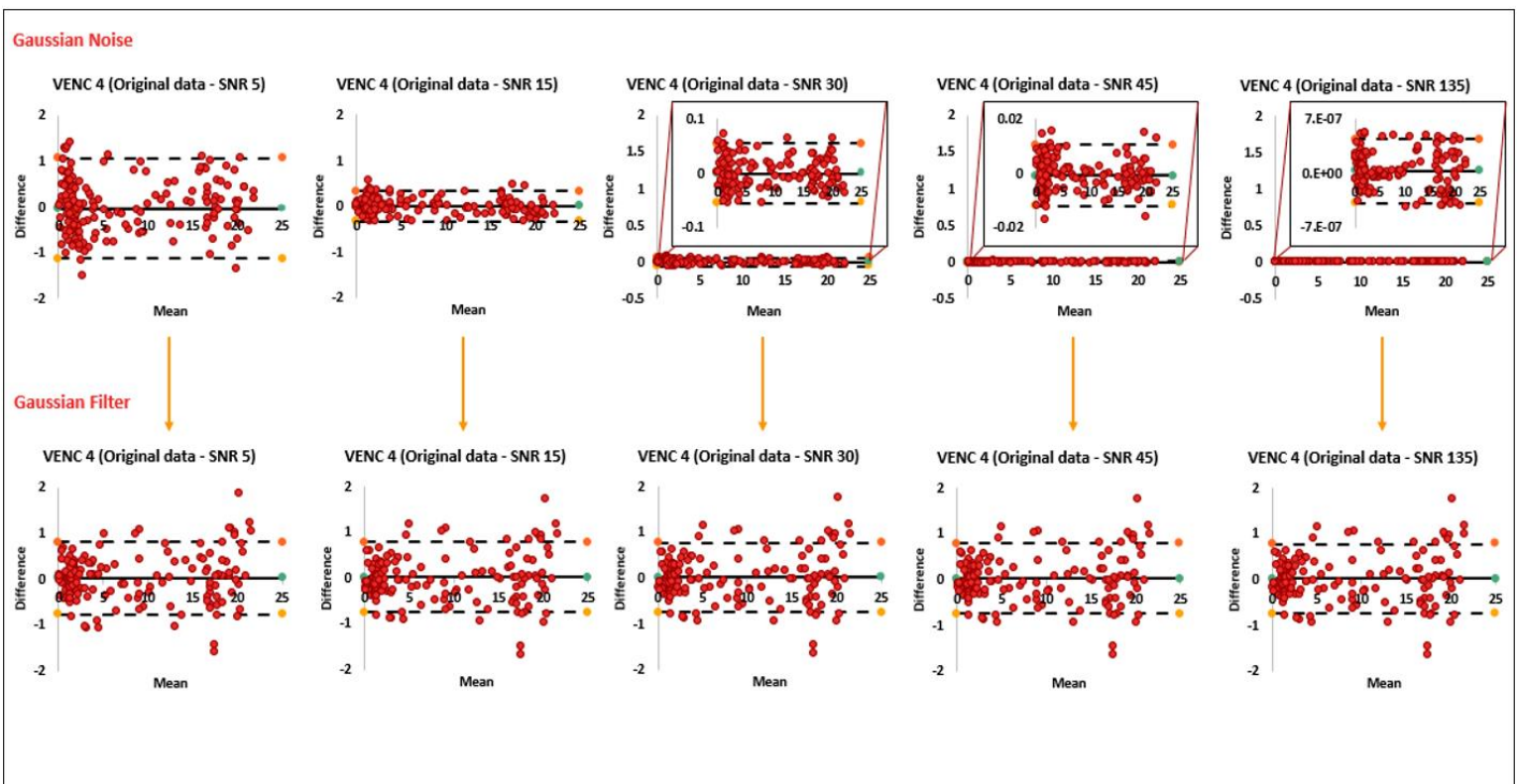


Figure S12. Bland-Altman plots for pressure drop against distance, Y , for VENC 4.

