

# tire

## TECHNOLOGY

### EXPO 2024

**MARCH 19, 20 & 21, 2024**

DEUTSCHE MESSE,  
HANNOVER, GERMANY

# SHOW PREVIEW

Discover exhibits from many of the world's most important suppliers to the tire manufacturing industry, plus conference highlights, awards and networking opportunities



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FREE EXHIBITION  
ENTRY!**

**EUROPE'S MOST IMPORTANT TIRE MANUFACTURING TECHNOLOGY EXHIBITION AND CONFERENCE**



# tire

TECHNOLOGY  
EXPO 2024

**MARCH 19, 20 & 21, 2024**  
DEUTSCHE MESSE,  
HANNOVER, GERMANY

**240+**  
EXHIBITORS

# EUROPE'S MOST IMPORTANT ANNUAL SHOWCASE **FOR THE ADVANCEMENT AND FUTURE OF TIRE MANUFACTURING**

**Start planning your trip:** For registration, visa, travel or hotel information, please visit the website: [www.tiretechnology-expo.com](http://www.tiretechnology-expo.com)



**7**  
reasons  
to visit

**1**

#### **Exhibition**

See cutting-edge exhibits and multiple new developments in tire design and manufacturing from 240 specialist suppliers at the free-to-attend exhibition

**2**

#### **Conference**

Hear case studies and share best practices with 180+ speakers from leading tire and car manufacturers

**3**

#### **Short courses**

Stay abreast of the latest advances in tire design by gaining new skills at the short courses





**180**  
SPEAKERS ALREADY  
CONFIRMED!

ATTENDEES  
FROM MORE THAN  
**55**  
COUNTRIES\*

Staying ahead of the curve – the critical mission that everybody faces! Tire Technology Expo 2024 is the unrivaled opportunity to address groundbreaking innovations, meet industry experts and share insights with fellow professionals. Find out more over the next 21 pages

By **CHARLOTTE IGGULDEN**

### 3 SPECIALIST SHORT COURSES

AKRON TIRE MECHANICS, MODELING & SIMULATION, TIRE REINFORCEMENT PAGE 21

**3 DAYS**  
OF CONFERENCE  
SESSIONS

PAGE 18

## HANNOVER

EUROPE'S MOST TIRE-FOCUSED CITY.  
A FANTASTIC VENUE PROVIDING EXCELLENT  
LOGISTICS AND EFFICIENCY

**4**

#### Mix and match

Mix and match your conference and short course options to make the most of the show

**5**

#### Networking

Benchmark with your peers and discuss the tire industry's biggest concerns

**6**

#### Awards

Celebrate the industry's achievements at the Tire Technology International Awards for Innovation and Excellence, presented live during the show

**7**

#### Out and about

Enjoy the evening entertainment on offer in Hannover, named a UNESCO City of Music, and home to many museums, concert halls and restaurants

\*Based on 2023 visitor attendance

## SUSTAINABLE SOLUTIONS FOR A CIRCULAR ECONOMY

Zeppelin Systems provides optimal engineered solutions for the mixing room and beyond, with 'green ticks' as standard. From upgrading an existing system to building a new plant, Zeppelin Systems creates solutions exactly to your needs to ensure maximum productivity of the highest quality. The company's leading materials handling technology and concepts have evolved from its vast plant engineering experience. It strives for sustainable premium technology solutions that meet the highest standards in terms of environmental and health protection.

Together with international partners along the value chain, the Zeppelin Sustainable Tire Alliance supports and enhances tire recycling

processes on an industrial scale with a holistic approach and a strong network. Recyclates gain outstanding importance as an essential part of the circular economy, and the company knows how to produce and reuse them. It creates solutions!

Visit the company's booth to get an overview of its systems and solutions for silo storage; pneumatic conveying; and weighing and feeding of powders, chemicals, solids and liquids, as well as its recycling technologies along the entire supply chain, all carefully managed by Zeppelin's automation packages.

**Zeppelin**  
**Booth 9000**



## COMPLETE AUTOMATED WINDING SYSTEM

Desmasa revolutionizes the concept of winding with a patented solution for a fully automated winding system for the tire industry. The complete automation of the winding application enables the company to have a more stable and non-stop production, which translates into improved results.

A feeding turntable at ground level enables easy handling by AGV or an operator of the reel/cassette. The table has a loading and unloading position with the possibility of 360° positioning. The solution has an automatic loading and unloading reel/cassette system.

The key to the complete automated system is the patented Automatic Liner Manipulator, which manages the tension control in winding and unwinding on a mobile roller column. It can also be fitted with optional peripherals such as a machine vision camera to control the production, and a material cutter. This is a fully automated solution, so it does not require operator intervention in any of the stages. Find out more at Desmasa's booth.

**Desmasa**  
**Booth 3014**

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## BELT DESIGN DELIVERS ENERGY SAVINGS AND MORE

Innovation is at the core of Intralox, and the company is excited to showcase its energy savings tech at the expo. The Series 900 Insert Roller, a cutting-edge belt, is a revolution in conveyor systems. It features rollers that extend above and below its surface, which support the belt on rollers on the carryway. Products move at twice the belt's speed. While the belt design is conceptually simple, it delivers sophisticated and multifaceted advantages, including reductions in energy consumption, increased belt life, and less wear on sprockets and other moving components than traditional conveyors.



To underscore the tangible benefits of this groundbreaking technology, Intralox is gearing up to provide live demonstrations remotely through its Demonstration Test Center in the Netherlands. This commitment to remain at the forefront of critical advances reflects the company's eagerness to share the positive environmental and economic impacts of its S900 IR energy savings technology with the world.

**Intralox**  
**Booth 8010**



**tire**  
TECHNOLOGY  
INTERNATIONAL 2024  
AWARDS  
FOR INNOVATION AND EXCELLENCE



## NOMINATIONS NOW OPEN FOR THE TIRE TECHNOLOGY INTERNATIONAL AWARDS FOR INNOVATION AND EXCELLENCE 2024

The **Tire Technology International Awards for Innovation and Excellence** are recognized as the industry's top accolades and aim to celebrate the best new technologies and innovations from all over the world. The awards are judged by a fully independent, international panel of journalists and industry experts, and will be presented live at Tire Technology Expo.

### CATEGORIES

- Environmental Achievement of the Year – Tire Design
- Environmental Achievement of the Year – Manufacturing
- Environmental Achievement of the Year – Industry Contribution
- Chemicals and Compounding Innovation of the Year
- Materials Innovation of the Year
- R&D Breakthrough of the Year
- Tire Manufacturing Innovation of the Year
- Tire Industry Supplier of the Year
- Tire Concept of the Year
- Tire of the Year
- Tire Manufacturer of the Year
- Young Scientist Prize
- Lifetime Achievement Award

See the awards presented live  
during Tire Technology Expo

## Course spotlight

MOHAMMAD  
BEHROOZI



### Vehicle dynamicist, GM

Moderator and tutor:  
Tire Modeling and its  
Application in Tire and  
Vehicle Development

The three-day course covers the computer modeling of tires within a full vehicle system and is aimed at engineers and researchers working in industry or academia. Fundamental modeling approaches are discussed in such a way that participants understand the concepts behind commercially available tire simulation packages or can attempt custom solutions.

