

ACTUATOR 16

International Conference and Exhibition
on New Actuators and Drive Systems

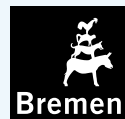
Bremen, Germany
13 – 15 June 2016

Exhibition Catalogue



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ACTUATOR 16

15th International Conference on New Actuators

&

9th International Exhibition on Smart Actuators and Drive Systems

Exhibition and Congress Center Bremen, Germany

13–15 June 2016

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Imprint

Location

Exhibition Center Bremen, Hall 4.1

Opening Hours of Exhibition

Monday 13 June 2016 9:00 – 18:00

Tuesday 14 June 2016 9:00 – 18:00

Wednesday 15 June 2016 9:00 – 15:00

Organiser & Publisher

MESSE BREMEN

WFB Wirtschaftsförderung Bremen GmbH

Findorffstraße 101

28215 Bremen

Germany

Tel.: +49 (0) 421 3505-464

Fax: +49 (0) 421 3505-15464

actuator@messe-bremen.de

www.actuator.de

Project Manager

Hubert Borgmann

Service for Participants/Exhibitors

Ole Bast

Christina Laue

Sabrina Schramme

Technical Support for the Exhibition

Alexander Fritsche

Chris Janina Neumann

Vanessa Ullmann

Marketing

Christina Lolk

Webmaster

Jann-Michael Dornseiff

Malte Heitmüller

Press

Gerhard Vogel, ext. (energy press, Landsberg a.L.)

This catalogue has been carefully compiled according to the information received from the exhibitors. Nevertheless, we apologize for any occurring mistake. No responsibility is assumed by the publisher for any claim referring to incorrect entries.

Welcome to

ACTUATOR 16

15th International Conference on New Actuators

&

9th International Exhibition on Smart Actuators and Drive Systems

Exhibition and Congress Center Bremen, Germany

13–15 June 2016

Organised by



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and University of Twente, Enschede, The Netherlands
- ▶ **A. Ludwig**, Ruhr-Universität-Bochum, Bochum, Germany
- ▶ **J. Maas**, Hochschule Ostwestfalen-Lippe, Lemgo, Germany
- ▶ **P. Müllner**, Boise State University, Boise, USA
- ▶ **E. Pagounis**, ETO MAGNETIC GmbH, Stockach, Germany
- ▶ **J. Perret**, Haption GmbH, Aachen, Germany
- ▶ **P. Pertsch**, PI Ceramic GmbH, Lederhose, Germany
- ▶ **A. Preumont**, Université Libre de Bruxelles, Brussels, Belgium
- ▶ **H.F. Schlaak**, Technische Universität Darmstadt, Darmstadt, Germany
- ▶ **S. Soetebier**, ABB AG, Brilon, Germany
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- ▶ **E. Vander Poorten**, Katholieke Universiteit Leuven, Heverlee, Belgium
- ▶ **G. Vergani**, SAES Getters S. p. A., Lainate, Italy

Organiser

- ▶ **H. Borgmann**, MESSE BREMEN, Bremen, Germany



Welcome to the 15th International Conference on New Actuators and its accompanying exhibition. For nearly 30 years this is a unique biennial meeting place for international experts in the field of miniaturised actuators and drives. Always in June of the even years, while the soccer actors compete for the European or even the World championship, experts from science and industry meet here in Bremen to present and discuss the latest results or to show new products based on smart actuators.

Actors versus actuators? Attractive human muscles versus high-tech artificial muscles? This time there is no severe problem with the competing schedules, thus we can focus on the technical highlights without interruption.

In the comfortable atmosphere of the Bremen Exhibition and Congress Center the 450 experts from more than 30 countries find a comprehensive conference programme with 89 lectures and 49 poster contributions plus the accompanying "9th International Exhibition on Smart Actuators and Drive Systems" in the adjacent Hall 4.1.

But ACTUATOR is not only a brilliant place to present and discuss the latest results in the area of new actuators, it also an excellent place for networking within the worldwide experts' community present here, for creating visions for new inter-research co-operations or starting business co-operations with industrial partners. We are sure you will find excellent opportunities and competent candidates.

Of course, such an event cannot be realised without highly qualified partners. In this concern we thank all the members of the Programme Committee for their excellent work and valuable assistance in compiling the programme. Furthermore, we are particularly grateful to the endorsing institutions, the media partners and to all others who have supported our public relations work. And our special thanks go to all those participants who are actively contributing to this event by sharing the results of their research work here – as authors of papers and posters, or as exhibitors.

