Coreless Brush DC Motor Powers Next-Gen Thrombectomy Device for Brain Clot Removal

30 May 2024

Fast and effective treatment of blood clots is essential for positive patient outcomes. This is especially true when they occur in the brain, where they can have fatal consequences. Mechanical thrombectomy devices powered by miniature motors are essential for clearing blood vessels and preventing further cell damage. A leading manufacturer recently approached Portescap to help deliver an optimal DC motor solution with an efficient, lightweight design for their new device.

Blood carries oxygen and nutrients around the body through arteries and veins. However, if substances in the blood thicken, a blood clot can form, most commonly to stem bleeding from an injury. However, this can also happen within the blood vessel itself. This prevents blood from travelling beyond it, causing damage to the surrounding tissue. All blood clots are serious, but clots preventing blood flow to the brain are especially dangerous and require immediate treatment to avoid further complications.

Stopping brain clots

Medical professionals leverage sophisticated tools like thrombectomy devices to help remove clots impacting the brain. These devices employ a high-speed spinning wire to disrupt and subsequently remove clots from the bloodstream via vacuum aspiration, thereby restoring unhindered blood flow. Given the narrow confines of blood vessels, the procedure demands utmost precision.

Tailoring its operation to the specific characteristics of each clot, the device necessitates variable speeds to guarantee both safety and efficacy. Moreover, a

lightweight, ergonomic design is critical for easy utilization by medical personnel. These devices must exhibit not only precision but also exceptional reliability to ensure the success of every procedure.

Choosing a medical motor expert

The process of selecting miniature motors holds significant weight in the development of thrombectomy devices, given these multiple requirements. Seeking to enhance their design, a medical device manufacturer reached out to Portescap for a solution capable of meeting various performance criteria.

Portescap, a well-known manufacturer of miniature motors, has long provided micro motion solutions for medical and surgical applications, with its products supporting a wide range of precision procedures. Due to this longstanding history of delivering a wide array of products tailored to the medical industry, Portescap emerged as the clear choice for the device manufacturer.

A powerful motor for a powerful device

Portescap selected its 16N78 brushed DC coreless motor for this device, which can run efficiently at the high speeds required to achieve proper wire rotation and quickly break up a clot. This motor covers a wide speed range too, which makes it ideal for meeting the different requirements of patients. Furthermore, Portescap can tailor electromagnetic coils to exactly meet customer performance criteria, delivering a truly specialized solution.

By their very nature, coreless motors provide better response times and speed consistency, which is critical to sensitive applications like this. Their high power density also ensures adequate torque production throughout the procedure. The 16N78 features an ironless winding design, which reduces mass and electrical inductance, ideal for precision work. A neodymium magnet and precious metal commutation further promotes exceptional performance in the application.

Reliable and easy to handle

The 16N78 provided ergonomic benefits as well. Due to its high efficiency, it can operate at a lower voltage range. This allowed the device manufacturer to downsize the battery, lowering the weight of the design and optimizing packaging for a compact footprint. This contributed to better ease of use for medical personnel.

A proven design for this application, the 16N78 offers superb reliability in operation, which it has demonstrated in testing. Additionally, Portescap's REE® System (Reduction of the Electro-Erosion) protects against the electro-erosion of the brushes and commutators, which ensures precise performance for variable patient requirements, promoting reliable procedures.

Delivering a dependable solution to patients

With a motor now selected, the manufacturer could continue developing the device and successfully release it to market. The 16N78's combination of speed, power and reliability ensured that the device met the critical requirements of the thrombectomy procedure, while setting new standards in efficiency and weight saving.

The risk of blood clots can be reduced by lifestyle changes, but in a worst-case scenario, an important factor for a successful patient outcome is the proficiency of the tools available to medical professionals. With highly optimized devices using the most advanced miniature motor technologies, clots impacting the brain can be removed more effectively, aiding recovery and reducing the risk of further complications.

Image captions:

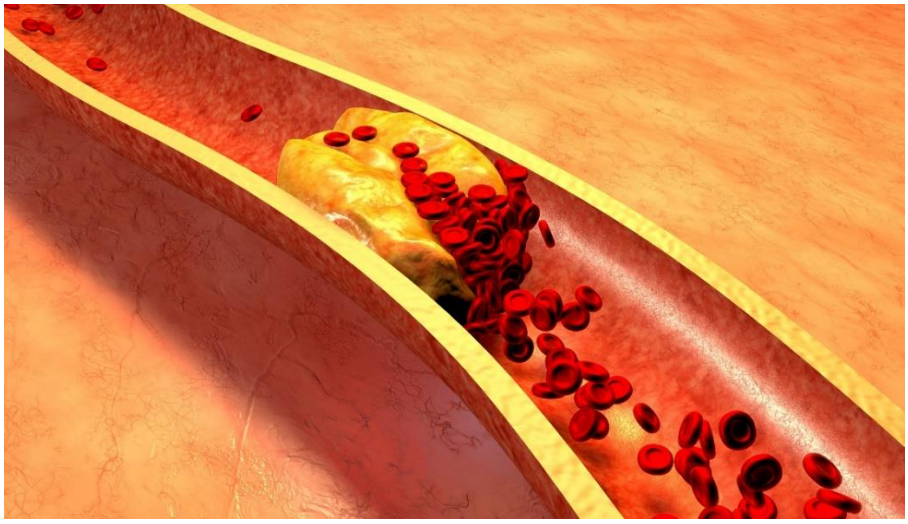

Image 1: Fast and effective treatment of blood clots is essential for positive patient outcomes. Mechanical thrombectomy devices powered by miniature motors are essential for clearing blood vessels and preventing further cell damage.

Image 2: When approached by a leading manufacturer of mechanical thrombectomy devices, Portescap selected its 16N78 brushed DC coreless motor, which can run efficiently at the high speeds required to achieve proper wire rotation and quickly break up a clot.

About Portescap

Portescap offers the broadest miniature and specialty motor products in the industry, encompassing coreless brush DC, brushless DC, stepper can stack, gearheads, digital linear actuators, and disc magnet technologies. Portescap products have been serving diverse motion control needs in wide spectrum of medical and industrial applications, lifescience, instrumentation, automation, aerospace and commercial applications, for more than 70 years.

For more information, visit www.portescap.com

Press contact:
Portescap
Nicole Monaco
Global Marketing Manager
Tel.: +1 404.877.2534
Portescap.sales.europe@regalrexnord.com

PR Agency:
DMA Europa
Anne-Marie Howe
Progress House, Midland Road, Worcester, WR5 1AQ, UK
Tel.: +44 (0) 1905 917477
anne-marie.howe@markettechgroup.com
news.dmaeuropa.com