Behroozi's presentation during the short course is on the finite element modeling of tires and covers FE modeling philosophy, the fundamentals of tire mechanical structure and material testing and modeling.

Participants will be able to expand their expertise in tire technology and engage with industry professionals at the forefront of tire modeling and simulation.

### By joining this course, participants will:

- Gain a comprehensive overview of tire modeling and simulation, covering essential building blocks and methodologies;
- Learn about tire testing, finite element modeling and the fundamentals of tire design;
- Benefit from real-world insights from industry experts at OEMs and other leading organizations;
- Explore the role of driving simulators in tire design and their impact on real-time simulation;
- Enhance their knowledge of terramechanics tire modeling;
- Understand the use of CD-Tire/MF-Tire/F-Tire in practical applications.

Please visit the conference section of the event website for all the latest information, from the full speaker list to the program schedule



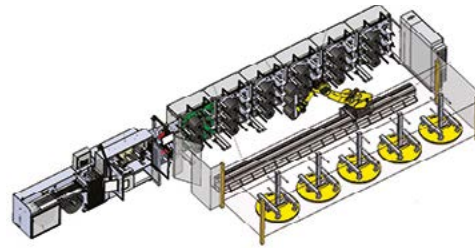
## SMART TIRE BUILDING, INSPIRED BY AI

The VMI booth at Tire Technology Expo 2024 will be all about smart solutions that optimize tire building and will further transform the industry. New advanced camera-based vision systems, self-learning AI algorithms and self-adjusting processes all contribute to further automation, improved flexibility, higher accuracy and the highest consistency and quality of products. Join VMI at its booth and discover its vision for smart tire building.

**VMI**

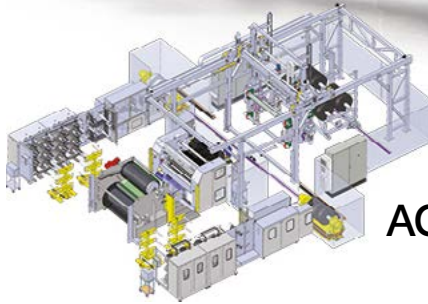
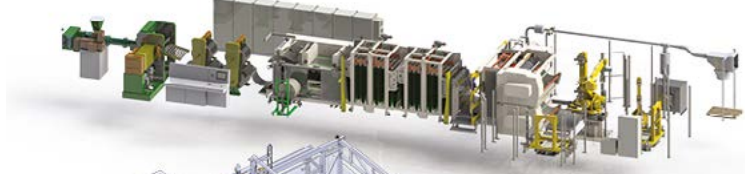
**Booth 8054**

Smart tire  
building...  
inspired by AI



**IN-LINE SPOOLING**

**GUM TAPE LINE**



**AQUIRION**

## BOOSTING PRODUCTIVITY IN RUBBER SLITTING AND SPOOLING MACHINES

For almost 70 years Spoolex and its well-known Calemar converting machinery division has been recognized by all the major tire companies as a key supplier in rubber slitting and spooling machines to cover all slitting needs in passenger, light truck, high-speed and two-wheel vehicle tire plants. More than its standard offline equipment, the company has for several years been developing fully automated lines for in-line continuous processes (in-line winding with its Gum Tape Line and

in-line spooling), as well as automated loading/conveying/unloading solutions with its Aquirion complete cell.

Visit Spoolex's booth to talk with the team about the company's user-friendly and reliable fully automated lines, and discover how Spoolex can help you to save time and costs while safely increasing productivity.

**Spoolex**

**Booth 8018**



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## TIRE EFFICIENCY TESTER

With the TET, ZF Test Systems has launched a tire test bench with the main task of determining the energy efficiency and rolling resistance of a tire.

The TET not only tests tires for efficiency, but it is also highly efficient itself. The use of electric drives eliminates the need for hydraulics, thus reducing energy requirements and maintenance. Braking energy is fed back into the system through recuperation. An important application of this machine will be safeguarding the label value, ensuring

adherence to stated specifications in tire production.

With the well-known test procedure according to ISO 28580, the rolling resistance coefficient can be continuously maintained in tire production in a cost-efficient manner. The high measurement quality also qualifies it for use in development centers. All other established test standards are optionally available.

**ZF Group**

**Booth 2000**





## SPRING VENTS FOR SPECIAL APPLICATIONS

The GACZ spring vent is a tiny thing that creates a huge difference in the appearance of a tire. It also brings economic savings because of the saved rubber and lack of need for tire trimming.

The spring vent is, by its very nature, an environmentally friendly solution because it prevents the creation of waste – the rubber spews. It's a small detail, but a game-changer.

Companies can even customize imprints on tires to differentiate tires with their pattern.



Also, it is worth nothing that when the imprint is not flat but has a texture, it does not shine and merges with the tire surface.

GACZ has developed many types of spring vents for special applications based on customers' requests. All such products will be on display at the expo in Hannover.

**Gottschol Alcuilux**  
**Booth 3003**



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## GREEN PATH OF SUSTAINABLE DEVELOPMENT

As a specialist in tire mold solutions, Himile continues on the path to green and sustainable development. Leading with the concept 'Be brave in innovation; carry on exceeding', Himile continuously develops and optimizes new products. The company has launched products and technologies such as electric heating vulcanization machines, efficient and energy-saving containers, vacuum containers, laser engraving and raw material recycling, to provide strong support in energy saving and emissions

reduction. Over 50% of energy saving is achieved on electric heating technology.

In addition, Himile also has facilities including schools and hospitals to provide nearby services to the public, alleviate urban public pressure and fulfill social responsibilities. Find out more about Himile's work toward a green and low-carbon future at the company's booth.

**Himile**  
**Booth 7042**

## INDUSTRIAL INSTALLATION SERVICES

Lifting Solutions provides installation services for many industrial sectors, executed by an ambitious, motivated and skilled group of people committed to achieving professional success, and dedicated modern and technically advanced construction plant and equipment.

The company's mission is to support clients in the development and expansion of their businesses through engineering projects.

It can install the full spectrum of industrial equipment – from individual machines to all production lines in a factory.

One of the sectors the company is proudly serving is automotive tire manufacturing, and over the years it has executed many investment projects for the majority of the world's manufacturers as well as OEMs, installing machinery for all steps and phases of the modern tire manufacturing process.

The company is looking forward to discussing how its experience, motivation for success, skilled engineering, team spirit and numerous plant and equipment can help visitors in Hannover.

