



# Introducing the Vortex3 and Wireless Technology Air Sampling

AIHA 2022

Justin Stewart

- Existing Pumps
  - Heavy
  - Large
  - Loud
  - Basic features
- The Problem
  - Transportation
  - Decontamination



# The New Vortex3!

- High Flow (12L/min)
- Rugged and light
- Unique interlocking design
- Bluetooth enabled
- IP65



- **Unique Interlocking Design**
  - Patent pending
  - Carry multiple units
  - Comfortable handle
- **Lightweight**
  - Weighs only 4.78lb (2.17kg)
- **Convenience**
  - Tube and sampling head on the pump



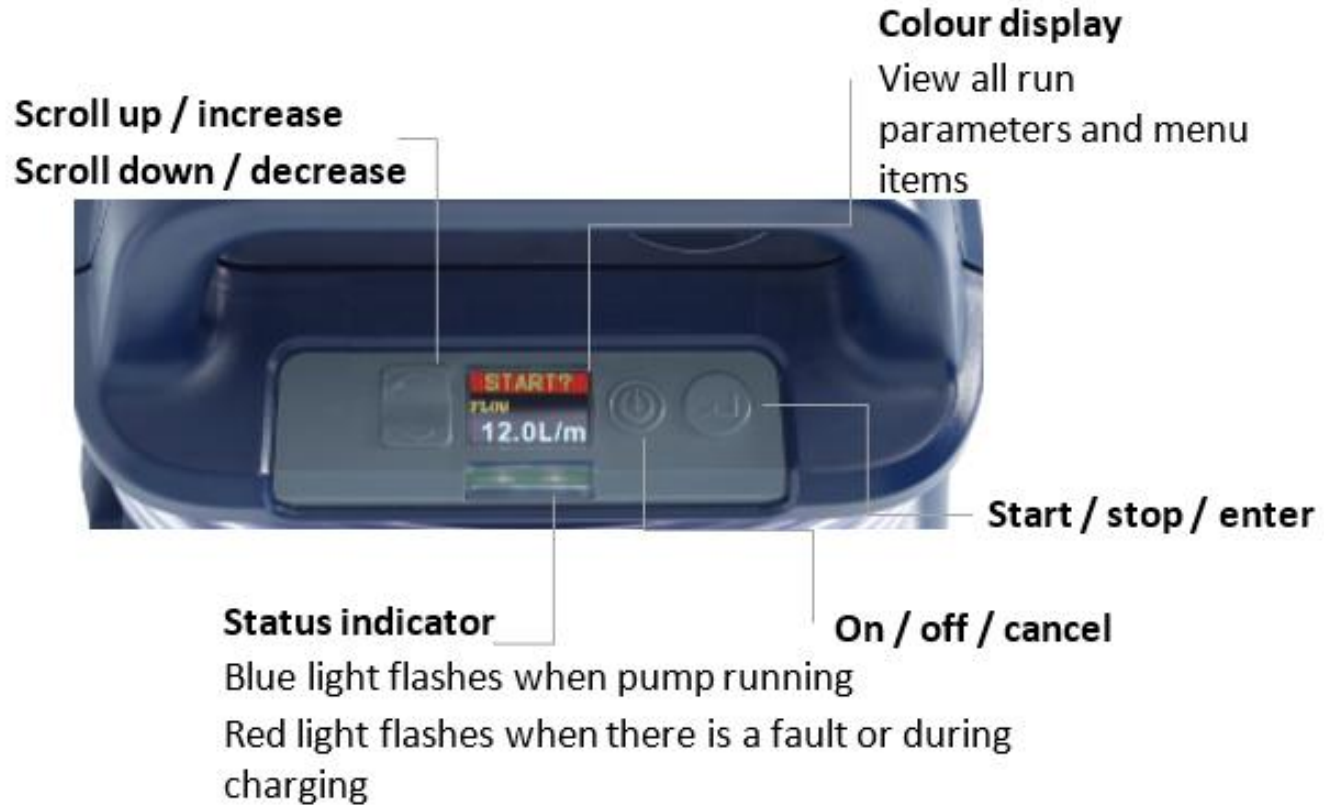
- **Rugged Design**
  - Built for strength - ABS
  - Smooth finish
- **IP65**
  - Decontaminate with water
  - One way valves
  - No small crevices
- **Performance**
  - 4 hour runtime @ 12L/min, 25mm 0.8um filter
  - Flow accuracy better than +/-5%



