

Fast, reliable DC motors for ice-core drilling in the Antarctic.

Ice-core drilling is nothing new. But maxon motor developed a DC motor gear combination that can drill up to eight times faster, 600 metres below thick ice.

Conventional ice-core drilling takes a long time. The 3.4km deep hole at Dome Concordia in the Antarctic took five years to complete. 800,000 year old ice was retrieved which, up until now is the profoundest look into the history of the Earth's core.

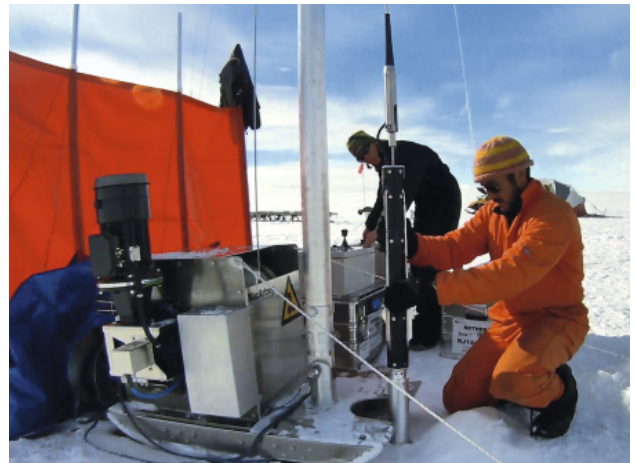
Using maxon motor DC technology, several small drill-sites of approximately 600 meters are bored to ascertain the correct position to deep-drill. The thickness of the ice and the geothermal heat indicate if it is worth drilling deeper to yield useful scientific results. A process that would previously take two months to complete, but now with maxon DC motors takes seven days.

The DC motor gearhead combination selected for this task was an off-the-shelf, maxon EC 45 250 Watt motor combined with a GP 52 planetary gearhead. Some modifications were made however the basis of the selection was the high power and high torque, with the ability to vary the speed of the motor at a constant torque. Most importantly, the DC motor had to fit into a very compact space within the drill and withstand extreme temperatures.

For application assistance on DC motors for mining, subsea, oil & gas or extreme environments, contact maxon motor Australia on tel. +61 2 9457 7477.

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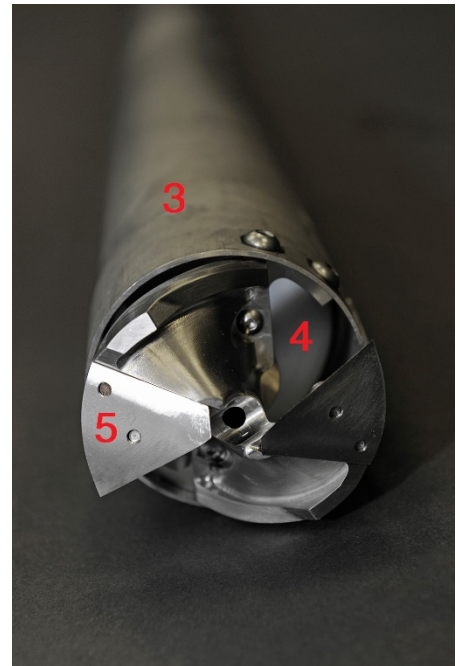
The media release is available on the internet at: www.maxonmotor.com.au



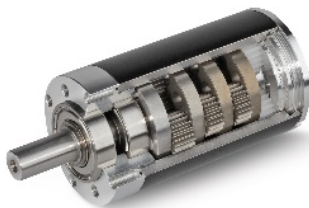
Pictures supplied by British Antarctic Survey (BAS). The Ice Dynamics and Palaeoclimate Team pictured with the new RAID (Rapid Access Isotope Drill) drilling technology.



The Drill showing 1) Chipping spiral, 2) Motor controller, 3) Spinning cutter barrel, 4) Cutter, 5) Fixed chipping spiral.



The maxon EC 45 motor has a diameter of 45 millimeters and provides 250 W of power.



Maxon's GP 52 Planetary Gearhead was combined with a modified Planetary Gearhead for this particular application.

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