**Lifting Solutions**  
**Booth 7039**





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## TWO PROCESSES FOR ECONOMIC ENERGY EFFICIENCY IN RUBBER GRINDING

Sustainability and economic production should go hand in hand. Hosokawa Alpine will present two grinding processes covering solutions for rubber grinding and other miscellaneous applications at Tire Technology Expo. The main objective in these processes is to ensure energy efficiency and a sustainable and economic production of the finest rubber powders.

The company's Cryogenic Grinding Process is characterized by cooling the material with liquid nitrogen. This makes it easier to process the particles. Combining the Hosokawa Alpine CW II pin mill with the Stratoplex ASP II gives a rotation speed of up to 250m/s and a throughput of 1,400kg/h. This creates the finest rubber powder sizes of 125µm (120 mesh) to 425µm (40 mesh).

The company's ambient grinding process uses pre-ground, pressured

and shear-stressed material. With this material the newest machine, the Rubber Powder Mill (RP), works smoothly and quietly. The separate classifying process uses a screen with exchangeable sieve meshes. The produced rubber powder (100–1,000µm) has great flow properties and mixing applications, and is ideally suited for the production of thermoplastic elastomers. Find out more at Hosokawa Alpine's booth.

**Hosokawa Alpine**  
**Booth 9026**



## Speaker spotlight

LI YANGUO

**Compound and material  
research, Linglong Tire**

Presentation title: Innovating on sustainable materials use for UHP green tire design



Automotive mobility is strongly driven by high-performance tire demand and environmental considerations. This presentation will highlight the recent progress of Linglong Tire in the R&D of sustainable materials introduced in its tires and innovative manufacturing (process/equipment) to maximize energy saving. It will also outline Linglong's commitment to achieving carbon neutrality through the future use of further sustainable materials while maintaining a high performance level.

**By attending this presentation,  
delegates will explore:**

- Sustainable material use for the tire industry
- Green process
- Energy saving in manufacturing equipment

Yanguo has been the material and compound department manager at Linglong since 2020. From 2008-2019 she was a compound and process engineer at Linglong. In 2008 she was awarded a doctorate major in materials and engineering from Beijing University of Chemical Technology.

Please visit the conference section of the event website for all the latest information, from the full speaker list to the program schedule



## BLADDER PRODUCTION EXPERTISE

Following a successful Tire Technology Expo 2023, MAE Industria Gomma (MIG), will showcase its bladder production expertise at the show in 2024.

The Italian company is well known in the retreading field, and after more than 25 years of experience in the production of curing bladders has been proposing itself as an important partner for new tire companies looking for bladder supplies externally.

MIG specializes in manufacturing curing bladders with compression and injection technology and is expanding its production

range with a brand-new injection machine using the latest technology available.

It is open to many kinds of cooperation, including providing bladders from its range, and manufacturing new bladders according to customer spec and requirement or using customer-supplied molds.



Following many years of experience, MIG, with its internal innovation-oriented department, has developed various specific compounds providing customers with high-performance curing bladders.

The company ensures flexibility according to requests of its partners, with short delivery time and stock levels according to customer needs in order to guarantee constant supplies. Find out more at the MIG booth.

**MAE Industria Gomma**  
**Booth 1010**





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## CONDITION MONITORING AND PREDICTIVE MAINTENANCE FOR INDUSTRIAL GEAR UNITS

At Tire Technology Expo 2024, SEW-Eurodrive will showcase its innovative concept DriveRadar IoT Suite for industrial gear units, a condition monitoring and predictive maintenance system for recording and evaluating operating data from industrial gear units. The suite makes it possible to reliably predict the behavior of drives as well as plan maintenance and repair measures in advance, thereby avoiding unplanned downtime.

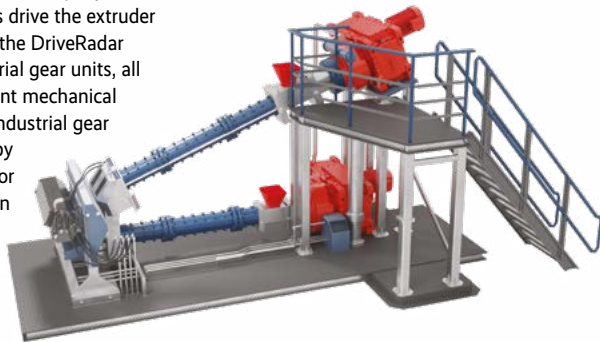
The advantages of this futureproof concept are illustrated by an application that is important for the tire industry: the extruder. Here, the company's industrial gear units drive the extruder screw. When using the DriveRadar IoT Suite for industrial gear units, all operationally relevant mechanical parameters of the industrial gear unit are measured by high-precision sensor technology and then evaluated and

interpreted with the aid of cutting-edge machine learning methods. Analysis algorithms can help allocate anomalies directly to a component. As a result, using the comprehensive web application or app, the customer always has a transparent overview of how healthy the monitored gear units are.

Customer benefits include avoiding downtime, reduced maintenance costs and targeted fault elimination.

Find out more by visiting the company's booth in Hannover.

**SEW-Eurodrive**  
**Booth 7046**



## Speaker interview

### Q&A

**TETSUYA MAEAKWA**

**Manager, Sumitomo  
Rubber Industries**



### What is your presentation about?

My presentation will focus on Active Tread, which is Sumitomo's innovative concept for the future mobile society. SRI is launching the first Active Tread product line, a new technology for autonomous vehicles that promotes the establishment of a sustainable society. SRI will help establish safety in the autonomous vehicle society by using Active Tread compounds that enable physical properties to actively switch to the optimized state in all weather conditions. The switchable performance makes it possible to eliminate the concept of border in the different tire categories.

Read the full  
interview online  
at [tiretechnology-international.com](http://tiretechnology-international.com)

### What is Active Tread technology?

This is unprecedented technology that enables the physical properties of rubber to adapt to changes in road conditions, such as wet conditions. The technology is necessary to realize safety by changing the grip performance of the tire tread.

In general, grip performance in wet conditions is lower than in dry conditions. However, Active Tread makes it possible for the physical properties of the tread compound to change to increase the grip force to its equivalent in dry conditions.



**SUMITOMO**  
**RUBBER INDUSTRIES**

## NEXT-GENERATION MACHINE VISION OPTIMIZES QUALITY CONTROL

Automated visual inspection during the complete tire manufacturing process is essential to meet the high quality standards expected in the industry today.

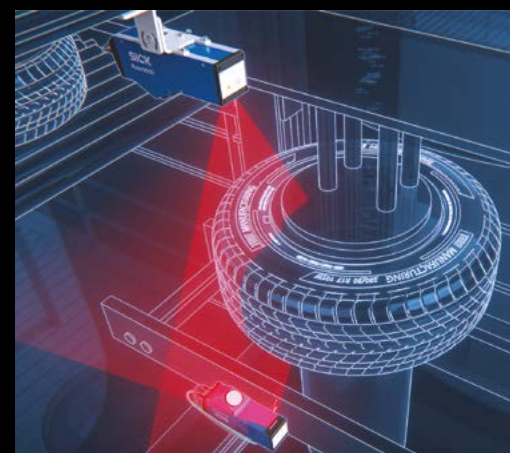
The high-speed 3D camera Ruler3000 from Sick – recently updated with a powerful 3R laser – ensures high-precision 3D measurements even on dark rubber at full production speed and, in combination with the Sick Nova software, enables complex applications with unprecedented simplicity.