Bland-Altman plots: Relative pressures

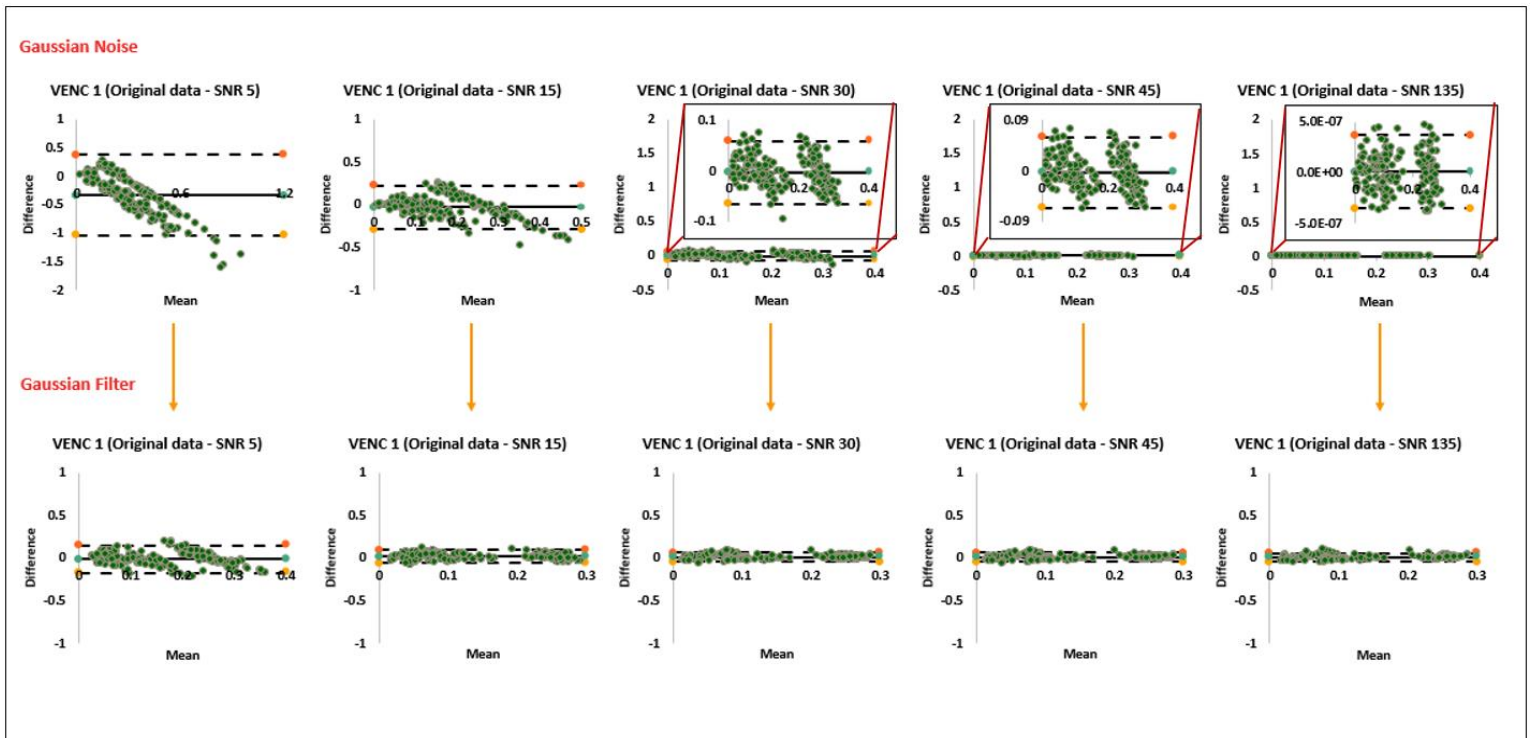


Figure S13. Bland-Altman plots for relative pressures against distance, Y , for VENC 1.

