Revealing Sealing

Brushless DC servo motors are an effective solution for applications in harsh environments.

A major factor for the selection of a DC motor in an application is the environment that it is intended for. maxon motor offer a wide range of IP rated brushless DC motors however factory IP ratings can sometimes have undesired side effects. Take for example Figure 1: which is a 250w continuously rated 45mm brushless DC motor. This motor is assembled with a 52mm Ceramic Planetary Gearhead. The Gearbox is fitted with rubber sealed bearings and a rear cable exit housing for the encoder, motor and hall sensor cables that pass through rubber sealed grommets. This solution offers effective IP54 sealing for the of the DC motor but it is easy to see that the sealing method is quite bulky and possibly not suitable for many applications with tight mounting constraints. The good news is there are many other sealing solutions. maxon brushless DC inrunner motors do not require any airflow through the motor itself to maintain operating temperatures in the winding. Many unsophisticated brushed and brushless DC motors do however require convection cooling of either the windings or brushes. The inrunner design of maxon brushless DC motors combined with the ironless rhombic winding also allows the rotor to be thermally bonded to the housing and completely conduction cooled. Meaning the motor requires no airflow through it, allowing the motor to be inserted into a tube or extrusion housing to protect it from the elements. In many applications the size and cost of factory IP rated motors has resulted in the selection of smaller non IP rated motors with simple modifications like rubber or Teflon sealed bearings. Often the simple addition of an external v type seal on the shaft is sufficient. Figure 2: is an example of this style of modification. This brushless motor is only 30mm in diameter and with the addition of a Teflon seal and the motor being mounted in a tube housing gives a small, well cooled, sealed brushless motor at a fraction of the cost for factory IP solutions. This motor is used in an aerospace application where the weight of the motor is obviously critical and this solution offered a major advantage weighing only 270 grams. Additionally maxon also manufacture specialist motors for extreme applications. For example downhole drilling or deep sea remotely operated vehicles. In these applications the motors see extreme pressures whereby sealing is impossible and an alternate approach of letting the motor flood with oil is adopted.

Contact maxon motor in Sydney for further assistance. Ph: +61 2 9476 4777

Length of this press release: 436 words

The media release is available on the internet at: www.maxonmotor.com.au
Figure 1: EC 45 250w brushless DC motor with IP rating © 2013 maxon motor Australia

Figure 2: 200w 30mm diameter brushless DC motor with sealed bearings © 2013 maxon motor Australia