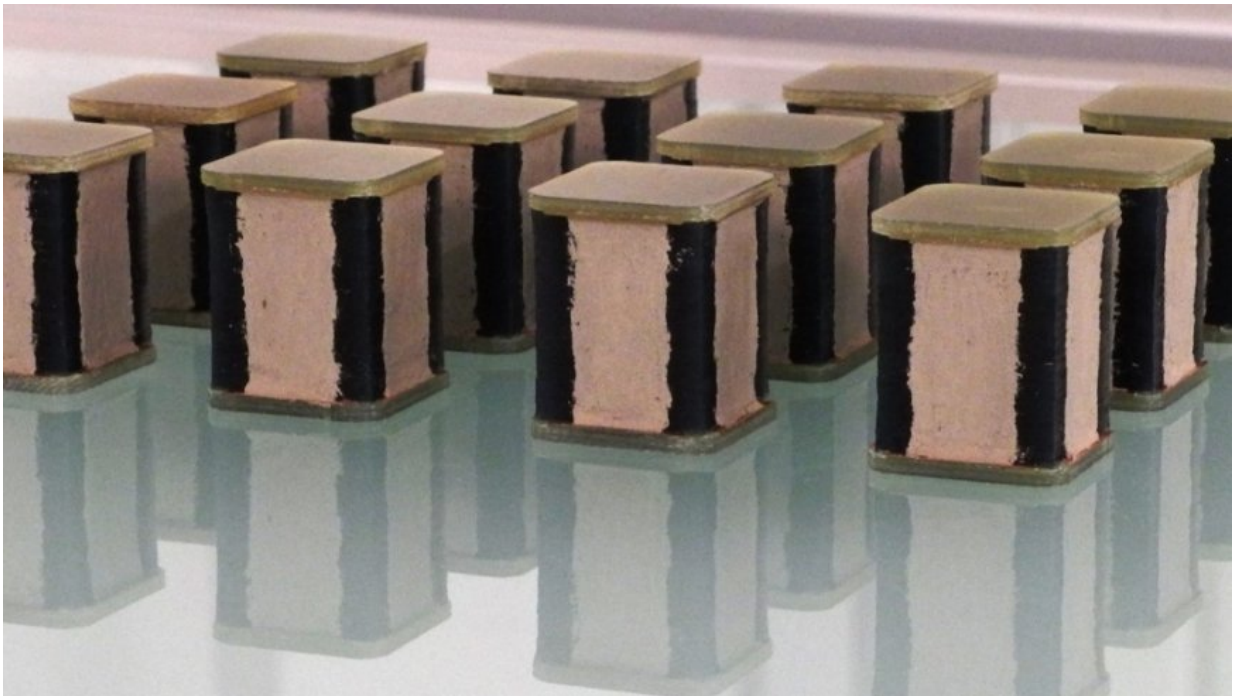


# Smart polymers transform electrical energy into mechanical work

July 12 2018, by Karin Weinmann

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Credit: Swiss Federal Laboratories for Materials Science and Technology

CTsystems, a spin-off of Empa, and Daetwyler, the Swiss specialist for sealing solutions, partner up to market and industrialize polymer transducer technology. CTsystems has already presented the first prototype of electromechanical polymer converters in stack construction: As an actuator, this converts electrical energy into mechanical work with an "integrated" sensor function. Thanks to the cooperation, the level of

industrial production reaches a new level, while the robustness of the technology in the application increases.

The partnership between Daetwyler and CTsystems focuses on polymer actuators, sensors and generators that improve the performance of products in various applications, such as pumps, valves, medical dosing systems, vehicle locking systems, haptic feedback systems, switches and seat adjusters. The technology is based on a large number of stacked, wafer-thin elastomer layers coated with special electrodes. Thanks to this special combination, the polymer actuator can convert [electrical energy](#) into [mechanical work](#). The unique design of this new technology increases the reliability and efficiency of the product, which benefits the customers of both companies. Applications are found in the automotive, aerospace, power generation and distribution, automation and medical industries.

## **More efficient integration into existing and new applications**

The new partnership between Daetwyler and CTsystems also marks the start of a new industrial consortium, as CTsystems maintains strong alliances with universities and industry partners. The cooperation and extended access to expertise from industry and academia will enable the improvement and further development of new products as well as a higher production volume of primary materials. In addition, the partnership also creates the conditions for application-specific assembly with the support of technical experts. Industrial production is completely set up and carried out by Daetwyler. CTsystems acts as a broker of polymer transducers integration technology, from research and development to product demonstration and production. This cooperation between the two companies accelerates the production and marketing process and thus enables a more efficient integration of the new

technology into existing and new applications.

"We are always looking for ways to improve and expand our services for our customers. I am all the more pleased about the new partnership between Daetwyler and CTsystems, which will create great synergies for both sides," says Gabor Kovacs, CEO of CTsystems. "Above all, however, it brings advantages for our customers. The more services and competences we can now offer will advance the development within the industry as a whole."

## **Polymer transducer: better performance and results**

The unique design of the thin-film silicon stack [polymer](#) transducer replaces and surpasses existing technologies. The operating principle, in which the electrical power is converted into mechanical movement by elastic deformation, enables efficient and multifunctional operation. Some of the improvements of the [new technology](#) are low energy consumption, no complicated mechanical parts, a robust and robust design and silent operation with simultaneous sensor function. The partnership between Daetwyler and CTsystems will provide the more cost-effective transducers for a variety of industries. "The partnership underlines our common goal of offering state-of-the-art technologies while maximizing our industrialization and production capacities," says Norbert Haberland, Vice President New Products and Processes at Daetwyler. "By working with CTsystems, we are expanding the range of cutting-edge technologies available to our customers."

Provided by Swiss Federal Laboratories for Materials Science and Technology

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