We hope you enjoy this interesting event with lots of stimulating discussions and inspirations, and, of course, a pleasant stay in the Hanseatic City of Bremen.

Hans Peter Schneider

Hans Peter Schneider
MESSE BREMEN
General Manager

Hubert Borgmann

Hubert Borgmann
MESSE BREMEN
Project Manager ACTUATOR 2016



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91207 Lauf, Germany
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CeramTec
THE CERAMIC EXPERTS

Monday, 13 June 2016

Exhibition Forum I

09:40 – 10:00

New Compact, Dynamic, Precise Actuation Solutions from CEDRAT TECHNOLOGIES

F. Claeysen, CEDRAT TECHNOLOGIES S/A, Meylan, France

10:00 – 10:20

Xeryon, a Company Specialized in Custom Piezo Solutions

B. Kersschot, Xeryon bvba, Leuven, Belgium

Exhibition Forum II

15:10 – 15:30

Miniature Fiber-Based Interferometry in Position Control and Other Applications

U. Helfferrich, attocube systems AG, München, Germany

15:30 – 15:50

Fuse Actuator Stacks and High Temperature Actuator Stacks

C. Goueffon, Noliac A/S, Kvistgaard, Denmark

Tuesday, 14 June 2016

Exhibition Forum III

09:30 – 09:50

Industry 4.0 and Shape Memory Actuators – Opportunities and Challenges

R. Theiß, Zentrum für angewandte Formgedächtnistechnik (ZAF), Remscheid, Germany

09:50 – 10:10

Smart, Low Energy Actuators for the 21st Century

F. Schiere, The Smart Actuator Company (SACO), Malvern, United Kingdom

Exhibition Forum IV

14:30 – 14:50

New Piezo Resonant Motion Technology for Optomechanical Applications

C. Wolthaus, Thorlabs GmbH, München, Germany

14:50 – 15:10

The Broadest and Deepest Portfolio of Positioning Systems

J. Suske, Physik Instrumente (PI) GmbH & Co.KG, Karlsruhe, Germany

Wednesday, 15 June 2016

Exhibition Forum V

09:30 – 09:50

Funding Opportunities for Smart Materials Research within the EU Framework Programme Horizon 2020

E. Brockhaus, Forschungszentrum Jülich GmbH, Jülich, Germany

09:50 – 10:10

High Voltage for Actuators

W. Müller, hivolt.de GmbH, Hamburg, Germany

A

attocube systems AG

Königinstraße 11A, 80539 München, Germany
 Tel.: +49 (0) 89 2877809 - 0
 Fax: +49 (0) 89 2877809 - 19
 www.attocube.com
 info@attocube.com

Stand C03

attocube is a leading supplier for nano precise motion and highly accurate interferometric sensor solutions. The portfolio includes linear, goniometric and rotational piezo stages, hexapods, and ultrasonic drives, all working with nanometer accuracy. The positioners are available for various environmental conditions, always optimized for the specific field of application. The fiber-based displacement sensor is the product of choice for challenging OEM and synchrotron applications. It offers sub-nanometer resolution and can be applied for highest precision measurements, vibration analysis and displacement detection

C

CEDRAT TECHNOLOGIES S/A

59, Chemin du Vieux Chêne, 38246 Meylan, France
 Tel.: +33 (0) 456 58 04 00
 Fax: +33 (0) 456 58 04 01
 www.cedrat-technologies.com
 actuator@cedrat-tec.com

Stand E01

Cedrat Technologies is an internationally recognized mechatronics specialist and manufacturer of piezo and magnetic actuators offering a wide range of standard products: amplified (APA®), pre-stressed piezo actuators, XY piezo stages, stepping motors, shutters, magnetic actuators, the associated electronics and also customised products. The company has a strong experience in developing compact, precise and dynamic solutions for demanding applications (air & space, optronics, biomed, instrumentation, production machine...).

