Fast MS Example Data for Medical Applications:

Using a "Fast Orifice Inlet" and a 2m PTFE sample line the following data was collected. The sample line was held close to the subject's Nose and a series of breathing patterns were acuired.

The MS was firstly calibrated in room air for N2, O2, CO2 and Ar.

The MS was set to collect data at an analysis dwell/measurement speed of 2ms / gas.

Looking at the data below and concentrating on the CO2 and O2 signals. The first block of peaks were at measured at approximately 1 sec/breath for 10 breaths

The second block were 20 breaths at approximately 0.7 sec/breaths

The Third block was considerably faster and led to hyperventilation after 20 breaths. Finally a single exhaled breath was recorded.

Approx 1 breath/sec   Approx 0.7 breaths/sec   Approx 2.5 breaths/sec   Single continuous Exhale!
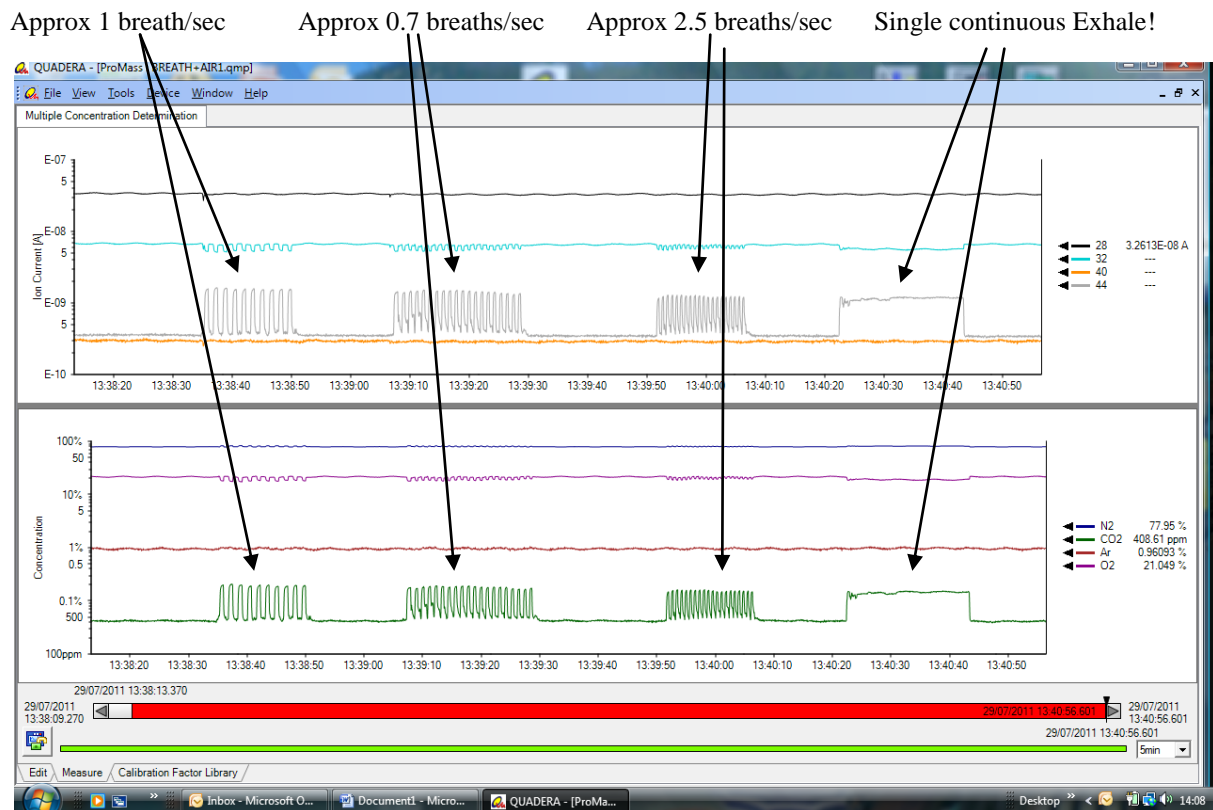
As can be seen, both the inlet gas transfer speed and also the ability of the MS to plot data points at 2ms intervals enable you to clearly analyse the shape and profile of each individual breath!

