

# More than a standard power meter.

- All standard power meter data is available as normal
- With 256 accurate torque data measurements per second, the InfoCrank® can supply the foundation for all your performance analysis
- The question is really - "How much information do you need?"
- Do you want to analyse individual pedal strokes?
- Do you want to optimise position on the bike for best pedalling action and power output leading to increased speed?
- Do you want to see any deterioration in pedal stroke during an event?
- Do you want to see and analyse the first moments of an event before even a pedal stroke is completed?
- Do you want to optimise power and line through the banking?
- Do you want to be sure that increased power is actually an improvement and not an error?
- **All these and many more concepts can be drawn from the extensive data available from your InfoCrank.**

# Power Meter Mode

- InfoCrank is compatible with all ANT+ Data Readers such as Zwift or Garmin.
- All standard ANT+ metrics are available live and in your chosen Analysis programme.
- We recommend that the head unit be set to show 1 second updates.
- The crank should only be zero'ed after new batteries installed, or a firmware update, or in case of a hard knock or air/car travel.

# Key Details – Power meter mode

- InfoCrank measures crank torque every 4 milliseconds and then averages that torque for every completed pedal stroke for each leg.
- Cadence is calculated from the pedal stroke.
- Right Crank sends data to left crank after each completed pedal stroke.
- Left Crank sends data to head unit or computer 4 times each second.
- Head Unit accepts one message per second and displays that.
- Messages include standard product data as well as torque and power.
- Three of the four packets each second from InfoCrank® contain Torque data in order to ensure accurate power readings.

# InfoCrank® Suite apps for normal Power meter mode

- Firmware updaters are available for MAC/PC/Linux and Android devices.
- The Android updater is recommended for all cranks with serial numbers beyond 2200.
- Older cranks can use all updaters.
- The PC/Mac versions are more complicated – the newer Android version is designed to do diagnostics and updating with little human interaction.

# High Speed Data

- Each InfoCrank is capable of sending high speed data as well as the standard Power meter data.
- The normal commercially available readers such as Garmin or Zwift cannot read high speed data.
- Analysis programmes such as TodaysPlan or Training Peaks cannot read or analyse high speed data.
- High speed data when recording at InfoCrank® speed has considerably more data than normal Power meters. It now becomes useful for diagnostic and corrective actions.

