



14 – 17 May 2018, Novi, MI

## CTI Symposium World Series

2,500+ attendees in China, USA & Europe in 2016!  
Representatives from over 28 countries!

## Exhibitors in 2016

AIDA



**AIDA** – the leader in the metalforming industry – has been concentrating on the innovation, development, manufacture, and sales and service of metal stamping equipment for a century.

**AIDA EUROPE**

[www.aida-europe.com](http://www.aida-europe.com)

Associated Spring



A pioneer, leader & innovator in the engineered spring & precision metal component manufacturing industry. With a wealth of engineering capability & manufacturing expertise, the Associated Spring Team solves customers' complex product and process design challenges, to help them achieve superior performance & competitive advantages in the market place.

**Associated Spring**

[www.asbg.com](http://www.asbg.com)



### YOUR CONTACT:



**Michael Follmann**

Sales Director

+49 (0) 2 11.96 86-

3729Email

## Associated Spring Raymond



A pioneer, leader & innovator in the engineered spring & precision metal component manufacturing industry. With a wealth of engineering capability & manufacturing expertise, the Associated Spring Team solves customers' complex product and process design challenges, to help them achieve superior performance & competitive advantages in the market place.

### Associated Spring Raymond

[www.asraymond.com](http://www.asraymond.com)

## AVL



AVL is the world's largest independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems.

### AVL North America

[www.avl.com](http://www.avl.com)

## Barnes Group Inc



**Barnes Engineered Components (EC)** is a world class manufacturer, supplier and distributor to key markets including: Automotive, Medical, Aerospace, HVAC/Refrigeration, High Tech/Telecom, HDT, Construction/Mining, Energy & General Industrial. EC spans 20+ global manufacturing and non-manufacturing strategic locations, with approximately 1,500 employees dedicated to collaborating with customers, adding value through innovation and state-of-the-art technologies.

### Barnes Engineered Components

[www.bginc.com](http://www.bginc.com)

## BEIER Werkzeug- und Maschinenbau



**Paul Beier** is one of the leading companies in the field of tool manufacturing and mechanical engineering. Our customers are top German and international industrial enterprises. They rely on our precision and professionalism. And value the flexibility and proximity offered by a medium-sized enterprise such as ours.

**Paul Beier GmbH**  
**Werkzeug- und Maschinenbau & Co. KG**  
[www.beier-kassel.de](http://www.beier-kassel.de)

## BorgWarner Inc.



**BorgWarner Inc.** (NYSE: BWA) is a product leader in highly engineered components and systems for powertrains around the world. Operating manufacturing and technical facilities in 74 locations in 19 countries, the company develops innovative technologies to improve fuel economy, reduce emissions and enhance performance for efficient gasoline, clean diesel, hybrid and pure electric vehicles as well as commercial and on/off-highway applications. For more information, please visit [borgwarner.com](http://borgwarner.com).

**BorgWarner Inc.**  
[www.borgwarner.com](http://www.borgwarner.com)

## BOSCH



**Bosch** is an industry leader of transmission modules and actuation, control units, solenoids, and thermal system technologies. These product groups are part of the Bosch Group Mobility Solutions business sector (BBM). The BBM is largest Bosch Group business area with sales of €33.3 billion, or 68% of total group sales.

**Bosch**  
[www.bosch-mobility-solutions.com/en](http://www.bosch-mobility-solutions.com/en)

## Brose North America, Inc.



**Brose** is one of the top 40 automotive suppliers in the world supplying electric motors and mechatronic systems for driveline and powertrain, focusing on excellence in customer support, product quality and manufacturing. Brose's powertrain actuators are integrated in stop-start, disconnect systems, and torque vectoring using the modular construction kit approach.

**Brose North America, Inc.**  
[www.brose.com](http://www.brose.com)

## Buehler Motor, Inc.



**Buehler Motor** is an independent, globally-active company focused on the development and production of mechatronic drive solutions and electric pumps. A leading supplier in the Automotive industry, with 1,700 employees at ten locations worldwide, we are committed to offering world-class products to help to improve the drivetrain efficiency and performance.

**Buehler Motor, Inc.**

[www.buehlermotor.com](http://www.buehlermotor.com)

## Christian Bauer GmbH & Co. KG



With decades of familiarity with the market and solid know-how, **cb** successfully designs flexibility creatively. Wherever disc springs, diaphragm springs and complete subassemblies for vane pumps are involved, we stand for the tightest of production tolerances while being consistently solution-driven. In addition to the DIN disc springs Bauer Springs, Inc. (our subsidiary in the USA) and cb also support you with tailored and customised developments.