CeramTec GmbH

Multifunctional Ceramics Division

Luitpoldstraße 15, 91207 Lauf, Germany
 Tel.: +49 (0) 9123 77 - 0
 Fax: +49 (0) 9123 77 - 515
 www.ceramtec.com/actuators
 multifunctional_ceramics@ceramtec.de

Stand D02

CeramTec GmbH is one of the largest international manufacturers of ceramics for technically demanding applications and amongst others also a specialist in piezoceramics. Piezoceramic actuators utilize the piezoelectric effect: A piezoceramic PZT material expands in the direction of the electrical field when voltage is applied to it. Thus, the piezoceramic actuator provides precise movement up to about 200µm, while exerting high forces for applications such as valve control and micro-positioning.

E

ETO MAGNETIC GmbH

Hardtring 8, 78333 Stockach, Germany
 Tel.: +49 (0) 7771 809 - 0
 Fax: +49 (0) 7771 809 - 100
 www.etogroup.com
 magnetoshape@etogroup.com

Stand D04

The ETO GRUPPE with its more than 1.800 employees at 8 locations in Europe, America, and Asia develops and produces customer specific electromagnetic actuators and sensors in highest quality for fluidic and mechanical applications in the automotive and machine building industry.

As a highlight, we present our MAGNETOSHAPE® technology with actuator solutions based on proprietary magnetic shape memory materials. These are single crystalline alloys of Nickel, Manganese and Gallium, which are able to produce 6% strain under more than 2 N/mm² external load with moderate magnetic fields.

F

FGL-Netzwerk

Andrea Böhm
 Nöthnitzer Straße 44, 01187 Dresden, Germany
 Tel.: +49 (0) 351 477 - 22320
 Fax: +49 (0) 351 477 - 22303
 www.fgl-netzwerk.de
 andrea.boehm@iwu.fraunhofer.de

Stand A01

Today shape memory alloys (SMAs) are not that well established in technical applications as for instance conventional structural materials. Therefore the network -Efficient added value in the manufacturing and application of shape memory alloys- was founded. Experts for material production, research and development as well as users of the SMA technology participate. Thus the network establishes a platform for companies which apply SMAs or are generally interested in this technology. Hence the main objective is the spacious establishment of the multi-functional material SMA with its outstanding properties and benefits. It is further aimed to connect the currently separated process steps in manufacturing, processing and adapting SMA-components. The network offers innovative proceedings, consulting services and new products using SMA to interested users of all sectors.

Fraunhofer-Allianz Adaptronik (FAA)

Anika Seifert
Marketing
Bartningstraße 47, 64289 Darmstadt, Germany
Tel.: +49 (0) 6151 705 - 236
Fax: +49 (0) 6151 705 - 214
www.adaptronik.fraunhofer.de
info@adaptronik.fraunhofer.de

Stand B01

6 Fraunhofer institutes, being engaged in complementary research areas, cooperate within the Fraunhofer Adaptronics Alliance.

These partners work together in scientific as well as in industrial research projects, according to demand. Thus, interdisciplinary solutions can be found from one source. The partners' competencies cover the following areas:

- Materials and components
- Experimental system analysis
- Numerical and experimental simulation
- Electronics and control engineering
- Production and processing
- System design, evaluation and application

H

hivolt.de GmbH & Co. KG

Oehleckerung 40, 22419 Hamburg, Germany
Tel.: +49 (0) 40 537122 - 0
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www.hivolt.de
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Stand C01

hivolt.de is an internationally operating specialist for professional High Voltage Components: HV-Power Supplies, HV-Amplifiers, HV-Cables & Connectors and customized solutions. Products which are delivered by hivolt.de are being used in a variety of applications, both in industry as well as in research. Due to our inhouse design capabilities and our close cooperation with several leading manufacturers we are able to offer custom-made HV-Products, that match our customer's specific applications, including variations of standard products or full custom designs.

J

Johnson Matthey Piezo Products GmbH

Bahnhofstraße 43, 96257 Redwitz, Germany
Tel.: +49 (0) 9574 81 - 466
Fax: +49 (0) 9574 81 - 98466
www.piezoproducts.com
piezoproducts@matthey.com

Stand A04

Johnson Matthey Piezo Products is a specialist for piezo bending actuators. We focus on development, production and sales of piezoceramic actuators, sensors, energy harvesting generators and ultrasonic atomizers as well as engineered piezoelectric systems and modules with electronics and mechanics for industry applications, textile machines, medical devices, automotive and other markets.