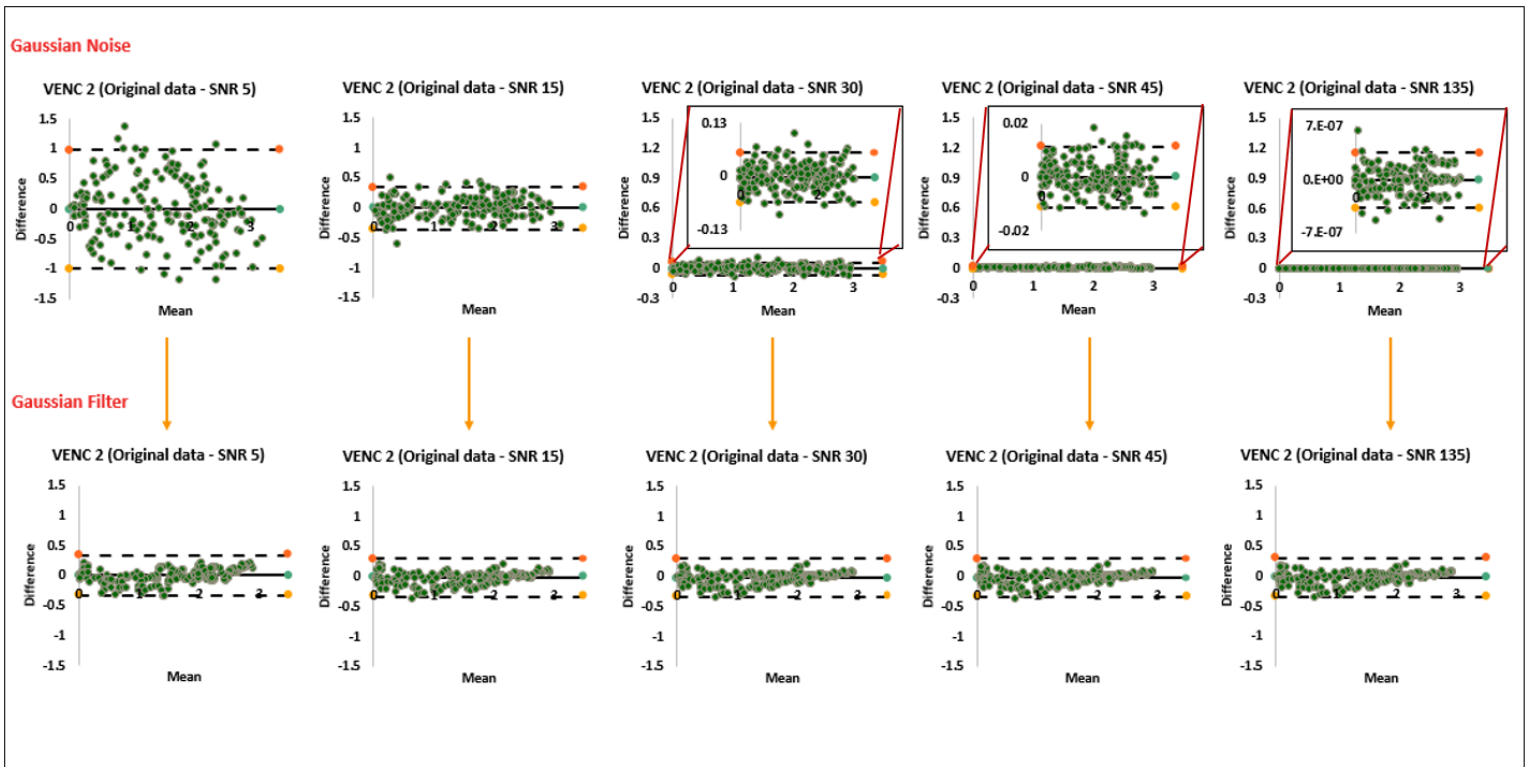
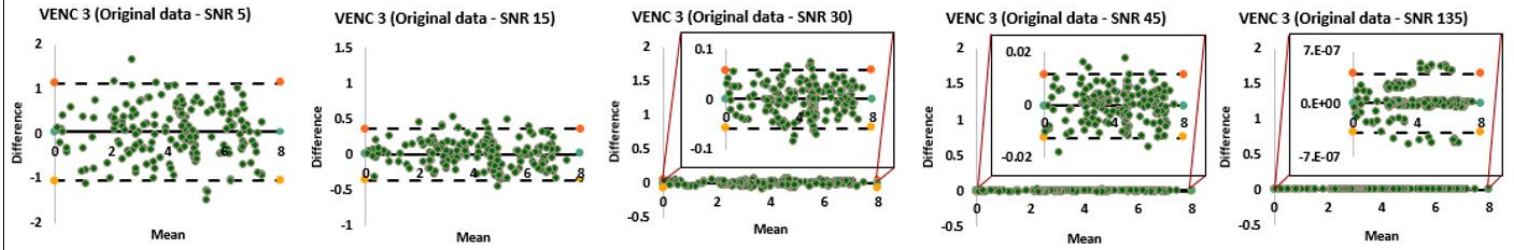


Figure S14. Bland-Altman plots for relative pressures against distance, Y , for VENC 2.