- **Colour Display**
  - View in low and high light
  - Colour coded
- **Large Keypad**
  - Easy to operate in gloves
- **User Interface**
  - Remembers previous settings
  - Simple menu



## Controls



Features	Vortex3	Vortex3 Pro
Flow range 5-12L/ min	✓	✓
Flow control +/- 5%	✓	✓
Battery & Mains Powered	✓	✓
Run Duration Timer	✓	✓
Bluetooth®		✓
Battery Gauge		✓
Pressure Indicator		✓
Remote Start/Stop		✓

- Full range of accessories available
- Provided with mains charger





- **Operate remotely**

- 25m range
- iOS or Android
- See run information
- Ensure operating correctly

- **Download data**

- See pump memory
- Input site data
- Location stamp
- Email results in a report format

Equipment Details	
Device	Casella Vortex3
Serial Number	9999999
Firmware Revision	217009.00.48
Battery Remaining	3%
Service Life	0 Hours
Site Details	
Analyst Name	Tim
Site Name	HQ
Job ID	001
Sample ID	001
Location	<a href="#">Google Maps</a>
Run Data	
Run Mode	Manual
Stop Mode	Manual
Start Date & Time	6 Feb 2015 20:31:57
End Date & Time	6 Feb 2015 20:55:37
Duration	00:23:40 (HH:MM)
Flow Rate	8.0 L/m
Volume Sampled	189331.00 L
Inlet Pressure (Start)	0.0 kPa
Inlet Pressure (End)	11.0 kPa
Temperature (Start)	64.4 F
Temperature (End)	84.2 F
Temperature (Avg.)	77.9 F
Flow Faults	0





## Making all air sampling smarter

- Auto calibration of pumps
- Remote checking
- Start/stop
- Note taking
- Quick reporting

The screenshot displays the Airwave CASSELLA mobile application interface. At the top, the status bar shows connectivity icons, 50% battery, and the time 12:03. The app header includes the Airwave logo and the text "CASSELLA" with a menu icon. Below the header, there are two monitoring cards for "Vapex" devices. Each card includes a play button icon, a Wi-Fi signal icon, and a battery level icon. The first card shows a device with S/N: 9999999, a run duration of 00:06:01, and a flow rate of 200 mL/min. The second card shows a device with S/N: 3874416, a run duration of 00:00:08, and a flow rate of 200 mL/min. Both cards also display volume sampled, inlet pressure, motion index, flow faults, and battery status.

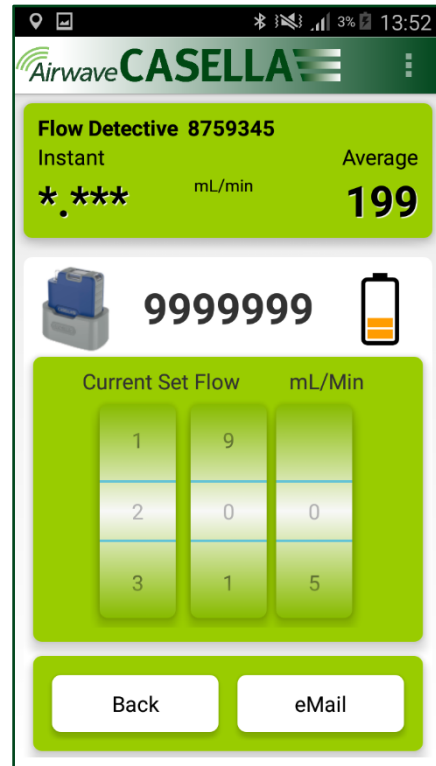
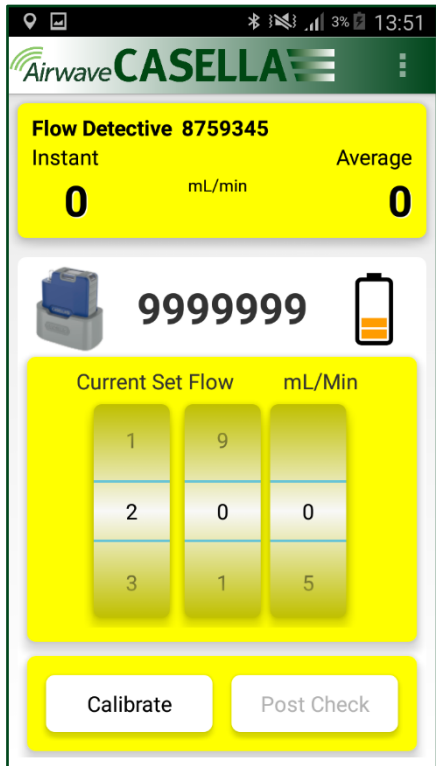
Device S/N	Run Duration	Flow Rate	Volume Sampled	Inlet Pressure	Motion Index	Flow Faults	Battery (HH:MM)
9999999	00:06:01	200 mL/min	1.203 L	5.6 cmH2O	0 %	0	41:24
3874416	00:00:08	200 mL/min	0.026 L	0.0 cmH2O	0 %	0	52:40

