NORBERT HABERLAND, DATWYLER

Norbert Haberland, PhD, born in 1956 in Germany, received his MSc degree in Chemistry and Technology of Rubber and Plastics from Moscow Institute for Fine Chemical Technology in 1981. In 1986, he gained his PhD in chemical engineering from the same institute. Dr Haberland is a member of the German Rubber Association, where he worked for many years as Chairman of the North Rhine-Westphalia section. For his dedication and contribution to the German Rubber Association, he became member of the Rubber Hall of Fame in 2012.

After diverse management positions in material development, technical management, and general management in globally active rubber companies, Dr Haberland has been working for Datwyler Group since 2010, and is currently Vice-President New Processes & Products, with a focus on advanced technologies and innovation.

Interviewed here, Dr Haberland discusses Datwyler's interests in the field of wearable technology in the healthcare sector.

Q Mr Haberland, what is your view on wearable healthcare solutions, especially in the context of digital health?

A Digital health has been gaining lots of traction in recent years. It is currently one of the big trend topics in the industry, offering many opportunities to pharmaceutical and medical companies, as well as their suppliers. At Datwyler, we have been exploring the field of digital health since 2014. It has become an important new business field for us. We see lots of potential for innovative healthcare solutions, especially regarding wearables, such as injection or monitoring systems. Therefore, we are continuously working on innovations in this area. But even more important to us is that patients can profit from this development. Improving patients' lives is one of our top priorities.

Q How does Datwyler contribute in the field of wearables?

A Datwyler is predominantly perceived as a significant player in the area of drug packaging and the development and manufacturing of medical device components for the administration of drugs (Box 1). However, we have also been exploring the area of wearable devices and digital health. For us, wearables are paving the way for new avenues of drug delivery. With partners and customers, we started to work on innovative wearable solutions. Among the results are our new soft dry electrodes (Box 2). The soft dry electrodes are our proposition for comfortable long-term EEG monitoring. As the name "wearable" suggests, the electrodes are made to be worn on the body for a long period of time, which can stretch over several days or even weeks.

BOX 1: PARENTAL PACKAGING AND PLUNGERS

Datwyler offers state-of-the-art solutions for parenteral packaging, including prefilled syringes and pen systems. Datwyler's plungers, a key component of these drug delivery systems, are compatible with all types of parenteral containers and are made of specialised bromobutyl-based formulations with all the physical, chemical and mechanical properties essential for the safe and easy administration of the drug product. These components are manufactured in line with Datwyler's first line standard, the highest manufacturing standard in the industry.

The production takes place in a fully automated cleanroom environment, including validated washing and the latest generation of 100% camera inspection techniques. For sensitive drugs, such as biologics and biosimilars, Datwyler also offers elastomeric closures with Datwyler's Omni Flex coating. Omni Flex is the first coating to offer excellent barrier properties and to eliminate the closure as a source of silicone oil-based subvisible particles. As a result, the plungers offer an optimised extractables and leachables profile, preventing chemical reactions with the drug and securing the drug's integrity and efficacy. Even after several years of storage, maximum plunger barrel seal integrity is guaranteed.

BOX 2: SOFT DRY ELECTRODES

Datwyler's soft dry electrodes are the company's proposition for long-term EEG monitoring with a focus on patient comfort. The electrodes are based on a flexible conductive polymer and customisable design, ensuring comfort during monitoring. The electrodes allow dry signal acquisition, which eliminates the use of gels and decreases skin irritation significantly. The specific design and characteristics allow usage without special skin preparation. Patients can be monitored anywhere – a hospital environment is not necessarily needed.

Q What are the advantages of the soft dry electrodes?

A Patient safety and comfort are our main concern. Therefore, during the development of the soft dry electrodes, we focused on high-quality materials which are waterproof, flexible, biocompatible and offer a high degree of comfort for the patient. Due to the flexible conductive polymer and customisable design, the soft dry electrodes ensure maximum comfort during monitoring. In addition, dry signal acquisition eliminates the use of gels and decreases skin irritation significantly. The special design allows usage without any skin preparation and does not necessarily require hospitalisation during monitoring.

Q Do you have any other examples of wearable healthcare products?

A We are co-operating closely with the Interuniversity Microelectronics Center (IMEC) in Belgium on research in the wearables sector. This programme is focused on developing advanced materials for intelligent electrodes for brain monitoring platforms. IMEC has conducted research to realise eye movement tracking technology to help diagnose and monitor the progression of neurodegenerative diseases. Together, we developed a standard pair of eyeglasses, which includes wireless eye-tracking technology (Box 3). The smart glasses use electro-oculograms (EOG), which measure the electrical potential across particular points on the skin around the eyes during eye movement. The glasses use five dry-contact electrodes.

BOX 3: EYE-TRACKING TECHNOLOGY

Datwyler is co-operating closely with the Interuniversity Microelectronics Center (IMEC) in Belgium and the Holst Center in the Netherlands to research intelligent electrodes for brain monitoring platforms. Patients with neurodegenerative diseases often experience symptoms of abnormal eye movements. IMEC has conducted extensive research to develop eye movement tracking technology to help diagnose and monitor the progression of these disorders. In co-operation with Datwyler, it developed a wearable device concept which integrates wireless eye-tracking technology into a standard pair of eyeglasses. The smart glasses use electro-oculograms, which measure the electric potential across particular points on the skin around the eyes during eye movement. The glasses use five dry-contact electrodes developed by Datwyler.

Q It sound like partnerships are a key driver for developing new products. Is that correct?

A Absolutely. Partnerships are incredibly important to us. Above all, these partner companies encourage synergies which enable the development of high-tech medical solutions. A recent example is our partnership with Coldplasmatech (Griefswald, Germany), a start-up focusing on plasma research and technology. Together we developed an intelligent wound patch, which uses the regenerative characteristics of cold plasma. The patch is suitable for the therapeutic treatment of chronic wounds which are infected with multi-resistant germs. Cold plasma can eliminate germs and gently improve wound healing through disinfection and cell activation. The patch can be directly applied to an open wound – only a few sessions are needed for recovery and each takes no longer than two minutes. The whole patch is thrice covered with liquid silicone in a complex injection moulding process to ensure maximum safety.

Q What long-term advantages do you see in the wearables sector?

A Our ambition is to continuously master current challenges in the market and turn them into new opportunities for our customers. As a specialist in developing solutions for drug administration, we believe that combining wearables with drug administration could result in new therapeutic measures and devices, which can not only provide more comfort and flexibility for patients, but also contribute significantly to creating a safer healthcare environment.

DATWYLER

Dr Norbert Haberland
Vice-President, New Products and Processes
T: +41 41 875 1313
E: norbert.haberland@datwyler.com

Datwyler Pharma Packaging USA Inc
9012 Pennsauken Highway
Pennsauken
NJ 08110
United States

sealing.datwyler.com