The software enables rapid configuration of the visual inspection task as well as result communication in an easy point-and-click environment via a web browser. Sick Nova executes

both on embedded vision sensors from Sick, such as the Inspector and Visionary product lines, and on a separate computing unit in combination with, for example, the high-speed Ruler3000.

It further supports 3D and 2D Vision applications by comprehensive image processing toolsets, including tools for OCR and deep learning. Ruler3000 is an ideal match for applications such as tire uniformity, splice detection and DOT code reading. Find out more at the Sick booth.

**Sick**  
**Booth 4036**



## INTELLIGENT AND FLEXIBLE ELECTROMECHANICAL BEAD LOCK SYSTEM

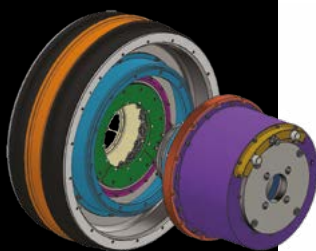
Automation, precision and flexibility are the key requirements for all steps in the tire building process. To address the rising number of requests for integrated production lines, Marangoni Meccanica has patented a newly developed system to automate the loading and unloading operations of the carcass and green tire. This tooling offers complete and precise control over the diameters of the flanges, even during shaped carcass rotation, as the inboard and outboard flanges can move synchronously or independently according to user preference.

Electronic control by drive also enables precise control of the bead lock force, which can be adjusted according to the recipe and adapted during the cycle.

Fluid and continuous expansion and contraction movements allow delicate management of the carcass and green tire, preventing surface damages to the bead area. During the engineering of this system, Marangoni Meccanica focused on these main aspects: user friendliness (fast size change, flexibility of adaptation to different cycles), easy maintainability (bead lock cartridge individually interchangeable) and safety (holding brake engaged during all manual operation and maintenance). For more details, visit the company's booth.

**Marangoni Meccanica**

**Booth 8040**



## GAME-CHANGING TIRE PAINT

Release agent specialist Münch Chemie International will unveil its latest innovation for tire manufacturing at the expo. Inside Lube IP-2134 is a high-quality inside tire paint designed to set a new standard for quality, environmental friendliness and efficiency.

Inside Lube IP-2134 is a water-based inside tire paint that is completely free of volatile organic compounds (VOCs). It contains no silicones, no per- and polyfluoroalkyl substances (PFAS) and no D4, D5 or D6 siloxanes. This not only makes it environmentally friendly but also reduces hazards and risks to employee safety and health in production facilities.

Inside Lube IP-2134 stands out for its semipermanent characteristic, made possible by carefully selected polymeric ingredients. This unique formulation enables multiple consecutive demoldings per application. This means a large increase in efficiency in tire manufacturing while reducing the need for post-treatment.

The versatility of Inside Lube IP-2134 is another major advantage. This product can be universally used in tire manufacturing, for production of passenger car tires, truck tires and specialty tires.

**Münch Chemie International**

**Booth 5016**



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## UHF READ/WRITE HEAD

How can economy and industry grow and at the same time require fewer resources? Optimizing processes is the key and automation can help to increase productivity.

For the tire industry, these standards offer new advantages, including traceability of automated material flow, seamless tire identification along the entire product life cycle, and improving the circular economy of tires. Pepperl+Fuchs designs RFID solutions for tracing tires and semi-finished goods, ideally from cradle to cradle.

The company will be showcasing at the expo its UHF F190-B40 read/write head (Sensorik 4.0) for the clear identification of green tires during vulcanization, reputedly the most powerful in its class. It is designed for reliable identification of green tires. Typically the UHF reader is integrated into the gripper of the curing press. This compact solution results in an especially space-saving installation. An onboard industrial ethernet interface enables easy PLC integration.

The tag in the green tire is automatically detected via RFID with absolute reliability. This validates the green tire and verifies the tire, production order and production parameters (pressure, temperature, process time). A high-performance antenna enables identification even under harsh conditions. Automated documentation of the manufacturing process ensures the traceability of production parameters during the entire life of the tire.



Reliable identification using RFID technology ensures a clear process sequence, high efficiency and machine availability. The rugged IP67 housing is ideal for harsh industrial conditions. The REST API allows simple connection to existing IT back end systems, such as MES and ERP. Additional IOs are available to make the reader extremely flexible. For example, read operations can be started or stopped as required via two trigger inputs. An internal output port can be used to indicate status of the identification process.

Many use cases demonstrate how intelligent sensor technology can reduce scrap, increase uptime and improve the circular economy of tires. This reflects the long-term vision of tire manufacturers and is key for sustainability.

Visit the company's booth and conference presentation to discover conceptual and practical solutions for the tire industry.

**Pepperl+Fuchs**

**Booth 4032**





## RETHINKING AUTOMATION

At the 2024 expo in Hannover, Beckhoff will be showing its modular MX-System, which heralds a revolution in automation technology and is considered the benchmark for circuitry for machines and plants.

The MX-System, a modular automation system, enables machines and plants to be automated without a control cabinet for the first time. Robust baseplates with screwed-on function modules come together to build an IP67-protected control system that replaces control cabinets and boxes in and on the machines. Designers and developers can rethink machine and system design entirely.

The MX-System has many benefits over the full machine life, from the initial planning for the machine through to series production and subsequent operation of the plant. Work is reduced substantially across the board. Certified to international standards, controllers based on the MX-System are suitable for global

use in machines and plants. Time-consuming assembly of components and circuitry that is prone to errors becomes obsolete. The footprint of the machines and the number of lines are also reduced. Energy-intensive air-conditioning is no longer required, as the system is designed for operating temperatures of up to 50°C.

Beckhoff bundles over four decades of automation expertise in the MX-System, which is evident in energy supply, fuse protection and distribution; generation and fuse protection of auxiliary voltages; sequence control with inputs and outputs; motor and actuator control; and connection level for field devices. Control disciplines such as pneumatics or unchanged classically structured control functions can be integrated via corresponding modules and adapters. Control cabinet design can therefore be revolutionized step by step.

**Beckhoff**  
**Booth 9063**

## AUTOMATIC SMALL CHEMICALS WEIGHING INNOVATION

Manual dosing of products in powder form can cause errors during the preparation of the recipe, which can jeopardize the result of the finished product, says Color Service.

The company is a leader in the development of automatic dosing systems for powder and liquid products, is thrilled to introduce its latest innovation, dedicated to small chemicals weighing – a safe and easy-to-use collaborative robot that works closely with humans in the manufacturing environment.