- Closed loop calibration
  - Connect sample train
  - Use Flow Detective
  - Airwave App will calibrate the VAPex
- Saves time and effort in setup

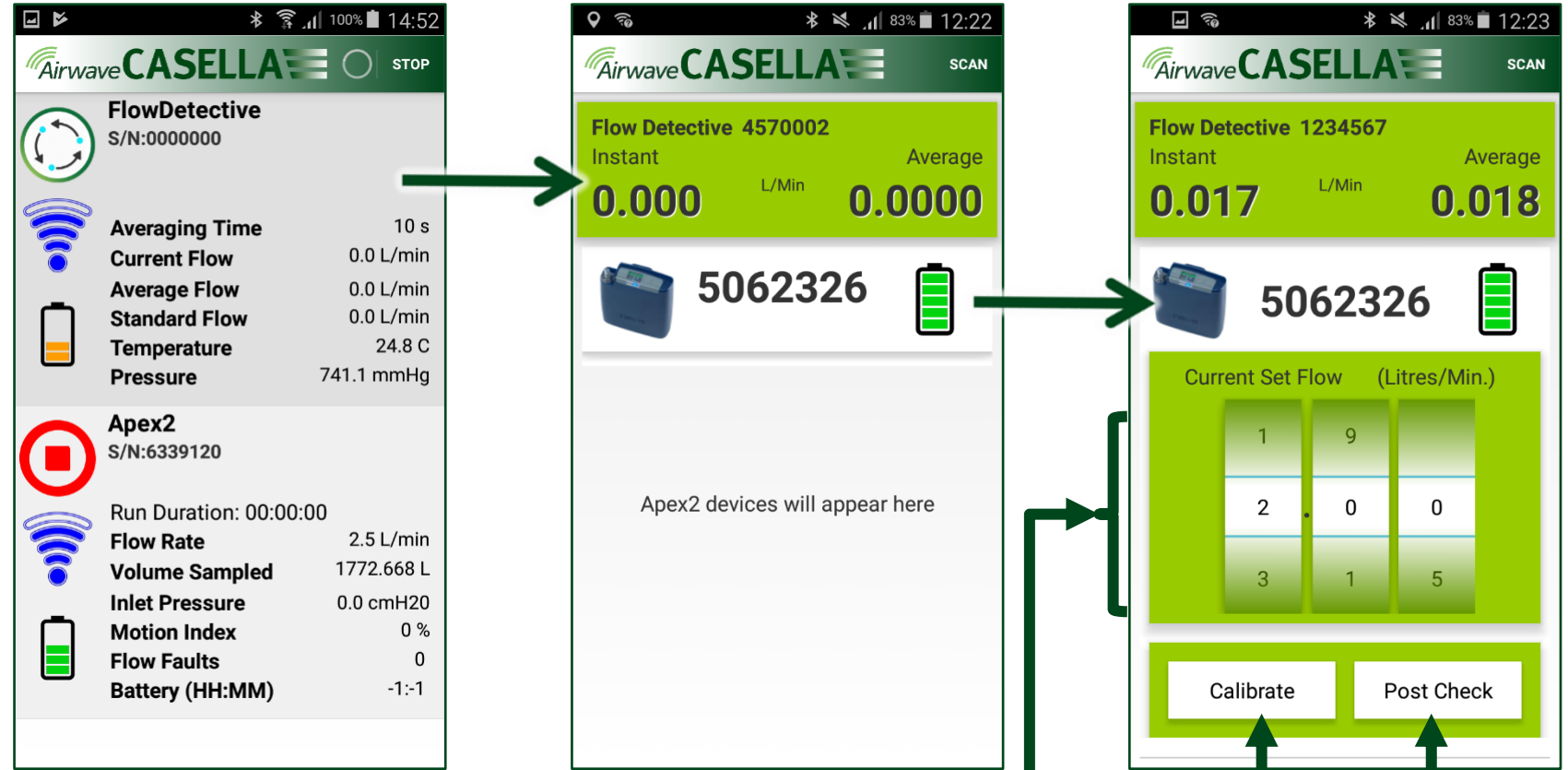


# Closed Loop Calibration with Flow Detective

- Select flow detective
- Select pump and connect (light on VAPex will flash blue)
- Select calibrate



- Select flow detective
- Select pump to be calibrated
  - Pumps switched on
  - Scan if not found
- Set pump flow
- ‘Calibrate’ or ‘post check’



Set flow

Calibrates flow to set level

Checks current flow of pump only

- Automatic calibration
- Define pre or post calibration
- Insert pump and sample IDs
- Gives location data

Compares Calibration and Post Check Results



**Manual Calibration**  
Flow Detective 1234567

Instant  
**2.153** L/Min

Average (30s)  
**2.1515** L/Min

Calibration  
 Post Check

eMail Finish

Flow Detective 1234567  
Calibration Completed 9:00a.m. 28/02/18  
Average Flow 2.1515 L/min  