Here is a zoomed version of the fastest set of breaths:
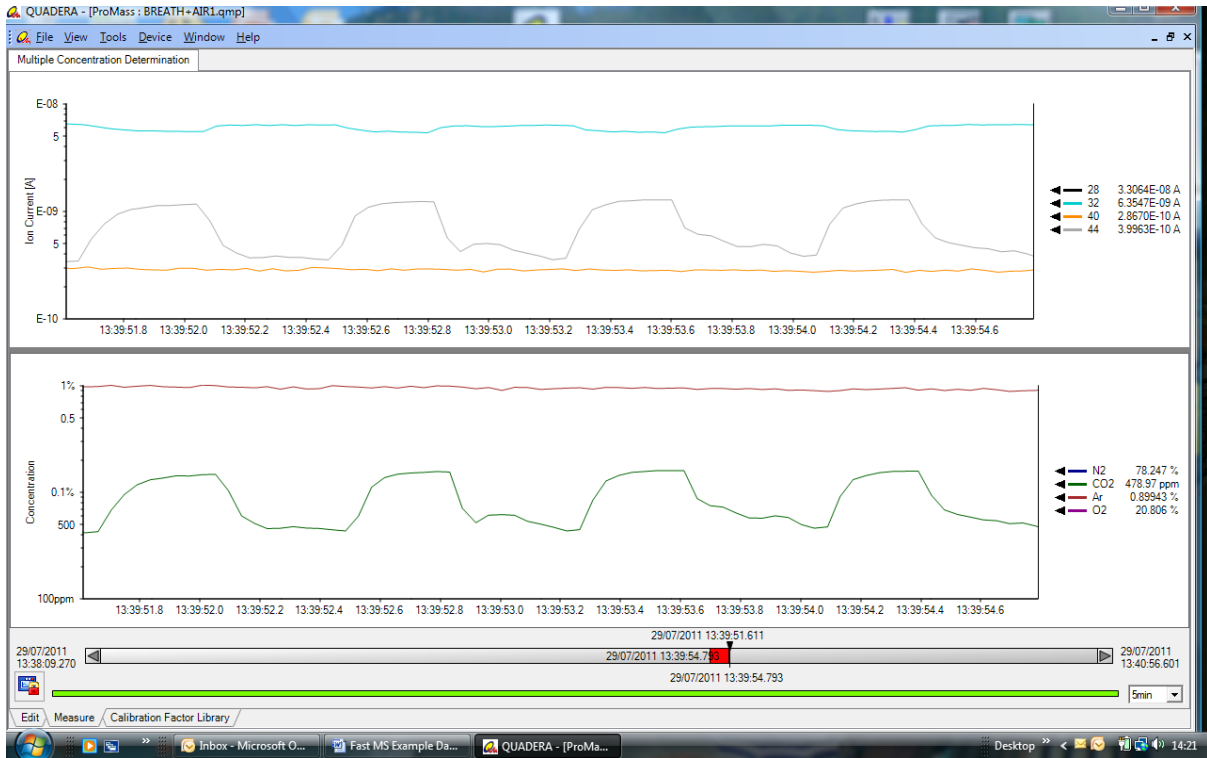
Note again the ability of the fast sample system as well as the ability of the MS to plot data points at 2ms intervals! The profile of <u>each breath</u> can now be seen again!

Here is some more data that shows just 2 gases selected. CO2 and O2:

CO2 at approx 1 breath/sec   CO2 at approx 2 breaths/sec

Again. You can clearly see the profile of every breath. The second set of breaths led to hyperventilation as there were more than 120 breaths / minute.

Note: The corresponding data is also available an Excel File