The COBOT collaborative robot is capable of automatically dosing any type of product with high precision, guaranteeing operator protection from dangerous products during the dosing and handling phase.

It can be supplied alone or combined with the MagRob handling robot for automatic storage system of raw materials, replacing the manual dosing station and eliminating the use of the operator during this specific process.

The COBOT not only ensures the highest levels of precision and minimizes human errors, but also leads to considerable savings in materials, time and resources.

**Color Service**  
**Booth 8034**



## TRIPLE FOUR-ROLL CALENDERING UNIT AND MORE

Comerio Ercole introduces the Triple four-roll calendering unit, a groundbreaking configuration designed to integrate various rubber processing operations, including fabric and steel cord rubberizing, rubber sheeting, innerliner production and more. The goal is to enhance product quality, productivity and plant flexibility.

The Triple line features a four-roll 'S' arrangement at 45° or 30° angles. The upper and lower rolls produce rubber sheets laminated between the rolls, allowing the production of thick rubber sheets without air bubbles. Hydraulic control systems ensure precise calendering with micrometric gap control and force control. The system can adjust to changing

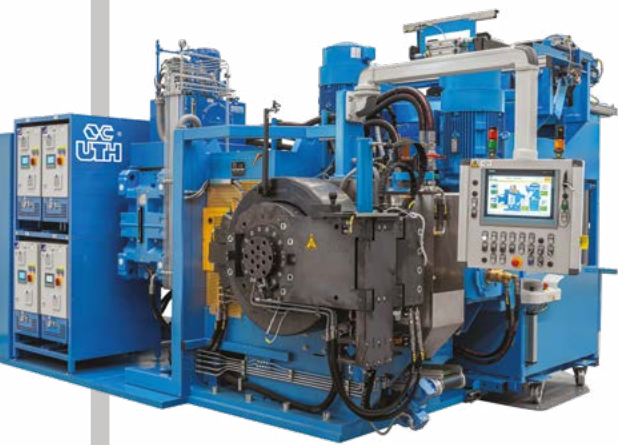
conditions, providing precise calibration and consistent rubber penetration into cords. It can be integrated for applications such as air-spring manufacture and innerliner gum production for

the tire industry. For rubber sheeting, the line includes cassette-type automation for efficient product management.

In addition, Comerio Ercole will present Hercules 4.0, the new digital platform for data product management, which includes anomaly detection algorithms based on artificial intelligence. Comerio Ercole will also showcase Fasteel, a revolutionary system developed for the automatic and fast changing of steel cord production. Also presented will be RewTire, a recent development for the recovery of non-vulcanized rubber tire process scraps in line with the circular economy and ESG concept.

**Comerio Ercole**  
**Booth 8006**





## COMPACT, HIGH-PERFORMANCE SOLUTIONS FOR OPTIMIZED TIRE COMPOUNDS

Product quality requirements have been continuously growing for the rubber processing industry over the past few years, while the pressure to reduce costs has greatly increased for some elastomer products.

Clean rubber compounds are the prerequisite for meeting these requirements. Rubber compounds with non-dispersed ingredients or impurities such as dirt or other foreign substances of course cause problems. They lead to an increase in rejection and waste rates.

This can be counteracted by straining the rubber compound. The roll-ex gear extruder technology allows the particularly gentle and precise extrusion of materials and the use of fine mesh screens. In recent years, fine mesh straining within the mixing line has become more popular as this process enables huge throughput for final batch, masterbatch and rework straining. Discover more at the company's booth.

**UTH**

**Booth 4002**



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## TRANSFER AND SORTING FOR TIRE PALLETIZING

In response to signals coming from the tire production market, based on the analysis of inquiries over the last two to three years regarding the automation of tire transportation in the areas of sorting, palletizing and storage, Transsystem, together with its partners, has developed solutions that meet current demand and trends.

The developed solutions put particular emphasis on increasing efficiency, including the elimination of bottlenecks in places where finished tires are received from the production line – where the entire production goes – and placed on pallets for transportation to the final warehouse for distribution, as well as forwarding them to further processes before they leave the factory and reach the end customer.

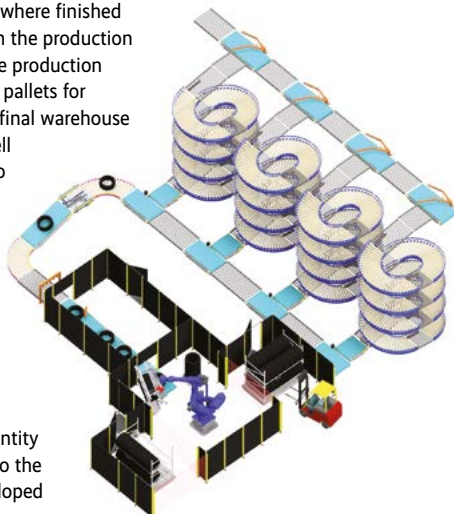
One is palletization, which involves placing tires on a pallet to transport a larger quantity of them at one time to the warehouse. The developed

palletizer station ensures precise and reliable movement control and accuracy of tire gripping and positioning, thereby reducing machine downtime and maximizing production efficiency.

An example of the second device is a stacker/destacker, which is perfect for the palletizing process, as well as for labeling stacks or individual finished tires.

**Transsystem SA**

**Booth 9016**



## HIGH-SPEED PRESSURE IMAGING

In the world of tire design and testing, precise data is paramount to understanding tire performance. Xsensor's High-Speed (HS) Tire system is an innovative tool for tire designers and test engineers, offering high-resolution contact patch pressure data essential for understanding tire behavior at speed.

Measuring tire surface pressure is challenging, especially on tracks with varying conditions. The HS Tire system uses high-speed sensors to provide reliable data in real-world conditions. A high spatial resolution enables designers and engineers to visualize the fine details in a tire, such as the sipes, grooves, tie bars and notches.

The system can be assembled and configured to record data in as little as 10 minutes, allowing users to capture fine tread details and record at over 450Hz, even at speeds up to 150km/h. The system's flexibility and portability make it ideal for multilocation testing, streamlining the testing process.

In the competitive field of tire design and testing, the HS Tire system is indispensable. It empowers engineers and designers to assess pressure profiles and make precise measurements for practical tire mechanics comparisons quickly. With its high-resolution, reliable testing capabilities, the HS Tire system leads the way in ensuring safer, more efficient, and better-performing tires on the road. Find out more by speaking to Xsensor representatives in Hannover.

**Xsensor Technology Corporation**

**Booth 3106**





## EXHIBITOR INTERVIEW TOMI PEKKOLA

### VP and sales and marketing director, Black Donuts Engineering

From concept to reality: Black Donuts Engineering on guiding newcomers on the road to tire success

#### Tell us a little about your company.

Black Donuts Engineering is the only one-stop shop for modern tire technology and the world's number-one tire technology expert and leading independent R&D specialist. Our services span greenfield to brownfield tire plant technologies, tire development services, technical expertise, testing, certification, production optimization and supply chain improvement. We offer services for new and existing product development for PCR, TBR, OTR, EV and agriculture and have expertise in areas such as stud technology and tread pattern development processes. From the blueprint stage to test drives, we've consolidated it under one umbrella.