Standard Flow 2.153 L/min  
Temperature 20.8°C  
Pressure 1028.8cmH2O  
Location Link Not Available

**Pump Model**  
Name and class of the pump

**Serial Number**  
Pump Serial Number

**Sample Identification**  
Unique sample text

Abort Send



- Combines Calibration and post check data
- Calculates post run averages
- Calculates flow deviation %



CALIBRATION RESULTS	
Calibration Completed	12:34pm 27/03/2018
Average Flow	1.999L/min
Standard Flow	2.001L/min
Temperature	296.4°K
Pressure	751.0mmHg
Apex2	6339120

POST RUN CHECK RESULTS	
Flow Detective	0183862
Post Run Check Completed	12:35pm 27/03/2018
Post Run Average Flow	2.001L/min
Post Run Standard Flow	1.997L/min
Temperature	296.4°K
Pressure	751.0mmHg
Apex2	6339120
Location	<a href="#">Google Maps</a>

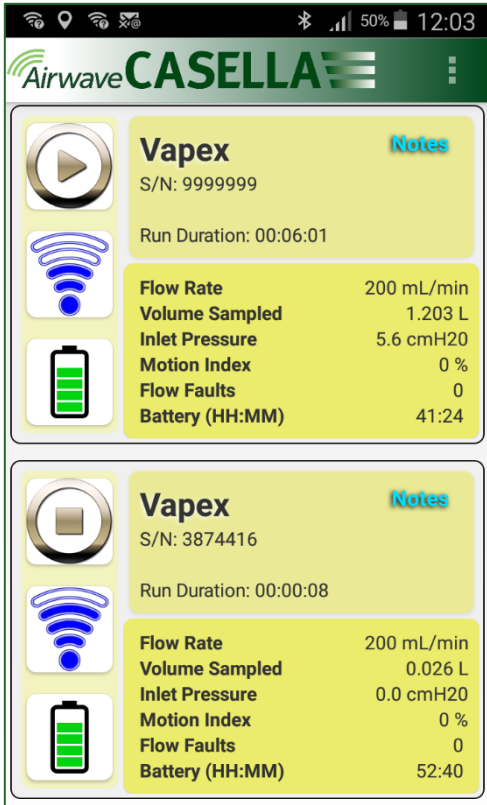
  

CORRECTED AVERAGE FLOWS	
Corrected Average Flow	2.000L/min
Corrected Standard Flow	1.999L/min
Flow Deviation	0.1%

Copyright © 2018 Casella. All rights reserved.