M

SENSOR MAGAZIN / LASER MAGAZIN

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Tel.: +49 (0) 5723 5534
Fax: +49 (0) 5723 76212
www.magazin-verlag.de
kontakt@magazin-verlag.de

Stand B02

SENSOR MAGAZIN provides information to engineers and scientists who develop, manufacture and use sensors and actuators. The trade journal reports on the application of sensor and actuator technology in all branches of industry as well as in institutes and laboratories. The industry's latest technological developments are highlighted in the MAIN TOPIC of each issue. The journal focuses on practice-oriented articles under the headings of Practice, Market and Trade Fair Reports as well as Products. Future trends are reflected under the headings of Research, Innovations, Patents and Micro-Nano Integration. Exclusive interviews with key people from research and industry round off the spectrum of articles. The content, design and service meet the high requirements placed on a high-tech journal worth reading and promoting sales. www.sensormagazin.de

MECHATRONIK / I.G.T. Informationsgesellschaft Technik GmbH

Stand B02

Oskar-Maria-Graf-Ring 23, 81737 München, Germany

Tel.: +49 (0) 89 673697 - 0

Fax: +49 (0) 89 673697 - 19

www.mechatronik.info

mechatronik@igt-verlag.de

MECHATRONIK is an intersectoral journal for development processes and system integration. MECHATRONIK is concerned with the synergy of mechanics, electronics and software/information technology. Technical and application-related contributions, news, product trends, interviews and opinions relating to current research guide the readers from product idea to system integration via development and systems engineering. Engineering trends are discussed in detail, new research is presented in step with actual practice and new products are introduced in an appealing way.

MECHATRONIK is linked to the web portal www.mechatronik.info.

MECHATRONIK is published 8 times a year.

Mikroproduktion / MIKROvent GmbH

Stand B02

Salvatorberg 2, 84048 Mainburg, Germany

Tel.: +49 (0) 8441 797611 - 0

Fax: +49 (0) 8441 797611 - 4

www.mikroproduktion.de

info@mikroproduktion.de

Mikroproduktion is the German speaking special interest magazine for applied micro technology such as lithography, micro milling, micro laser processing, micro injection moulding, EDM, micro assembly and micro robotics, Nanotechnology, clean room technology and micro metrology. Mikroproduktion describes the whole process chain for the manufacturing of micro components, functional micro structures and micro systems. Main application fields can be found in micro optics, micro sensors and MEMS, micro fluidics and micro mechanics.

MSM Net

Stand D04

c/o ETO Magnetic GmbH

Hardtring 8, 78333 Stockach, Germany

Tel.: +49 (0) 7771 809 - 452

www.themsm.net

Magnetic Shape Memory (MSM) alloys are ferromagnetic materials that produce motion and force under moderate magnetic fields. The MSM Net is an international R&D alliance whose goal is to strengthen relationships between the partners and to promote and divulge the magnetic shape memory technology in the scientific and in the industrial realm and to enable its commercialization. The network currently consists of 7 members from Germany, Finland, and the US, including 2 companies and 5 research institutions.

N

Noliac A/S

Stand D01

Hejreskovvej 18, 3490 Kvistgaard, Denmark

Tel.: +45 (0) 49 12 50 30

Fax: +45 (0) 49 12 50 31

www.noliac.com

info@noliac.com

Noliac presents a unique proficiency in the field of piezoelectric technology. We design, develop and manufacture the total range of piezoelectric products from powders to mono- and multilayer components and all the way to finished plug-and-play applications.

At Actuator 2016, we will present two new piezoelectric actuators: Fuse actuator stacks and high temperature actuator stacks. The fuse actuator stacks are a unique solution for critical applications. The high temperature actuator stacks are ideal for high temperature applications, where you also need a high operating frequency.

P

Physik Instrumente (PI) GmbH & Co. KG

Stand D03

Auf der Römerstraße 1, 76228 Karlsruhe, Germany

Tel.: +49 (0) 721 4846 - 0

Fax: +49 (0) 721 4846 - 1409

www.pi.ws

info@pi.ws

Well-known for the high quality of its products, PI (Physik Instrumente) is one of the leading players in the global market for precision positioning technology for many years. PI has been developing and manufacturing standard and OEM products with piezo or motor drives for 40 years. In addition to four locations in Germany, the PI Group is represented internationally by fifteen sales and service subsidiaries.