Most of our people have a history in the tire industry. I spent 17 years at Nokian Tires.

At the heart of our operations lies the promise of providing all-inclusive solutions. From drawing to testing, our professionals have the necessary skills to cover all areas of tire manufacture and technology, including processes, material selection and equipment. Our team can conceptualize and build a tire plant, initiate production and innovate products. We work hands-on with our clients throughout the process to ensure every detail in the production aligns with their goals.

#### What will you be highlighting to visitors at Tire Technology Expo 2024?

We aim to show our services as a one-stop shop for the entire industry: as a full-service provider from R&D to tire testing. BD Testing is an innovative, independent company specialized in tire testing. We have our own outdoor drivers to test the tires. They have long experience in objective and subjective evaluation of tire performance, both in summer and winter conditions. For example, for winter tires, specifically studded tires, we have wide experience in how to test the tires to find out if they will pass all regulations or what should be developed. We can test all kinds of tires here in Finland, in Sweden or elsewhere in Europe.

Sustainability will be a major focus of future developments in tire technology. We are currently conducting additional tests for studded and other tires to address new road wear regulations. We look forward to sharing our tire testing methods and road wear impact assessment.

#### How is Black Donuts Engineering guiding tire industry newcomers on the road to success, and how is it working with established tire makers to optimize their operations in light of the prevailing trends affecting the tire industry?

Historically, there haven't been many newcomers into the tire industry, but this has increased a lot in the past five years; we are currently working with several newcomers. There is a domestic market in

**Black Donuts is a full-service technology house offering turnkey solutions for designing, building, supervising and running a smart tire plant with maximized productivity"**

those areas where there never used to be. The Tire Technology Expo Conference is very good for new companies, as they can acquire knowledge about the tire and what is needed to become a tire manufacturer.

Black Donuts guides tire industry newcomers on the road to success as we are a full-service technology house offering turnkey solutions for designing, building, supervising and running a smart tire plant with maximized productivity and best-in-

class products. All the customer needs are financing and the location; we'll handle everything else for the project.

We combine energy efficiency, a smaller factory footprint and machines with the latest technology to deliver unparalleled sustainability in tire production. By choosing greenfield tire plant solutions, customers can be confident that they are contributing to a greener future without compromising on quality or productivity.

When we talk about the top companies in the world, the scope can be different from a turnkey but we can, for example, design the factory, take care of equipment specifications and procurement and the training of employees. We work with 20 out of the world's top 25 tire manufacturers, providing tire development services, technical expertise, testing, certification, production optimization and supply chain improvement. However, it's not always a full-scale project with big manufacturers. Our scope can be negotiated project-to-project. The reason customers come to Black Donuts is that they're looking for an additional view and consultation on how this kind of project could be done.

#### How is the company innovating to meet sustainability goals and reduce its carbon footprint?

In R&D, we are solving the tire challenge by replacing fossil fuel-based synthetic rubber and carbon black with natural rubber and nanocellulose. So, in terms of sustainability, our journey involves the development of bio-based raw materials and recycled materials without sacrificing tire performance. Our mission has two main objectives: protecting the environment and reducing carbon footprint and emissions.

**Black Donuts Engineering**  
**Booth 8038**

Please visit the event website for all the latest information, from the full exhibitor list to the program schedule





## ARTIFICIAL INTELLIGENCE FOR GREEN AND EFFICIENT TECHNOLOGIES

NTE Process is a single-source provider of turnkey systems with process solutions for Industry 4.0, ranging from dense-phase pneumatic conveying to mixing, and liquid injection, drying, atomization and in-line formulation to packing. The company will be at the expo to show its dense-phase pneumatic conveying systems that are equipped with patented Air Assist technology and are ideal for primary products for tire production, ensuring the integrity of carbon black and silica (fines <1%).

Suitable for low-speed transportation systems (<5m/s) and long distances (over 150m), Air Assist technology uses the patented Eco Dense-Tronic technology. As a result of artificial intelligence, Eco Dense-Tronic increases system efficiency up

to 40% and reduces energy consumption by up to 70% with an annual CO<sub>2</sub> saving equivalent to almost 3,000 new trees planted each year.

Such equipment has a self-diagnosis and self-learning system with continuous monitoring of pressure and line flow, with a reduced degradation of the conveyed product (fines increase <1%).

NTE Process offers the patented air mixers Blender M244 and Jetmixer M531, which have no mechanical parts in contact with the product. NTE Process's air blender uses only air to mix products with different bulk densities and particle sizes, in a quick and effective way, ensuring specific control of the process requirements. Combining the air mixers with the Liquid Injection Skid

M535, liquids are injected directly into the piston chamber. Such patented technology improves oil and silane dispersion in powders (silica, carbon black, etc), using air as the distribution vehicle. The system can inject up to six liquids at the same time, preventing the powder from accumulating on the nozzle with the drop effect that generally characterizes traditional injection systems.

NTE Process has a research and innovation center equipped with a pilot plant, where it is possible to perform both scientific and full-scale tests to simulate the performance of technologies.

**NTE Process**

**Booth 8019**



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## TIRE IDENTIFICATION

Tires differ in rubber compound, tread pattern and size. Furthermore, each tire is unique and has an individual fingerprint, almost like an ID card. A new solution from Koenig & Bauer Coding makes it possible to recognize and read tires without applying any known industrial code.

Offering 100% control of tire authenticity, sophisticated software matched to top-quality camera technology enables the identification of tires anywhere in the world in just a few seconds.

The company claims that this solution offers more than just the physical recognition of objects. Visit the booth to find out more.

**Koenig & Bauer Coding**

**Booth 1040**

## MOLD INNOVATIONS

Hefei Wide Way Mould will be showcasing its technological innovations for molds, advanced equipment and other innovative products at Tire Technology Expo in Hannover.

Its technological innovations for molds include laser engraving, metal 3D printing, mold sidewall and insert precision engraving for high-precision assembly of mold sidewall and inserts, and aluminum pattern block internal organization and roundness improvement.

Meanwhile, the company's advanced equipment encompasses a laser engraving machine, a five-axis machining center and a fine engraving processing center.

Other innovative products on show at the expo will include snow tire S-type products, a vacuum system container, a non-inflatable tire mold, electric heating container products and a multipiece ventless mold.

In the future, the company expects to develop and use new environmentally friendly materials in mold processing, to further innovate technology by integrating processes and improving product quality. It also seeks to become green and sustainable with environmental protection.

**Hefei Wide Way Mould**

**Booth 4017**



## BLDC MOTORS FOR HIGHER PRODUCTIVITY AND FREEDOM FROM MAINTENANCE

Under the EL.Motion brand, Erhardt+Leimer offers two types of brushless motors with integrated controller: linear drives of type AG and rotary drives of type AD.