# The Verve InfoCrank® Nerve Centre (“VINCC”) suite of apps

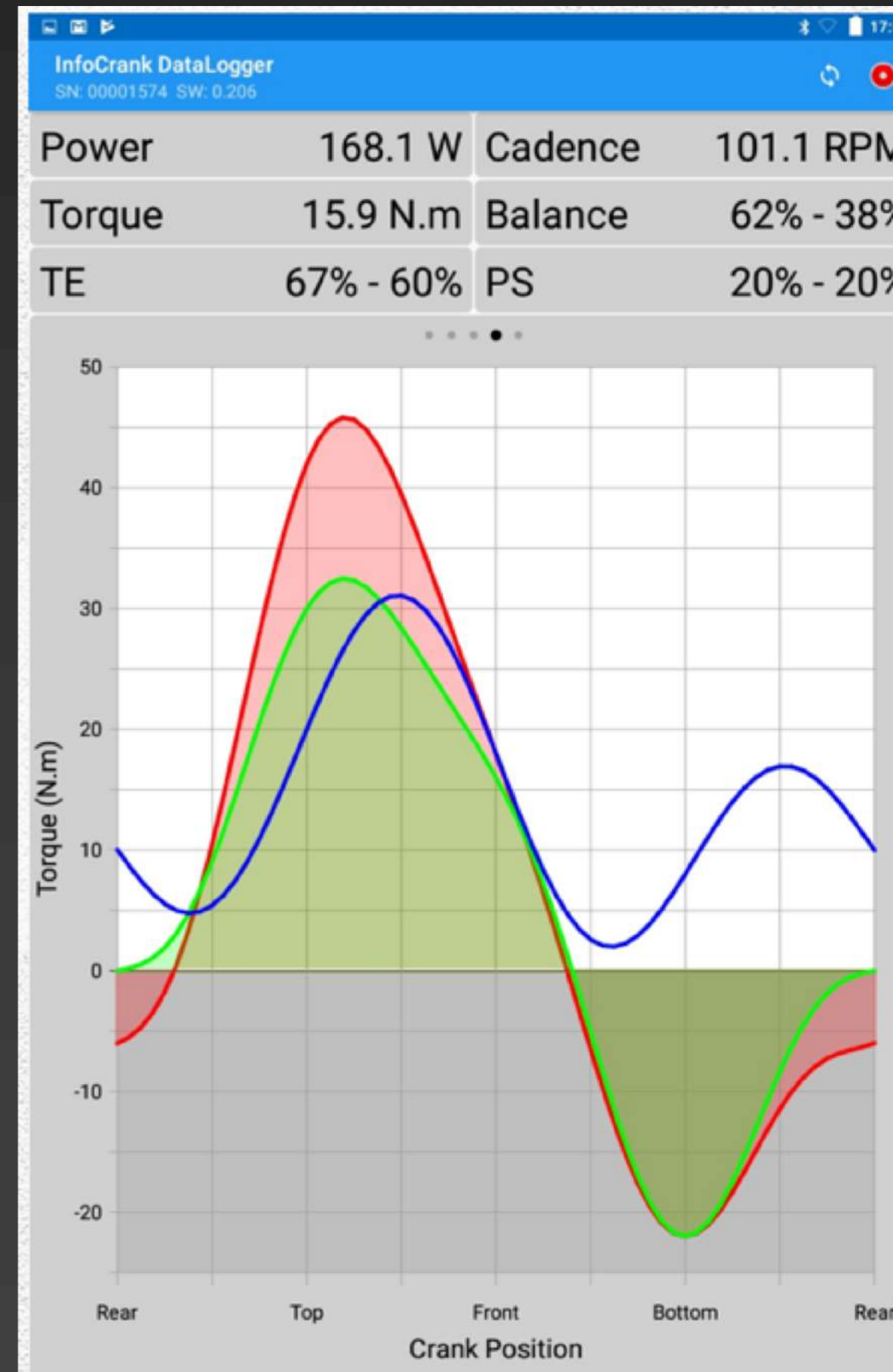
- Designed to make high speed data available for the first time.
- Free version for “normal” use.
- Subscription version for Professional and Scientific use.
- Key idea is to release data for post analysis.
- However, the graphs may be seen on the datalogger and also manipulated without affecting the data to be uploaded.
- Analysis assistance can be given to customer requirements.
- Initially designed to add value to the Track InfoCrank®, but available to all InfoCrank® customers regardless.

# The free VINC app.

- ④ Designed for those who want live visual feedback with no need for huge data loads.
- ④ Works with normal Power meter mode.
- ④ Perfect for training and BioFeedback on pedalling action
- ④ Very good for Isometric strength training in torque mode.
- ④ Enables some customisation of the InfoCrank® primarily to save battery power.

# Visualise accurately inside the pedal stroke

Free App with pages for training, live pedal visual analysis and Torque display.





# The VINC Pro Datalogger



# The VINC Pro Suite

- Android Data Logger loaded with Custom Apps to collect the data from each crank and from internal sensors.
- InfoCrank messaging customization app
- InfoCrank recording App
- InfoCrank and Sensor Decoder programme on Device.
- Data automatically saved on device for secure transmission.
- InfoCrank and sensor decoder programmer for PC – to receive Data logger information in coded form and then open for analysis.

# Data Security

- Each Datalogger is able to pair to any InfoCrank®.
- Information is not able to be uploaded by normal ANT+ readers while in High Speed mode.
- Data from the paired InfoCrank® is captured by the Datalogger and remains on the device until downloaded by owner.
- The downloaded data only can be opened by the decoder on your PC/MAC.
- The data is stored on the database provided in the decoder and is then as secure as all data held by you. Analysis is on your personal machines.
- Verve has no access to your data.