**Christian Bauer GmbH + Co. KG Germany**

[www.christianbauer.com](http://www.christianbauer.com)

## Continental



**Continental** develops intelligent technologies for transporting people and their goods. As a reliable partner, the international automotive supplier, tire manufacturer, and industrial partner provides sustainable, safe, comfortable, individual, and affordable solutions.

**Continental Automotive Systems, Inc.**

[www.continental-corporation.com](http://www.continental-corporation.com)

## Dana Holding Corporation



**Dana** is a global leader in the supply of highly engineered driveline, sealing, and thermal-management technologies that improve the efficiency and performance of vehicles with both conventional and alternative-energy powertrains. Serving three primary markets – passenger vehicle, commercial truck, and off-highway equipment – Dana provides the world's original-equipment manufacturers and the aftermarket with local product and service support through a network of nearly 100 engineering, manufacturing, and distribution facilities.

### **Dana Holding Corporation**

[www.dana.com](http://www.dana.com)

## Drive System Design Ltd.



**Drive System Design (DSD)** is an innovative transmission design and development company. DSD specializes in transmission/driveline design and simulation delivering prototype demonstrators and solutions to production issues. Current technology focus is around robust low noise gear design for volume production, efficiency improvement process for existing axles/transmissions and EV/Hybrid architecture derivation.

### **Drive System Design Ltd.**

[www.drivesystemdesign.com](http://www.drivesystemdesign.com)

## DuPont Performance Polymers



*The miracles of science™*

**DuPont™ Vespel®** parts help vehicles meet emission and efficiency standards by reducing friction and parasitic losses within new driveline technologies, including start/stop devices. The ability of Vespel® seal rings, thrust washers and bushings to survive high PV conditions provides peace of mind for engineers whose critical parts must work the first – and every – time.

### **DuPont Performance Materials**

[www.vespel.dupont.com](http://www.vespel.dupont.com)

**ebmpapst**

**ebmpapst**

The ebm-papst Group is the world's leading manufacturer of fans and motors. As a highly qualified engineering partner of the automotive industry, our innovations have been helping to make the driving experience safer, more comfortable and less stressful for over a decade. A growing number of renowned manufacturers and system suppliers, in both the passenger and commercial vehicle areas, are among our customers.

**ebmpapst Automotive and Drives, Inc.**

[www.ebmpapst-automotive.us](http://www.ebmpapst-automotive.us)

[www.ebmpapst.com](http://www.ebmpapst.com)

**ERNST GROB AG**



**ERNST GROB AG** offers customized solutions

High precision machines to cold form:

- external and internal splines on tubes and solid material parts
- external and internal splines on sheet metal parts e. g. clutch housings

Slotting machines for various operations on hollow cylindrical parts:

- trimming
- oil hole punching
- snap ring groove forming e.g. on clutch housing

**ERNST GROB AG**

[www.ernst-grob.com](http://www.ernst-grob.com)

## Feintool System Parts



**Feintool** is the world's leading technology group specializing in the development of fineblanking systems and the production of fineblanking and forming components. Feintool is globally active at its own facilities in Europe, Asia, and North America producing various drivetrain components such as formed disk carriers and fineblanked clutch plates.

### Feintool

[www.feintool.com/en](http://www.feintool.com/en)

## Felss Shortcut Technologies



The **Felss Group** manufactures under the brand Felss Shortcut Technologies metal processing machines and components for diverse sectors such as the automotive industry. The cold forming processes rotary swaging, axial forming, bending, autofrettage and tube end forming are central to the technology. Based in Königsbach-Stein, Germany, Felss has revenues of approximately 100 Million Euros, and employs approximately 550 people in 4 countries.

### Felss Shortcut Technologies

[www.felss.com](http://www.felss.com)

## FTE automotive USA Inc.



The **FTE automotive Group** is a competent partner in terms of the development and production of drive train- and brake system applications for the automotive industry. Innovative products are being individually designed in partnership with the leading research and development centers of the automotive world. The company is located with its 12 production sites and numerous technical support offices in all important continents and is one of the leading OE-suppliers for passenger cars and commercial vehicles worldwide.

### FTE automotive Inc, USA

[www.fte-automotive.com](http://www.fte-automotive.com)

## GKN



**GKN Driveline** is the world's leading supplier of automotive driveline components and systems, delivering power from the engine to the wheel in the most efficient, economical and reliable way possible. The

company develops intelligent driveline systems that enable automakers to create new markets for their brands and connect drivers with the road in new ways. With 45 manufacturing sites across 22 countries, GKN Driveline employs 26,500 people globally. The company's technologies feature in more than half of the world's road vehicles.