PI Ceramic GmbH

Stand D03

Lindenstraße, 07589 Lederhose, Germany

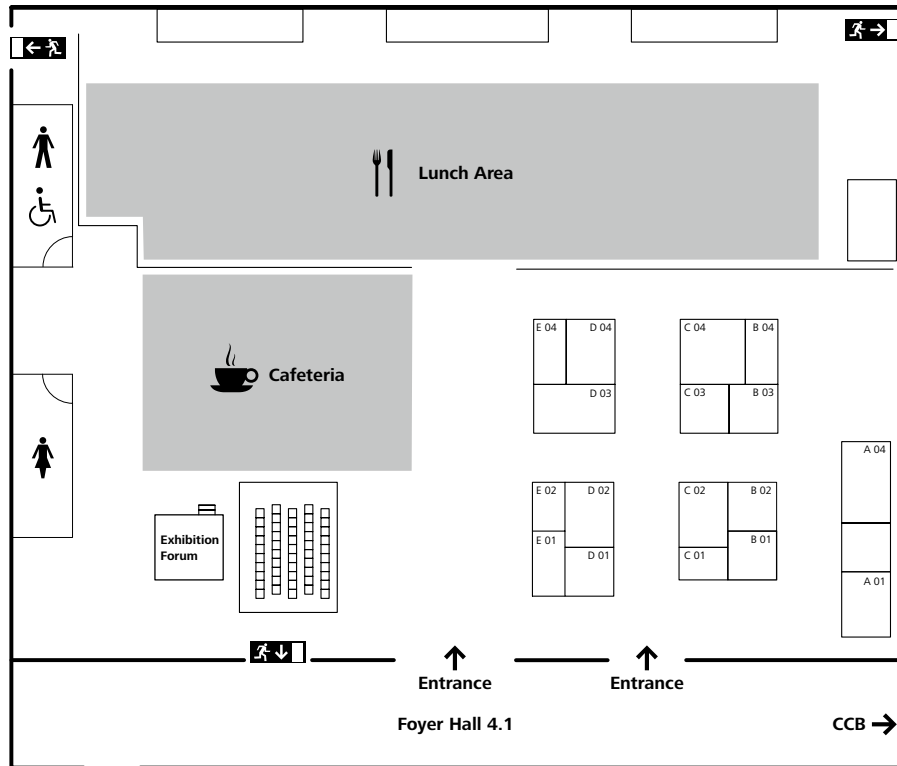
Tel.: +49 (0) 36604 882 - 0

Fax: +49 (0) 36604 882 - 4109

www.piceramic.de

info@piceramic.de

PI Ceramic is one of the global leaders for actuator and sensor piezo products. A broad range of expertise in the complex development and manufacturing process of functional ceramic components combined with state-of-the-art equipment ensure high quality, flexibility and adherence to supply deadlines. The company supplies piezoceramic solutions for all important high-tech markets from industrial automation and the semiconductor industry, medical engineering, mechanical engineering and high-precision engineering through to the aeronautics industry and the automotive sector.



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A attocube GmbH	C03
C CEDRAT TECHNOLOGIES S.A. CeramTec GmbH	E01 D02
E ETO MAGNETIC GmbH	D04
F FGL-Netzwerk Fraunhofer-Allianz-Adaptronik (FAA)	A01 B01
H hivolt.de GmbH & Co. KG	C01
J Johnson Matthey Piezo Products GmbH	A04
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S SmarAct GmbH	E02
T The Smart Actuator Company Thorlabs GmbH	C02 E04
X Xeryon bvba	B03

R

G.RAU GmbH & Co. KG

Kaiser-Friedrich-Straße 7, 75172 Pforzheim, Germany
 Tel.: +49 (0) 7231 208 - 0
 Fax: +49 (0) 7231 208 - 7599
 www.g-rau.de
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Stand C04

METALS ARE OUR WORLD

G.RAU is a globally active supplier of metal engineering and has become an established preferred supplier to several distinguished enterprises of automotive supply, electrical engineering, measurement and control technology and medical engineering. Founded in 1877, today G.RAU is an expert in manufacturing strips, tubes and wires made of precision metals, special alloys and composite materials. Furthermore G.RAU also uses these prematerials to manufacture precision parts and complex assemblies. G.RAU has three production sites in Germany, one in Costa Rica and a subsidiary in the USA.

