Brushless servo motor handles temperatures of more than 200°C

A new downhole drilling brushless servo motor from Maxon is designed to cope with ambient temperatures of more than 200°C (390°F) and atmospheric pressures of up to 1'700 bar (25'000 psi).

The different variants of the EC 22 HD are designed for operation in air or submerged in oil (flooded in hydraulic fluid. Their assigned power rating depends on the surrounding medium and averages to 80 Watts in air and, due to remarkably higher heat dissipation, 240 Watts in oil. Further requirements of the 22 mm diameter motors are the capability to withstand vibration of up to 25 grms as well as impulse and impact of up to 100 G, that is 100 times gravitational acceleration – as a parallel; a Formula 1 race car encounters about 2 G, a fighter jet about 13 G. The motors feature high efficiency (in air up to 88%, in oil more than 70%) and therefore offer the best prerequisites for battery-operated applications. With their detent-free running characteristics, they possess outstanding regulation behavior and are especially suitable for high-precision positioning tasks, even at low speed.

Drive systems made by maxon do their job under the most difficult conditions, such as, for example, on Mars. But not only in high altitudes or in outer space, maxon DC motors also operate in harsh ambient conditions as encountered deep underneath the earth's surface – immaculate, dependable, efficient.

As the first manufacturer worldwide, maxon motor launches with its EC 22 HD (Heavy Duty) a standard motor for extremely harsh operating conditions. Developed for the exceptionally high requirements in deep drilling technology, the electronically commutated motor EC 22 HD resists even most extreme conditions in

which “normal” drives call it quits.

Deep drilling (in the oil and gas exploration industry called “Downhole Drilling”) permits exploration of oil and gas resources from depths beyond 2'500 meters (8'200 feet). In conjunction with directional drilling (the dynamic orientation of a borehole), it allows exploration of, so far, inaccessible deposits in drilling depths of currently about 5'000 meters (16'500 feet) and bore lengths of up to 11'000 meters (36'000 feet). Today, electronics and the respective drives permit more sophisticated monitoring and control in a multitude of functions within the drilling process. For instance, the drilling head’s position and orientation can be dynamically measured and adjusted. Or; in various deep drilling tools, hydraulic valves and flaps are being operated by electromechanic drives. Temperature and pressure conditions present in this depth range, in conjunction with high vibration emitted by the drilling process, make the employment of electric drives a real challenge.

The motor unveils new possibilities in a number of applications that call for equally high requirements. It is well-prepared for the utilization in space technology or in power plants as well as in vehicle manufacturing, in the aircraft industry, in mining or in highly dynamic movements.