### **GKN Driveline**

[www.gkndriveline.com](http://www.gkndriveline.com)

### **Great Taiwan Gear**



**Great Taiwan Gear** is a leading manufacturer of high-accuracy gears and transmission parts. Our production capabilities allow us to offer our customers the quality, cost effectiveness and reliability they demand. We have considerable experience in the production of gears and shafts for DCT, CVT and EV projects – from prototypes to mass production. Our willingness and ability to manufacture and develop new products for our customers in a short space of time is the basis for our growth.

### **Great Taiwan Gear**

[www.taiwangear.com](http://www.taiwangear.com)

### **Hänggi**



 A business of BARNES GROUP INC

A world class partner for ultra-precision microstamping and fine-blanked applications. **Hänggi** offers unique solutions from engineering prototypes to serial production including complete assemblies. They specialize in producing complex metal stampings or by converting machined components into stamped parts gaining significant efficiencies and superior value. Hänggi has unmatched engineering expertise and manufacturing disciplines to provide complex stampings, optimal lifecycle costs & superior quality and service.

### **Heinz Hänggi Stanztechnik**

[www.hanggi.ch](http://www.hanggi.ch)

### **HOERBIGER Antriebstechnik GmbH**



**HOERBIGER** is the leading independent provider of synchronizer systems worldwide. The product range of HOERBIGER Strategic Business Unit Drive Technology encompasses full “package” support from complete development down to serial supplies of components and complete synchronizer systems. OEMs and



transmission manufacturers can select the appropriate system from HOERBIGER's product lines, depending on the application: the ClassicLINE as well as the new ClassicLINE DCT-Type and CompactLINE.

**HOERBIGER Antriebstechnik  
Holding GmbH**  
[www.hoerbiger.com](http://www.hoerbiger.com)

## **HORIBA**

# **HORIBA**

**HORIBA**, the long-standing global leader in motor exhaust gas analysis, is the first choice for engine and chassis testing. Powertrain and E-motor developers and manufacturers also depend on HORIBA for its experience, sound engineering, and comprehensive product portfolio. Partnering with HORIBA early in the development process ensures that your final system will provide years of dependable performance, meet current regulations, and be adaptable to future development needs.

**HORIBA**  
[www.horiba.com](http://www.horiba.com)

## **Hugo Benzing GmbH & Co. KG**



As one of world's leading producer of retaining elements **Hugo Benzing** is a Tier-1 supplier for almost every reputable automotive manufacturer. On more than 20.000 square meters we employ about 550 people. Over 26.000 different items are included within our product range of retainers, wire forms, precision stampings and complex designed assemblies. Benzing components are used in numerous applications for example in parking lock systems for torque converters and dual clutch transmissions.

[www.hugobenzing.com](http://www.hugobenzing.com)

## **JATCO USA, Inc.**



**JATCO Ltd.** is the world's largest producer of Continuously Variable Transmissions (CVT), with Research and Development facilities in Japan, United States, France and Korea. Manufacturing plants are located in Japan, Mexico, China and Thailand producing over 5 million CVT and conventional automatic transmissions per year. JATCO USA focuses on Research and Development Engineering, in addition to Sales and Service.

**JATCO USA, Inc.**  
[www.jatco-usa.com](http://www.jatco-usa.com)

## Konzelmann GmbH



**KONZELMANN**  
KUNSTSTOFF · INNOVATIONEN

Are you looking to increase efficiency without adding extra costs in your tribological system? Look no further. At **Konzelmann GmbH**, using global market experience and results from our test laboratory, we design each solution's polymer blend and geometry in order to optimize your application, with price and performance in mind. Our solutions include bushings, axial/radial bearings, thrust washers, seal rings, gears, guiding components, and more.

### **Konzelmann GmbH**

[www.konzelmann-gmbh.de](http://www.konzelmann-gmbh.de)

## Magna Powertrain of America, Inc.



**Magna Powertrain** is a premier supplier for the global automotive industry with full capabilities in powertrain design, development, testing and manufacturing. Offering complete system integration sets us apart from our competitors.

### **Magna Powertrain of America, Inc.**

[www.magnapowertrain.com](http://www.magnapowertrain.com)

## Means Industries



**Means** partners with OEM engineers to produce pioneering automotive-powertrain solutions. Known for customer service, rigorous design and quality products, Means demonstrates industry leadership by introducing Roller In-Die Spline Forming process, and Controllable Mechanical Diode (Selectable One-Way Clutch) technologies through its TransForm and Clutch Systems Business Units.

