

Reactor 2 Brushless DC Motor Summary

Two questions have come up several times since launching Reactor 2.

- “How much longer life will this new brushless motor have?”

While it's true that the new motor will very **likely** have a longer life expectancy and be able to run at a higher duty cycle, we don't have specific, direct test comparison data to be able to claim exactly how much better it is than the old one. The new motor was tested to a specific life standard and it has far surpassed that standard, but the old motor design has not been tested to that exact standard, so we can't confidently make a direct comparison.

Instead, we should focus on the benefits of the brushless design. Having no brushes means no maintenance and less overall moving parts. Worn or improperly installed brushes can cause voltage or current spikes that can damage the motor control board, so using a brushless design removes this failure mode completely. A perfectly maintained brushed motor may last just as long as the new brushless, but the new design gives the end user a much higher likelihood of maximum life expectancy and the benefit of no maintenance.

- “How much higher duty cycle is this new motor rated for?”

The new brushless motor is actually **not** rated for a higher duty cycle than the old motor. However, the advantage over the old brushed motor is that the new motor measures actual internal motor temp and scales back the output as necessary to keep the motor within the acceptable operating temp range. The old brushed motor did the same thing but it had to estimate motor temp based on pumping conditions. This estimate was very conservative so it often times cut back more than necessary. The end result, is that the new brushless design, will give you more output at high duty cycles vs the old design.

The engineer in me really wants there to be a hard and fast number that we can use to compare the new motor to the old, but the bottom line is that we just don't have that exact data. The primary benefits that we present to customers should be these:

- Simple, Maintenance free, less moving parts, cooler running

I hope this helps clarify the advantages of the new motor vs. the old in terms that you guys can use when talking to end users and distributors.