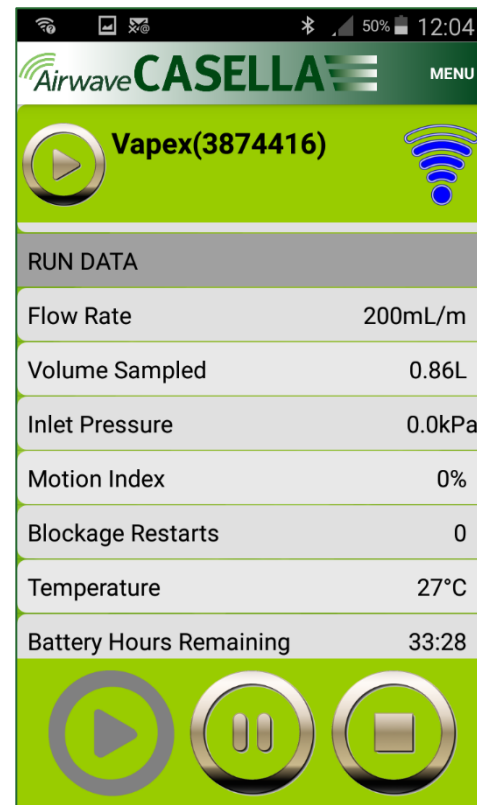
# VAPex – Remote Operation via Airwave App



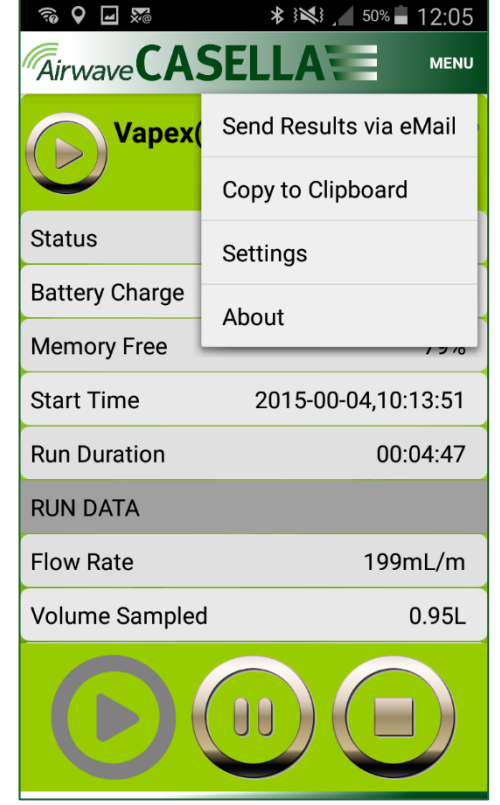
1 Find your VAPex on Airwave



2 Click 'Run' button



3 Start viewing the sampling



4 Email a copy of results

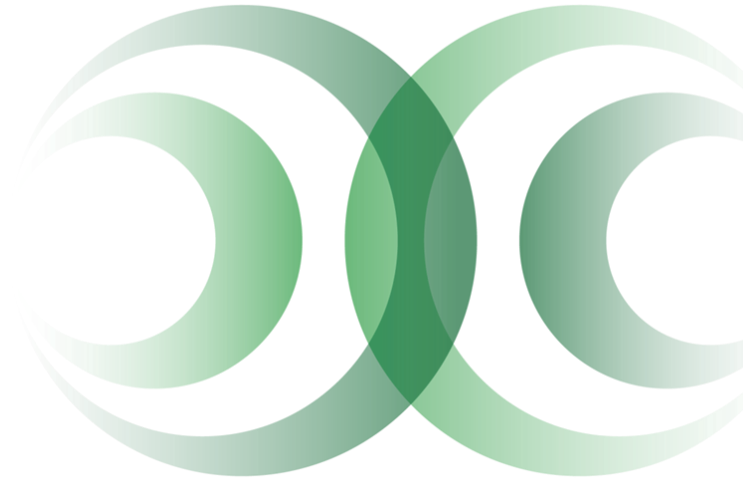




# Vortex3

High Flow

# Airwave



# VAPex

Low Flow

# Apex2

Medium Flow

Contact:

[info-us@casellasolutions.com](mailto:info-us@casellasolutions.com)

Phone: 800 366 2966

[justin.stewart@casellasolutions.com](mailto:justin.stewart@casellasolutions.com)