### **Means Industries**

[www.meansindustries.com](http://www.meansindustries.com)

## MPG



Formed by the merger of three companies (Metaldyne, HHI and Grede), **MPG** is an industry leader in complex metal-formed components for powertrain, driveline and safety-critical applications, including transmission products such as differential assemblies, clutch modules, valve bodies, hubs, gears and shafts. MPG supports its customers through a global footprint spanning more than 60 locations in 13 countries.

### MPG

[www.mpgdriven.com](http://www.mpgdriven.com)

## Michigan Spring and Stamping



**Michigan Spring and Stamping** has been a partner with OEM's for 70-years, specializing in Powertrain and Transmission applications. Our Cradle-To-Grave philosophy focuses investment in Design / FEA / Prototype / Testing-Verification, providing a globally competitive manufacturing process that deploys high-volume automated efficiency with -0- defect delivery. Specific competency in the components of: spring pack assembly; detent assembly; technical springs, precision stampings and wire forms.

### Michigan Spring and Stamping

[www.msands.com](http://www.msands.com)

## MIASA



**MIASA** with different locations worldwide, is a global partner with more than 45 years expertise in transmission market. Thanks to MIASA's vertical integration, including product concept, development, foundry, casting, machining and in-line verification, MIASA is recognised as leader supplier in high precision transmission components, for small and large series.

### MIASA Automotive LLC

[www.miasa.com](http://www.miasa.com)

## Petronas



**PETRONAS Lubricants International (PLI)**, the global lubricant manufacturing & marketing arm of PETRONAS (the national Malaysian fully integrated oil and gas company). PETRONAS Lubricants International manufactures and markets a full range of high-quality automotive and industrial lubricants products in over 80 markets globally. A market leader in off-highway finished lubricants, PLI's driveline lubricants portfolio specializes in manual transmission (MT), automatic and dual-clutch transmission fluids (ATF, DCT) as well as axle fluids and gear oils for both passenger and commercial vehicle applications.

### Viscosity Oil Company

[www.pli-petronas.com](http://www.pli-petronas.com)

## PMG Indiana Corporation



With six production facilities on three continents and over 50 years of experience in R&D and production, **PMG** is a leading manufacturer of sintered components and systems for the automotive industry and of soft magnetic powder composites (SMC) for electrical applications in various industries. PMG's structural PM steel components are optimized solutions for automatic and manual transmissions, engines, oil pumps and shock absorbers; the soft magnetic composite materials are designed for the specific requirements in electrical applications.

### PMG

[www.pmg-sinter.com](http://www.pmg-sinter.com)

## Punch Powertrain N.V.



**PUNCH Powertrain N.V.** is an independent Tier1 developer and manufacturer of continuously variable transmissions (CVT), electrical and hybrid powertrains for passenger cars. In developing the new generation CVTs and hybrid powertrains optimal performance, minimal fuel consumption, low emissions and driving pleasure are key topics. Apart from different gearbox technologies, Punch Powertrain N.V. is leading in the fields of Switched Reluctance Motors (SR Motors) and flywheels.

### Punch Powertrain

[www.punchpowertrain.com](http://www.punchpowertrain.com)

## Ricardo, Inc.



With a focus on innovation and sustainability, **Ricardo** is a global leader in consulting, design and engineering, and a special list niche manufacturer of high performance products. Ricardo is one of the world's most highly respected and experienced transmission and driveline engineering teams, offering comprehensive capability and collaboration with customers from concept to design and production. We deliver support for a broad range of products; from cost-optimized manual transmissions to advanced and high performance systems.

### Ricardo, Inc.

[www.ricardo.com](http://www.ricardo.com)

## Rotor Clip Company



**Rotor Clip** is the leader in the manufacture of tapered, constant section and spiral retaining rings meeting DIN, Inch, ANSI Metric and JIS standards, as well as TRUWAVE wave springs, ROTOR CLAMP hose clamps and custom designs. We support the market with first class Engineering Know-How, expert advice, reliability of delivery and high quality products. Rotor Clip is certified to ISO 9001, TS 16949, AS9100 & ISO 14001.

### Rotor Clip Company

[www.rotorclip.com](http://www.rotorclip.com)

## Saint-Gobain Performance Plastics L+S GmbH



**Saint-Gobain Performance Plastics L+S GmbH** is your global partner for applying high-performance polymer materials to solve engineering challenges in advanced transmissions. Design, testing and manufacturing expertise in seal rings, axial plain bearings and radial plain bearings allow these engineered components to be used where their compact installation, low mass and easy assembly allow their high performance to be combined with economic efficiency.