# Synchronised Highspeed Data logging

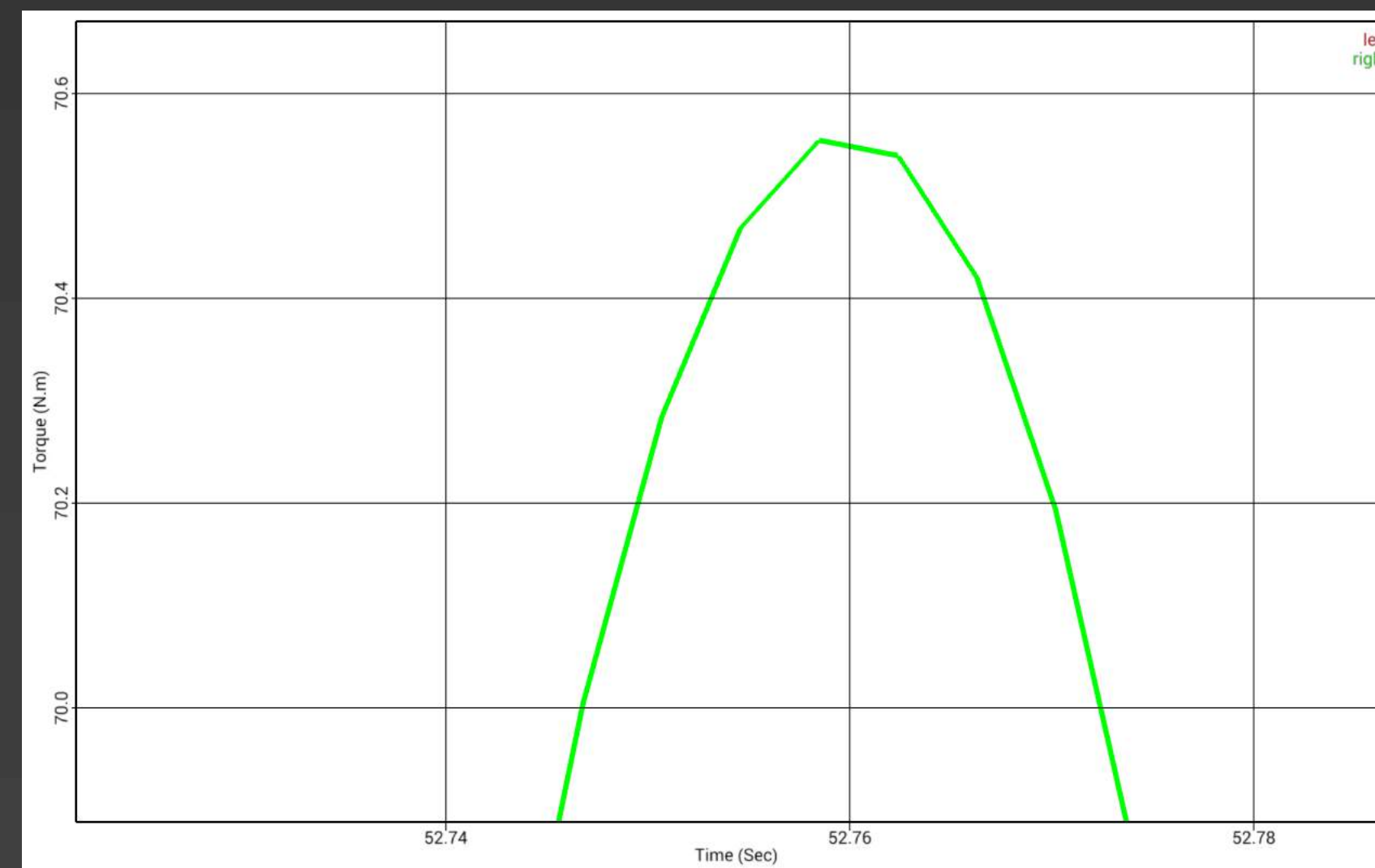
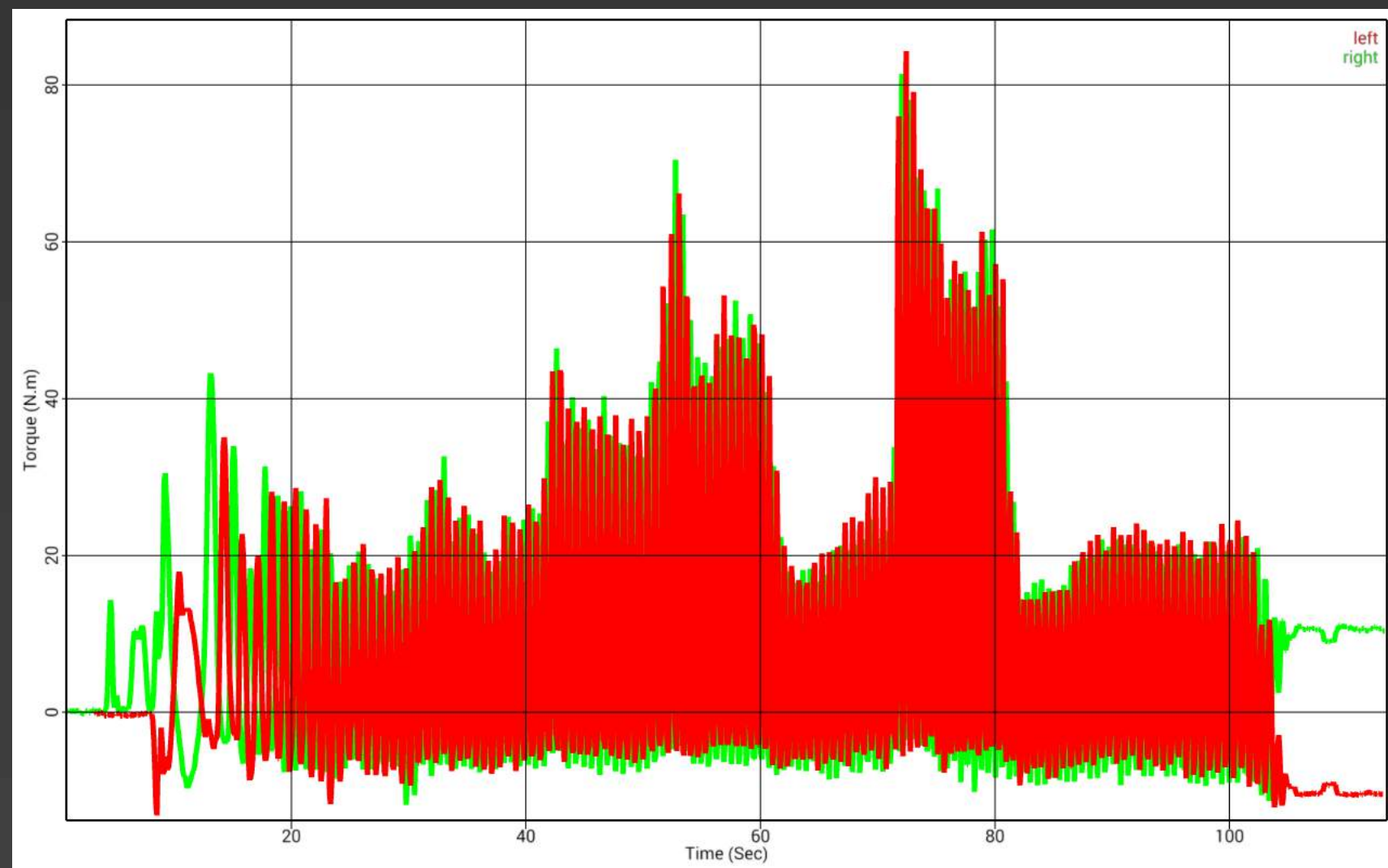
- ⌚ High Speed Instantaneous Torque Streaming;
  - each crank independently recorded
- ⌚ 3D orientation vector based on datalogger position.
- ⌚ Barometric Pressure Recording
- ⌚ GPS data – Lat/long, heading & Speed (GPS)
- ⌚ Heart Rate and Speed data also expected to be available

# What does the data look like?

- ⌚ Every pedal stroke – left and right independently – is available as a torque curve, regardless of pedal strokes. Resolution is very fine – High definition. (See separate slide)
- ⌚ Barometric and 3D orientation is repetitive and uploaded 20 x per second.
- ⌚ GPS data is uploaded each 4 seconds.
- ⌚ The datalogger only displays the graph form due to space requirements.
- ⌚ The PC decoder can read the file. 2 minutes of riding converts to over 60,000 data points.
- ⌚ The PC decoder enables analysis to your preference. Verve will provide documentation on the database to assist in generating the plots. If preferred, customers can ask Verve to assist to extract necessary information.

# Datalogger HD graphs

Graph 1 shows a 100 sec recording. (Torque only) and Graph 2 shows the definition at the peak of one pedal stroke.



Gridlines in HD version are 0.2N.m. and 0.02 Seconds.

# PC Decoder Graphs

- The data is stored on your computer in the database and able to be displayed and analysed as you require with no reference to Verve.
- Verve is able to assist you to extract data and design analysis formulas.