Bland-Altman plots: Relative pressures

Gaussian Noise



Gaussian Filter

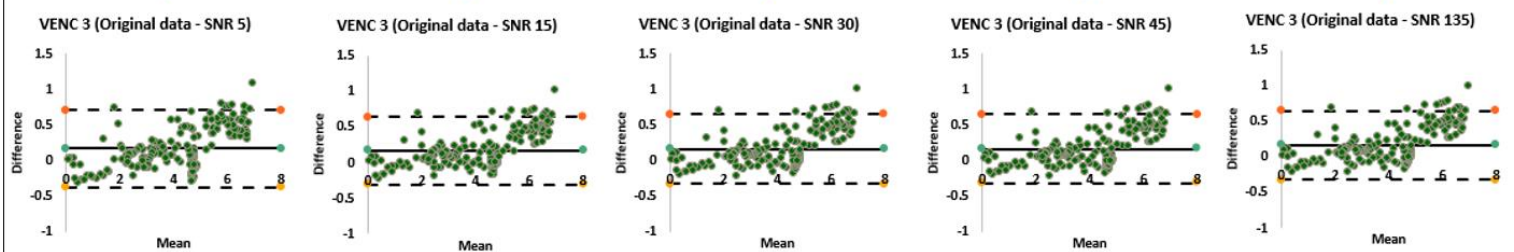
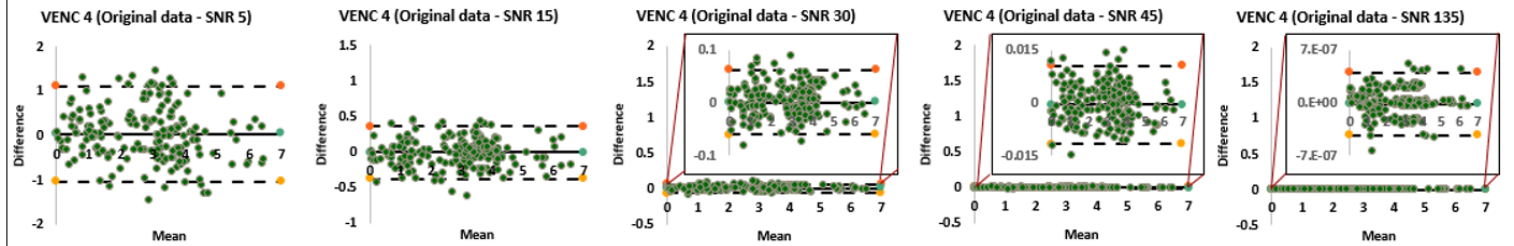


Figure S15. Bland-Altman plots for relative pressures against distance, Y, for VENC 3.

Gaussian Noise



Gaussian Filter

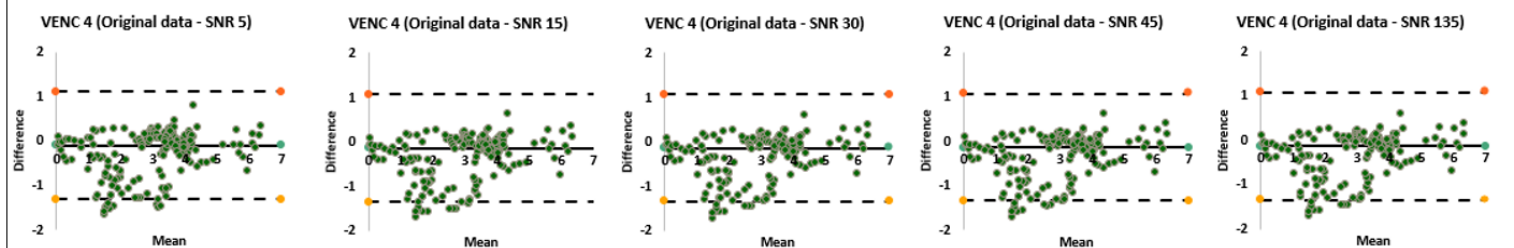


Figure S16. Bland-Altman plots for relative pressures against distance, Y, for VENC 4.