Supplementary figure captions:

Supplementary Fig. S-1. Schematic electrical wiring diagram. Designed using KiCAD.

Supplementary Fig. S-2. Schematic diagram of pressure, vacuum and liquid distribution system: (**a**) sampling mode, sample collection procedure from the air to the vial, (**b**) vacuum mode, capillary flushing procedure from the vial, (**c**) pressure mode, separation capillary flushing procedure from the BGE bottle. Numbers: 1 – pressure/ vacuum pump, 2 – 3-port, 2-way air valve, 3 – air split, 4 – BGE bottle, 5 – sample vial, 6 – waste bottle, 7 – bottle with pressure sensor

Supplementary Fig. S-3 P&ID diagram of a pressure/ vacuum distribution system. Markings: (1) – mini diaphragm 6 V pressure/ vacuum pump, (2) 3-port air split, (3) 3-port 2-way solenoid valve, (4) Pressure/ vacuum gas bottle, (5) pressure sensor, (6) waste bottle, (7) fused silica capillary, (8) sample vial, (9) background electrolyte bottle.

Supplementary Fig. S-4. Demonstration of signal compensation and conditioning, when analysis performed on a hovering drone. (a) Original electropherogram, (b) temperature change during analysis, (c) temperature-compensated electropherogram, (d) sensitivity-enhanced electropherogram. Peaks: 1 – NH_4^+, 2 – DEA, 3 – TEA, 4 – system valley. Average wind speed 7 m/ s, gusts up to 10 m/ s. Sampling – 32 min. Added volatile compounds: no more than 1.0 ppm NH_3, 1.3 ppm DEA, 1.0 ppm TEA. Separation conditions: BGE – 500 mM CH3COOH, injection at 10s×20 kPa, L_{tot} 30 cm, L_{eff} 23.5 cm, separation voltage potential + 4.0 kV, detection – C4D at 3.3 V 32 kHz square wave.

Supplementary Fig. S-5. Demonstration of signal compensation and conditioning, when analysis performed on a landed drone. (a) Original electropherogram, (b) temperature change during analysis, (c) temperature-compensated electropherogram, (d) sensitivity-enhanced electropherogram. Peaks: 1 – NH_4^+, 2 – DEA, 3 – TEA, 4 – system valley. Average wind speed 7 m/ s, gusts up to 10 m/ s. Sampling – 32 min. Added volatile compounds: no more than 1.0 ppm NH_3, 1.3 ppm DEA, 1.0 ppm TEA. Separation conditions: BGE – 500 mM CH3COOH, injection at 10s×20 kPa, L_{tot} 30 cm, L_{eff} 23.5 cm, separation voltage potential + 4.0 kV, detection – C4D at 3.3 V 32 kHz square wave.

Supplementary Fig. S-6. Schematic diagram representing how the capillary was fixed in order to prevent vibration caused effects on the detection