S

SmarAct GmbH

Schütte-Lanz-Straße 9, 26135 Oldenburg, Germany
 Tel.: +49 (0) 441 800879 - 0
 Fax: +49 (0) 441 800879 - 21
 www.smaract.de
 info@smaract.de

Stand E02

SmarAct develops, produces and distributes piezo-based micro- and nanopositioners, advanced control systems and tools for the nanoworld. In addition, SmarAct offers complete micro- and nanomanipulation systems, ranging from XY tables to multi-manipulator systems. The compact positioning systems combine sub-nm resolution with a high stiffness and cm-sized travels. They can be applied in normal pressure as well as in vacuum conditions.

SmarAct also presents PicoScale - an interferometer-based displacement sensor. It features three channels and extremely miniaturized opto-mechanical sensor heads.

The Smart Actuator Company

2 Assarts Lane, Malvern WR14 4JR, United Kingdom
 Tel.: +44 (0) 1684 565709
 Fax: +44 (0) 91684 560977
 www.smartact.co.uk
 tony@smartact.co.uk

Stand C02

The Smart Actuator Company (SACO) was formed in 2011 to develop a new electric valve actuator by incorporating up to date computer and electronics technology in to the designs.

The first medium size actuator, delivering 40 to 100 Nm of programmable torque output was launched at the British Valve & Actuator Association (BVAA) Spring Conference in May 2014 and cost approximately £1 Million to Research, Develop, and Test. It incorporated many of the features only previously seen in actuators costing thousands of pounds more; such as failsafe, modulation and speed control.

In 2015 SACO won a €2.4 Million Horizon 2020 European Union Grant for a project to develop smaller and larger versions of the first medium product. They will deliver 0-40 Nm and 100-400 Nm of programmable torque output respectively. The large product will also be available as a 'Subsea' version which has already been tested down to 80 metres depth.

T

Thorlabs GmbH

Hans-Böckler-Straße 6, 85221 Dachau / München, Germany
 Tel.: +49 (0) 8131 5956 - 0
 Fax: +49 (0) 8131 5956 - 99
 www.thorlabs.com/actuators
 europe@thorlabs.com

Stand E04

Thorlabs, a vertically integrated photonics products manufacturer, was founded in 1989 to serve the laser and electro-optics research market. As that market has spawned a multitude of technical innovations, Thorlabs has extended its core competencies in an effort to play an ever increasing role serving the Photonics Industry at the research end, as well as the industrial, life science, medical, and defense segments. The organization's highly integrated and diverse manufacturing assets include semiconductor fabrication of Fabry-Perot, DFB, and VCSEL lasers, fiber towers for drawing glass optical fibers (silica and fluoride), MBE/MOCVD epitaxial wafer growth reactors, extensive glass and metal fabrication facilities, advanced thin film deposition capabilities, and optomechanical and optoelectronic shops.

X

Xeryon bvba

Interleuvenlaan 62, 3001 Leuven, Belgium
 Tel.: +32 (0) 16 394824
 Fax: +32 (0) 16 394701
 www.xeryon.be
 steven.cappa@xeryon.be

Stand B03

Xeryon is specialised in the design, development and manufacture of piezo-electric actuation solutions. Our piezo motors are tailor-made to the needs of our clients who face the toughest challenges in precision applications. Xeryon's miniature XRT rotary stages position small samples with sub-micrometre error motion and very fine angular resolution. Our unique MultiDrive piezo motor technology combines the speed and unlimited stroke of a resonant motor with the extreme accuracy of a direct stroke actuator. Both modes of operation are simultaneously realised in a single motor, enabling coarse-fine positioning with one motor.

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Actuator Drivers (customised)

hivolt.de GmbH & Co. KG **Stand C01**
 Oehleckerring 40, 22419 Hamburg, Germany
 Tel.: +49 (0) 40 53 71 22 - 0
 Fax: +49 (0) 40 53 71 22 - 99
 www.hivolt.de
 info@hivolt.de

Actuator Systems

Johnson Matthey Piezo Products GmbH **Stand A04**
 Bahnhofstraße 43, 96257 Redwitz, Germany
 Tel.: +49 (0) 9574 81 - 466
 Fax: +49 (0) 9574 81 - 98466
 www.piezoproducts.com
 piezoproducts@matthey.com

