Carbon Dioxide Content by Syringe - Protocol

A syringe body fitted with some flexible tube and dilute sodium hydroxide(NaOH) solution can be used to estimate carbon dioxide percentage, as NaOH absorbs CO_2 but not methane.

1. Prepare approximately 100 ml of dilute sodium hydroxide solution by dissolving a couple of granules of NaOH in about 100 ml of water.

2. Draw up a 20-30 ml sample of biogas into the syringe (I initially fill the syringe with water to reduce air contamination) and put the end of the tube into the NaOH solution, then push out excess gas to get a 10 ml gas sample (you have to allow for the gas in the tube, 2 ml in my setup - but may be 4-5 ml).

3. Now draw up approximately 20 ml of solution and keep the end of the tube submerged in the NaOH solution while you shake the syringe for 30 seconds.

4. Point the syringe downwards and push out excess liquid, so the syringe plunger reaches 10 ml. Now read the volume of liquid, which should be 3-4 ml indicating about 30-40% of gas absorbed so we assume the balance of 70-60% is methane.

5. If the flame does not burn properly and you get over 50% methane (a reading of less than 5 ml of liquid) you must have nitrogen or some other gas present.