With these motors, E+L actuating drives guarantee the highest control accuracy and control dynamics. They can be used for position control, speed control or torque control and are particularly suitable for applications where very quiet operation and long service life are key. The combination of distributed intelligence with a dedicated interface concept enables a decentralized drive topology to be implemented that greatly reduces wiring and space requirements in the control cabinet, saving costs and resources for the customer.

A wide range of communication standards is available for these drives, together with a large number of sensors and input/output modules. All drives come with

web-based management on board as standard. This means that when the motor is connected via ethernet it can be addressed from the browser of a PC, allowing an operator to check and adjust settings or query the current status. E+L also offers open access via ethernet/UDP or certified standard protocols such as ethernet/IP, Profinet and Powerlink. Find out more at E+L's booth.

**Erhardt+Leimer**  
**Booth 2010**



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## Speaker spotlight

**JEREMY VAYSSETTES**

**Development program  
leader for connected  
mobility, Michelin**



**HÉLÈNE BATHIAS**

**Initiative leader for  
connected offers, Michelin**



Presentation title:

**Tire predictive  
maintenance solutions**

To provide services that satisfy auto makers' expectations, Michelin has developed a complete offer around algorithms based on vehicle data.

Vayssettes and Bathias's presentation will focus on algorithms for tire predictive maintenance and related uses for auto makers. The algorithms developed by Michelin are sensor-free, tire brand agnostic and easy to deploy. The presentation will cover the advantages of the Michelin approach and illustrate its accuracy level with proven results.

**By attending this presentation, delegates  
will explore:**

- A solution to predict tire end of life
- Use case for tire predictive maintenance
- Deployment constraints and learnings

Please visit the conference section of the event website for all the latest information, from the full speaker list to the program schedule



## CHEMICALS AND MATERIALS

### SULFURING SILANE COUPLING AGENTS

Ecopower (Yongxiu) New Material specializes in the manufacturing, research and development of sulfuring silane coupling agents, with an annual capacity of 21,000MT for tires, footwear and rubber goods. Sulfuring silane with multiple functional groups is successfully used in the rubber industry to improve the modulus and tensile strength of rubber, and reduce the compound viscosity and process energy consumption.

The company has the necessary technical expertise to solve today's challenging opportunities with its products and provide custom synthesis solutions to customers. Its technical staff are always available to collaborate on projects and deliver premier value.

**Ecopower (Yongxiu)  
New Material Co.**  
**Booth C528**



## AUTOMATED INSPECTION IN TIRE CORD WEAVING

Uster Q-Bar 2 monitors the weaving process on tire cord looms and helps prevent repeating defects. This inline inspection system from Uster Technologies provides full process control for increased first quality and reduced waste.

The usual rule in tire cord weaving is that higher quality means higher production costs. With Uster Q-Bar 2, that rule becomes invalid.

The system boosts tire cord quality through automated and precise defect detection. Any irregularity is identified during the weaving process, so users can be proactive in preventing defects at the earliest-possible stage. This saves raw materials by reducing the production of second-quality cords.



Installations at global producers of tire cords prove that Q-Bar 2 excels in reliably pinpointing defects, even beyond normal weaving issues – for example, oil stains or subtle imperfections such as transparent

lubricants. The system displays the fault image and position in real time. Each identified irregularity is documented and recorded for subsequent classification and grading purposes.

Its positioning on top of the loom allows installation of the Uster Q-Bar 2 on existing weaving machines.

**Uster Technologies**  
**Booth C616**

## SUSTAINABLE SOLUTION SBR AND LITHIUM BR

The preservation of Earth and the prosperity of the human race are embodied in Zeon's corporate philosophy, and the aspiration to realize a sustainable Earth (geo) and a safe and comfortable life (eon) is branded in the company name.

As a chemical manufacturer, the achievement of carbon neutrality by 2050 is a vital issue for Zeon. In order to achieve it, the company has formulated a masterplan for carbon neutrality. Launched in 2021, one pillar of the medium-term business plan strategy (Stage 30) is to promote a transformation of manufacturing (monozukuri) to realize carbon neutrality and a circular economy.

ZS Elastomers, the joint venture between Zeon and Sumitomo Chemicals, is well known for the advanced solution SBR and lithium BR technologies it has contributed to this transformation by shifting to sustainable raw materials, a key element of the masterplan.

After entering an MoU on October 2, 2022, with Shell Eastern Petroleum in Singapore, Zeon has recently obtained international certification for biomass-derived raw materials as a mass-balanced concept (ISCC+). It enables ZS Elastomers to provide the European tire market with sustainable solution SBR and lithium BR with ISCC+ certification.

ZS Elastomers can offer the advanced technology of S-SBR and lithium BR, the 'fourth generation', which optimizes silica dispersion, improves rolling resistance and grip performance. They are the building blocks of high-performance tires. Synergizing advanced polymer technology and the sustainability of raw materials has been Zeon's passion to realize the company's vision to protect the environment and aim for a better life.

**Zeon**  
**Booth C326**

## MODIFIED VEGETABLE OIL AS A SUSTAINABLE BIO-BASED PLASTICIZER

The large consumption of petrochemical base raw materials affects the ecological environment. Cheeshine has developed different series of modified cashew oil and soybean oil (non-food chain) with high biomass content and free from PAHs. The special modification improves the processing property, has excellent low-temperature performance, good plasticizing effect, excellent physical property and low rolling resistance. Modified vegetable oil does not cause harm to the environment, equipment or personnel under correct operation, and greatly reduces the toxicity and corrosiveness of original cashew oil. Furthermore, modified vegetable oil has good compatibility with various rubbers, instead of TDAE, esters or

polyether plasticizers. It will help to accelerate the transformation of the bio-based industries and plays an important part in contributing to low-carbon energy conservation. Find out more at Cheeshine's booth.

**Cheeshine**  
**Booth C436**



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## ADVANCED SILANES

Momentive Performance Materials' advanced silanes are used to chemically link polymers and fillers and help achieve optimal tire performance. The company's advanced silanes are also key to link tire sustainability to tire performance. Why? Momentive advanced silanes help reduce environmental impact, especially in tire use. Emissions can be reduced through improving rolling and wear resistance.

NXT silane contributes to reducing the tire footprint during manufacture, as processing of challenging tread compounds can be improved via lower temperatures and fewer mixing steps.

NXT P97 silane is new to Momentive's product portfolio. Use of NXT P97 silane can result in improved tire wear and excellent rolling resistance performance. Reducing wear is critical for achieving tire sustainability.

Recently the bio-based content in the company's silanes has been further increased to up to 80%.

Visit Momentive's booth at Tire Technology Expo in Hannover to find out more about how the firm's advanced silanes can help achieve tire sustainability goals.