Noliac A/S **Stand D01**
 Hejreskovvej 18, 3490 Kvistgaard, Denmark
 Tel.: +45 (0) 49 12 50 30
 Fax: +45 (0) 49 12 50 31
 www.noliac.com
 info@noliac.com

Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
 www.pi.ws
 info@pi.ws

G.RAU GmbH & Co. KG **Stand C04**
 Kaiser-Friedrich-Straße 7, 75172 Pforzheim, Germany
 Tel.: +49 (0) 7231 208 - 0
 Fax: +49 (0) 7231 208 - 7599
 www.g-rau.de
 info@g-rau.de

Adaptronics

Fraunhofer-Allianz Adaptronik (FAA) **Stand B01**
 Anika Seifert
 Marketing
 Bartningstraße 47, 64289 Darmstadt, Germany
 Tel.: +49 (0) 6151 705-236
 Fax: +49 (0) 6151 705-214
 www.adaptronik.fraunhofer.de
 info@adaptronik.fraunhofer.de

Analysing / Measuring Techniques

Fraunhofer-Allianz Adaptronik (FAA) **Stand B01**
 Anika Seifert
 Marketing
 Bartningstraße 47, 64289 Darmstadt, Germany
 Tel.: +49 (0) 6151 705 - 236
 Fax: +49 (0) 6151 705 - 214
 www.adaptronik.fraunhofer.de
 info@adaptronik.fraunhofer.de

PI Ceramic GmbH **Stand D03**
 Lindenstraße, 07589 Lederhose, Germany
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 Fax: +49 (0) 36604 882 - 4109
 www.piceramic.de
 info@piceramic.de

Bimorph Actuators

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Multifunctional Ceramics Division
 Luitpoldstraße 15, 91207 Lauf, Germany
 Tel.: +49 (0) 9123 77 - 0
 Fax: +49 (0) 9123 77 - 515
 www.ceramtec.com/actuators
 multifunctional_ceramics@ceramtec.de

Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
 www.pi.ws
 info@pi.ws

PI Ceramic GmbH **Stand D03**
 Lindenstraße, 07589 Lederhose, Germany
 Tel.: +49 (0) 36604 882 - 0
 Fax: +49 (0) 36604 882 - 4109
 www.piceramic.de
 info@piceramic.de

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 Lindenstraße, 07589 Lederhose, Germany
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 www.piceramic.de
 info@piceramic.de

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 Fax: +33 (0) 456 58 04 01
 www.cedrat-technologies.com
 actuator@cedrat-tec.com

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 Hardtring 8, 78333 Stockach, Germany
 Tel.: +49 (0) 7771 809 - 0
 Fax: +49 (0) 7771 809 - 100
 www.etogroup.com
 magnetoshape@etogroup.com

Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
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 info@pi.ws

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 info@hivolt.de

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 Hardtring 8, 78333 Stockach, Germany
 Tel.: +49 (0) 7771 809 - 0
 Fax: +49 (0) 7771 809 - 100
 www.etogroup.com
 magnetoshape@etogroup.com

MSM Net **Stand D04**
c/o ETO Magnetic GmbH
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 Tel.: +49 (0) 7771 809 - 452
 www.themsm.net

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 Lindenstraße, 07589 Lederhose, Germany
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 Fax: +49 (0) 36604 882 - 4109
 www.piceramic.de
 info@piceramic.de

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 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
 www.pi.ws
 info@pi.ws

Microactuators

CEDRAT TECHNOLOGIES S/A **Stand E01**
 59, Chemin du Vieux Chêne, 38246 Meylan, France
 Tel.: +33 (0) 456 58 04 00
 Fax: +33 (0) 456 58 04 01
 www.cedrat-technologies.com
 actuator@cedrat-tec.com

Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
 www.pi.ws
 info@pi.ws

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Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
 www.pi.ws
 info@pi.ws

PI Ceramic GmbH **Stand D03**
 Lindenstraße, 07589 Lederhose, Germany
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 www.piceramic.de
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 Fax: +49 (0) 89 2877809 - 19
 www.attocube.com
 info@attocube.com

Physik Instrumente (PI) GmbH & Co. KG **Stand D03**
 Auf der Römerstraße 1, 76228 Karlsruhe, Germany
 Tel.: +49 (0) 721 4846 - 0
 Fax: +49 (0) 721 4846 - 1409
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 info@pi.ws

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 Fax: +49 (0) 441 800879 - 21
 www.smaract.de
 info@smaract.de

