What is ECTune?

SUMMARY

- ECTune is the patent-pending technology in the ECMSet Pro C-2220-L ECM product that makes it work flawlessly on EC motors.
- ECTune allows the CT to harvest power and operate at extremely low currents.
- ECTune looks at the entire waveform of the motor it's monitoring, enabling it to more accurately detect on/off states.
- ECTune works reliably, even on motor with minimal difference between idle and running currents.

MONITORING AN ECM WITH A STANDARD CT

Senva has spent years profiling various EC motors to better understand how to detect their status. In many cases, the current draw using a standard clamp sensor is almost indistinguishable when the motor is running or idle. Figure 1 shows an EBM Pabst fan motor current draw when it is idle and running at minimum speed. The difference in measured current is about 8 ma.

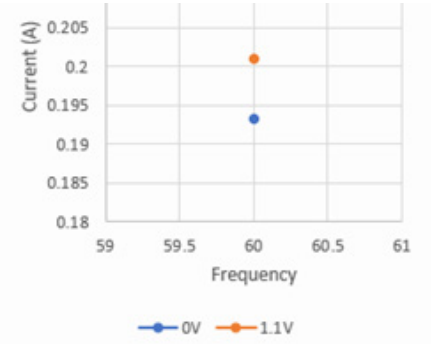

Figure 1: EBM Pabst motor given no run signal and a 1.1V minimum run speed signal, as measured by a standard CT.

This measurement assumes a perfect Sine wave to estimate the RMS current draw. However, an ECM running at partial speed (and most variable speed devices) has a highly distorted waveform, so assuming a perfect waveform does not tell the full story.

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Senva's ECMSet Pro is the best performing ECM CT in the industry (possibly, in the world). Learn more here: https://www.senvainc.com/en/products/current-sensing/ecmset-pro-current-switch

MONITORING AN ECM WITH ECTUNE

Considering distortion, Figure 2 shows the new difference between idle and minimum speed.

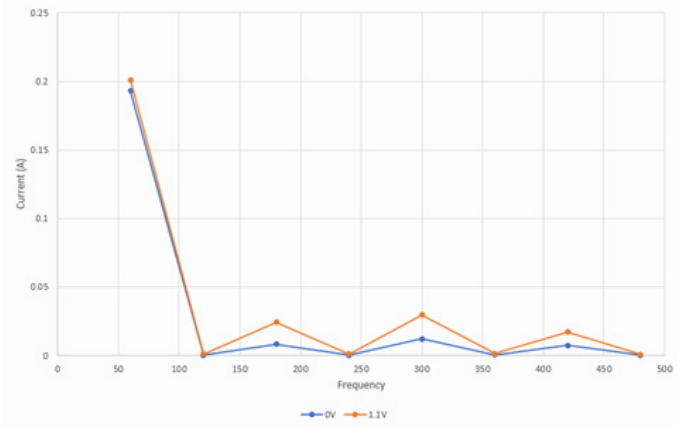

Figure 2: EBM Pabst motor given no run signal (blue) and a 1.1V minimum run speed signal (orange), as measured by ECTune.

The more complete picture in Figure 2 shows two things:

1. The difference between idle and minimum speed total current is amplified to about 54 ma, from 8 ma in Figure 1.

2. The current available to power the CT is now significantly increased from 190 ma to 222 ma, calculated by summing the current in each frequency.

ECTune technology (patent pending) is built into the ECMSet Pro and allows the current sensor to see the whole picture, including distortion. This allows the lowest turn-on in the industry as well as the most reliable on/off detection for EC motors.

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DOES IT WORK?

Figures 3 and 4 show the idle and running waveforms for two of the motors tested. While both examples have a higher current draw when on compared to idle, both also have wildly different waveforms. In most cases, an on state is more distorted than an off state. In both cases, as well as many other test cases, the ECMSet Pro could repeatedly detect on and off states with minimal adjustment needed, and with no wraps.

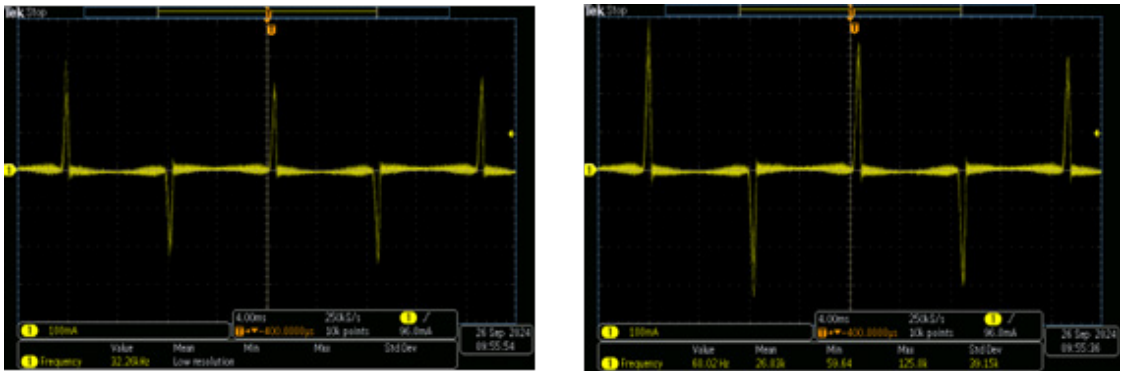

Figure 3: EBMPabst (W3G250-HK35-11) fan drawing 27 ma while idle (left) and 49 ma while at minimum speed (right).

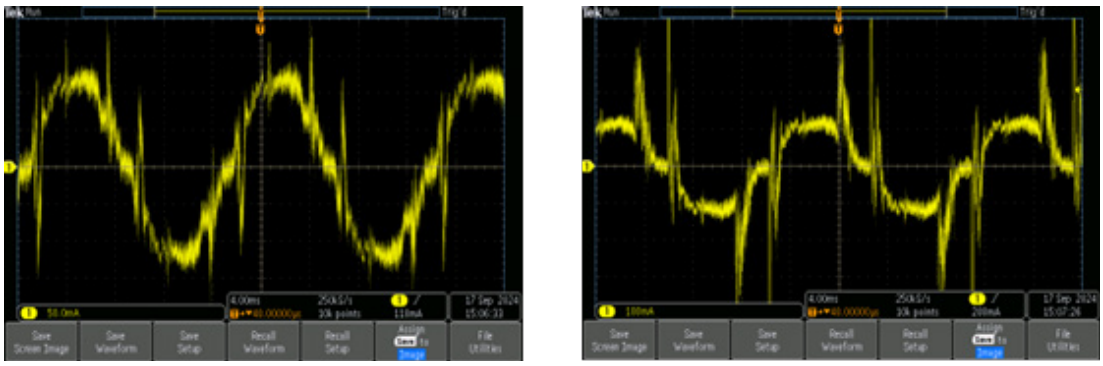

Figure 4: Ziehl (RH31C-ZIK.DC.CR) fan drawing 87 ma while off (left) and 121 ma while at minimum speed (right).

For both applications, the ECMSet Pro with no wraps was powered in the idle state and could repeatedly and accurately detect the on/off state. As shown in Figure 3, the 'as low as 30 ma' we've been claiming is conservative.

TRY IT FOR YOURSELF

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