### Saint-Gobain Performance Plastics L+S GmbH

[www.seals.saint-gobain.com](http://www.seals.saint-gobain.com)

## Scherdel GmbH



**SCHERDEL**, with its 29 locations and 4800 employees worldwide, offers a full product range in the area of engineering springs, metal forming and joining technology. The value chain contains service, engineering and production as well as in-house tool and machine construction for products used for powertrain, body and interior applications.

### Scherdel

[www.scherdel.com](http://www.scherdel.com)

## Schondelmaier Presswerk



We are a proactive international transmission system supplier with cold forming technology. We secure our place in the world market with new developments and sophisticated products worldwide. Our thinking and acting are always orientated to our customer's success. Motivated and highly skilled employees are essential for the development of the company.

### Schondelmaier GmbH, Presswerk

[www.schondelmaier.de](http://www.schondelmaier.de)

## Schuler



**Schuler** is the global leader of innovative metal forming systems and technology. We offer complex process and technology solutions for powertrain dies manufactured in Weingarten, Germany. Our scope of supply covers the range from engineering and die manufacturing to part production of powertrain parts in our Schuler Tech Centers located in Erfurt, Germany and Tianjin, China. Our roller-die technology and development service supports transmission component manufacturing with continuous development, planning, modeling, prototyping and tooling. Our latest hot sheet metal forging technology offers new approaches to component design and manufacturing.

### Schuler Incorporated

[www.schulerinc.com/transmission](http://www.schulerinc.com/transmission)

## Seeger



A world leading innovator and manufacturer of retaining and snap rings. **Seeger-Orbis** offers a large variety of industry standard products, specializing in specific items for customers' unique design applications. Utilizing state-of-the-art manufacturing processes and a wealth of experience, the Seeger team is able to design and manufacture retention solutions to fit individual requirements.

### SEEGER-ORBIS

[www.seeger-orbis.de](http://www.seeger-orbis.de)

## SOLVAY



**Solvay** manufactures semi-aromatic polyamides for solenoids, shift levers, clutch cylinders, housings, and shift forks; aromatic ultra polymers for seal rings, bearings, cages, bushings, and balls; fluoroelastomers for O-rings, bonded pistons, and oil seals; fluorinated fluids for lubrication, bearing grease, and additives; sulfone polymers for pump pistons; and customized films for bushings and bearings.

### Solvay Specialty Polymers USA, LLC

[www.solvay.com](http://www.solvay.com)

## Swoboda Inc



**Swoboda** is a worldwide leader in the technologically complex area of molding elements (high-precision metal-plastic composite parts) for the automotive industry that form the interface between mechanical and electronic components. Swoboda develops and manufactures components and assemblies in Germany, Czech Republic, United States, China, Romania, and Mexico.

### Swoboda Inc.

[www.swoboda.de](http://www.swoboda.de)

## TE Connectivity



**TE Connectivity** is a \$12 billion global technology leader. Our connectivity and sensor solutions are essential in today's increasingly connected world. We collaborate with engineers to transform their concepts into creations – redefining what's possible using intelligent, efficient and high-performing TE products and solutions proven in harsh environments. We believe EVERY CONNECTION COUNTS.

### TE Connectivity

[www.te.com](http://www.te.com)

## TREMEC



Torque transfer solutions from **TREMEC** are found in products ranging from supercars and high-performance sports cars to severe duty, vocational and commercial vehicles worldwide. The portfolio of products includes manual transmissions, dual clutch transmissions, gears, shafts, clutches, friction materials, shift systems, synchronizers, mechatronic systems, transmission control units, and control software.

### TREMEC

[www.tremec.com](http://www.tremec.com)

## Victrex



**Victrex**, the global leader in high-performance polymer solutions, supports engineers in developing innovative automotive components to enhance fuel efficiency, cost-effectiveness and driving comfort. VICTREX® PEEK and APTIV® fi Im are increasingly being specified in transmission and e-motor applications as the need for improved reliability, reduced recalls and increased warranty periods grows.

### Victrex

[www.victrex.com](http://www.victrex.com)



## Walter Henrich GmbH



The middle-class family business **Walter Henrich GmbH** has specialized in the development and production of precisely cold-formed tubular shafts. The Walter Henrich GmbH offers you the following advantages:

- support in the development of new products
- optimization regarding development time and costs through the own manufacturing of samples and prototypes
- use of efficient production technologies for chipless and chipping processing

### Walter Henrich GmbH

[www.walter-henrich-gmbh.de](http://www.walter-henrich-gmbh.de)

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