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 www.xeryon.be
 steven.cappa@xeryon.be

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 www.pi.ws
 info@pi.ws

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attocube GmbH **Stand C03**
 Königinstraße 11A, 80539 München, Germany
 Tel.: +49 (0) 89 2877809 - 0
 Fax: +49 (0) 89 2877809 - 19
 www.attocube.com
 info@attocube.com

CEDRAT TECHNOLOGIES S/A **Stand E01**
 59, Chemin du Vieux Chêne, 38246 Meylan, France
 Tel.: +33 (0) 456 58 04 00
 Fax: +33 (0) 456 58 04 01
 www.cedrat-technologies.com
 actuator@cedrat-tec.com

CeramTec GmbH **Stand D02**
Multifunctional Ceramics Division
 Luitpoldstraße 15, 91207 Lauf, Germany
 Tel.: +49 (0) 9123 77 - 0
 Fax: +49 (0) 9123 77 - 515
 www.ceramtec.com/actuators
 multifunctional_ceramics@ceramtec.de

Johnson Matthey Piezo Products GmbH **Stand A04**
 Bahnhofstraße 43, 96257 Redwitz, Germany
 Tel.: +49 (0) 9574 81 - 466
 Fax: +49 (0) 9574 81 - 98466
 www.piezoproducts.com
 piezoproducts@matthey.com

Noliac A/S **Stand D01**
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 Tel.: +45 (0) 49 12 50 30
 Fax: +45 (0) 49 12 50 31
 www.noliac.com
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Fax: +49 (0) 721 4846 - 1409
www.pi.ws
info@pi.ws

Stand D03

PI Ceramic GmbH

Lindenstraße, 07589 Lederhose, Germany
Tel.: +49 (0) 9123 77 - 0
Fax: +49 (0) 36604 882 - 4109
www.piceramic.de
info@piceramic.de

Stand D03

Thorlabs GmbH

Hans-Böckler-Straße 6, 85221 Dachau / München, Germany
Tel.: +49 (0) 8131 5956 - 0
Fax: +49 (0) 8131 5956 - 99
www.thorlabs.com/actuators
europe@thorlabs.com

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attocube GmbH

Königinstraße 11A, 80539 München, Germany
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Fax: +49 (0) 89 2877809 - 19
www.attocube.com
info@attocube.com

Stand C03

CEDRAT TECHNOLOGIES S/A

59, Chemin du Vieux Chêne, 38246 Meylan, France
Tel.: +33 (0) 456 58 04 00
Fax: +33 (0) 456 58 04 01
www.cedrat-technologies.com
actuator@cedrat-tec.com

Stand E01

Noliac A/S

Hejreskovvej 18, 3490 Kvistgaard, Denmark
Tel.: +45 (0) 49 12 50 30
Fax: +45 (0) 49 12 50 31
www.noliac.com
info@noliac.com

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Physik Instrumente (PI) GmbH & Co. KG

Auf der Römerstraße 1, 76228 Karlsruhe, Germany
Tel.: +49 (0) 721 4846 - 0
Fax: +49 (0) 721 4846 - 1409
www.pi.ws
info@pi.ws

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Xeryon bvba

Interleuvenlaan 62, 3001 Leuven, Belgium
Tel.: +32 (0) 16 394824
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www.xeryon.be
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Tel.: +49 (0) 40 53 71 22 - 0
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info@hivolt.de

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Fraunhofer-Allianz Adaptronik (FAA)

Anika Seifert
Marketing
Bartningstraße 47, 64289 Darmstadt, Germany
Tel.: +49 (0) 6151 705 - 236
Fax: +49 (0) 6151 705 - 214
www.adaptronik.fraunhofer.de
info@adaptronik.fraunhofer.de

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Andrea Böhm
Nöthnitzer Straße 44, 01187 Dresden, Germany
Tel.: +49 (0) 351 477 - 22320
Fax: +49 (0) 351 477 - 22303
www.fgl-netzwerk.de
andrea.boehm@iwu.fraunhofer.de

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Fax: +49 (0) 8441 797611 - 4
www.mikroproduktion.de
info@mikroproduktion.de

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G.RAU GmbH & Co. KG

Stand C04

Kaiser-Friedrich-Straße 7, 75172 Pforzheim, Germany
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actuator@messe-bremen.de | www.actuator.de