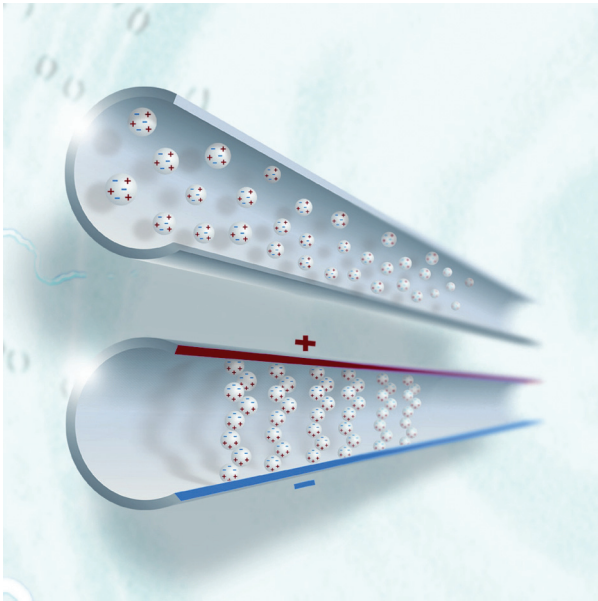


A Quantum Leap in Hydraulic Technology

Operating from Darmstadt, Germany, *Fludicon GmbH* has set its sights on revolutionising an entire technology segment - hydraulics. As the worldwide technology leader in the field of fluid digital control, the company has started providing groundbreaking solutions in valve control, vibration damping and actuation with its electrorheological fluids (ERFs).



Smart fluids are able to change their properties within one millisecond through the application of an electrical field

Fludicon GmbH was formed as a spin-off of the Darmstadt-based Schenck AG, a member of the Dürr Group, and began operating as Schenck's ERF competence centre in 2001. Since then, two financing rounds have been successfully completed. The first took place in 2004 through venture capital provided by Technostart (Ludwigsburg), while the second, which came about in 2007, Munich Venture Partners (Munich), Fraunhofer Venture Groups (Munich) and

KfW (Bonn) contributing funds. In total, five million Euros were invested in this second round into Fludicon's development as the driving force in the ERF market. The enterprise holds more than one hundred and ten patents as regards ERF technology and closely cooperates with numerous universities and Fraunhofer Institutes. It is headed by Stefan Luber, Managing Director.

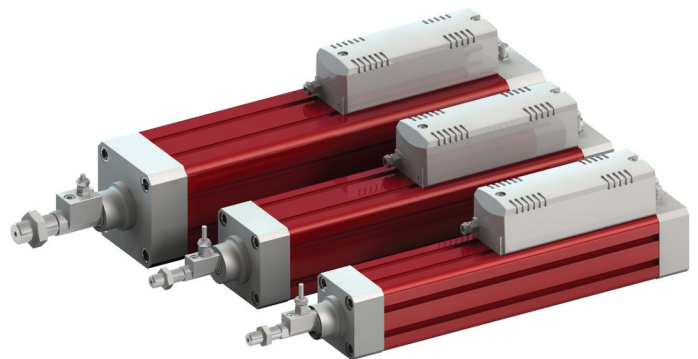
The entire knowledge base and technology repre-

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sented by Fludicon is derived from the scientific discipline of electrorheology, a technology that causes "intelligent" fluids to change their viscous properties within an electrical field. A complete system comprises mechanical components, electronics and the electrorheological fluid. Our first interview partner is Stefan Luber: "An ERF is essentially a silicone oil with polyurethane particles, which, under the influence of a direct-current electrical field, can be transformed from a liquid into a solid with ultra-precise control and nanosecond speed."

ERFs are robust, environmentally friendly, non-abrasive and temperature resistant and can be manufactured on an industrial scale. They are used in a wide range of applications, for instance finely controllable dampers, tuned-mass dampers, dynamic actuators, valves, clutches and brakes.

Our second interviewee is Michael Kautz, Sales and Marketing Director: "To date, hydraulic processes in industry and elsewhere have been controlled by mechanically operated valves, i.e. relatively heavy and sluggish mechanical structures. ERF now enables direct software control of the same processes and represents a revolution which can only be compared to the transition from analogue switchboards to software switching in telephony." A key technology for dramatically promoting miniaturisation in hydraulics, electrorheology enables large amounts of energy to be transformed in very confined spaces and eliminates the need for



The RheDamp® RD-50 is one of the first fully tuneable shock absorbers controlled by ERF technology

moving parts in hydraulic designs. The obvious upshot of this is the fact that investments in development and costs for maintenance can be greatly reduced.

At present, Fludicon's main product series are RheDamp® RD-25 - RD-50, one of the world's first fully tuneable shock absorbers controlled by electrorheological technology. Typical applications for this product can be found

in rehab and fitness devices, bicycle forks and in the automotive sector. Stefan Lubber reports: *"ERF technology has been around since 1950, but we are the first who could optimize the fluid and the electronics. It is our mission to combine ERF and mechanical technology with the aim of creating commercially viable products."* Michael Kautz adds: *"At this point in time, we are the only company in the world that is involved in*

developing applications for ERF."

Today, Fludicon is concentrating on broadening the user base for ERF technology and thus attracting an increasing amount of business. *"We are looking*

for companies interested in taking advantage of the many benefits afforded by ERF, as well as licence partners," concludes Stefan Lubber.

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