**Momentive Performance Materials**  
**Booth 4027**

## DYNAMIC MECHANICAL ANALYZERS

Discover the recent new features and capabilities of the Metravib DMA instrument range and its benefits, including new Dyna+ software for the DMA+ series with extended testing capabilities, new test sequencing possibilities, extended test controls, advanced DMA tests and fatigue tests fully mixable and automated with Xpander. All dynamic tests can be chained without losing time.

Other features include optimal repeatability with optimized automated tension mode using Xpander, a six-axis robot dedicated to DMA+ range for automated tension, compression and

shear tests; a specimen viewer to watch and store the specimen's image among the whole test; operator alert to enhance remote communication between the testing machine and the operator to feed the testing machine with specimens or to launch new test campaigns at the right time without losing precious testing time; pull-out tests to check the interface of the cords/rubber matrix.

Meet the Metravib team at its booth at Tire Technology Expo 2024.

**Metravib DMA**  
**Booth C236**



## LIQUID-PHASE MIXING TECHNOLOGY

Ecombine will be at the expo to talk to visitors about its continuous liquid-phase mixing process, which mixes tire-applicable rubber solutions and filler slurry (mainly consisting of silica/carbon black) directly in the liquid phase. Liquid-phase mixing technology has less constraint on filler morphologies and filler loading. The mixing technology greatly improves the dispersion of fillers, enhances filler-polymer interaction and results in better overall performance of the products while reducing energy consumption compared with traditional compounding methods.

Combining synthetic rubber technologies and advanced nanofiller manufacturing technology, Ecombine's streamlined manufacturing processes minimize energy consumption and deliver environmentally sound, high-performance rubber materials called EVEC. EVEC will provide further improvement to rolling resistance, wear and wet-braking performance of tires.

**Ecombine Advanced Materials**  
**Booth C508**



# TIRE TECHNOLOGY EXPO CONFERENCE



## Tire Technology Expo's prestigious conference is once again at Deutsche Messe in Hannover, Germany, March 19, 20 and 21, 2024

Next year's Tire Technology Expo Conference will feature more than 180 expert speakers from leading companies and institutions, such as **Michelin, Apollo Tyres, Sumitomo Rubber Industries, GDSO, Kumho Tire, Jaguar Land Rover, University of Twente** and many more, including **The European Commission**. Presentations will highlight the issues and trends set to dominate the tire business in the future, with plenty of opportunity for audience participation, as well as dedicated panel discussions to ensure a lively debate and exchange of ideas.

Leading speakers include: **Li Yanguo**,

compound and material research, Linglong Tire; **Guy Heywood**, vice president, Hankook Tire Europe; **Mohammad Behroozi**, vehicle dynamicist, GM; **Tetsuya Maeakwa**, manager, Sumitomo Rubber Industries; **Jan Prins**, technical group leader for wheel and tire development and modeling, JLR; and **Dalia Broggi**, project manager, scientific research, European Commission.

Tire Technology Expo Conference is one of the year's best networking opportunities. Stay up to date on the latest speaker additions by visiting the website: **[www.tiretechnology-expo.com](http://www.tiretechnology-expo.com)**



## CONFERENCE SESSIONS AT A GLANCE

- Global tire industry outlook and trends
- The circular economy and sustainability in tire lifecycles
- Understanding and mitigating tire road wear particles
- Advances in tire R&D and manufacture – exploring the implications of AI, IoT and Industry 4.0
- Smart tires: The ecosystem, technological advances and possibilities
- Advances and innovations in materials technology
- Sustainable tire manufacturing – outlook and possibilities
- Evaluating and analyzing tire performance
- Reinforcement: Developments in materials, manufacturing and testing
- Designing and developing tires for future mobility requirements

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**SPEAKERS**  
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## 20 MUST-SEE SPEAKERS!

Visit the website to view the full program – more than 180 speakers

### Emissions of tire road wear particles by a vehicle

Frederic Biesse, senior fellow for tire physics and modeling, Michelin, France



### A study of the effect of road roughness on cornering stiffness

Marco Furlan, senior modeling and simulation engineer, Calspan, USA



### New functionalized LiBR for enhanced tire compounds

Federico S Grasso, technical manager – tire, Versalis SpA, Italy



### Experimental measurements of rubber friction and flash temperature

Tom Sanders, doctoral researcher, Loughborough University, UK



### The latest tire modeling and testing developments at Jaguar Land Rover

Jan Prins, technical group leader, JLR (Jaguar Land Rover), UK



### Use of silane terminated resins in new high NR loading in tread formulation

Vincent Greff, rubber technical manager, Cray Valley – TotalEnergies, France



### Elucidating the impact of functionalized rubber coupled to silica

Marcin Sek, PhD candidate, Apollo Tyres Global R&D BV, Netherlands



### Active tread: Sumitomo's innovative concept for the future mobile society

Tetsuya Maeakwa, manager, Sumitomo



### Pyrolysis of specific parts of end-of-life tires

Krzysztof Wróblewski, CEO, Contec SA, Poland



### GDSO – beyond tire electronic identification

Riccardo Giovannotti, secretary general, Global Data Service Organisation for Tyres and Automotive Components (GDSO), Belgium



### React or non-react? Insights into silica/silane/functionalized SBR compounds

Prof. Anke Blume, University Professor, University of Twente



### Tire materials and technology arms race

Guy Heywood, vice president, Hankook Tire Europe GmbH, Germany



### Wear impact on tire temperature, temperature impact on tire wear

Antonio Sorrentino, tech product manager, MegaRide Srl, Italy



### Environmental impact of retread tires: lifecycle assessment methodologies

Tiffany Charbouillot, LCA expert, Michelin, France



### Creating a universal tire geometry testing solution

Oliver Scholz, deputy head of department, Fraunhofer Institute EZRT, Germany



### Sustainable materials for green tire development

K R Krishnan, senior deputy general manager, Balkrishna Industries Limited, India



### Innovating on sustainable materials usage for UHP green tire design

Li Yanguo, compound and material research, Linglong



### Tire predictive maintenance solutions

Dr Jérémy Vayssettes, development program leader for connected mobility and Hélène Bathias, initiative leader for connected offers, Michelin, France



### Degradation of tires during regular operation

Dr Radek Stoczek, general manager, PRL Polymer Research Lab, Czech Republic



Polymer Research Lab.

### CheeShine modified vegetable oil as bio-plasticizer for tire application

Hai Li, director of R&D Center, Jiangsu CheeShine Performance Materials Co Ltd, China



**10 SESSIONS INCLUDING MATERIALS, SUSTAINABILITY AND SMART TIRES STREAMS**  
**PLUS 3 SPECIALIST SHORT COURSES**



## The University of Akron 53<sup>rd</sup> Tire Mechanics Short Course

The course will be held concurrently with Tire Technology Expo 2024 in Hannover, Germany, March 18, 19, 20 & 21, 2024 – starting the day before the exhibition opens

SCAN CODE  
TO BOOK!



### THE COURSE

This four-day educational and developmental course will provide engineers and scientists with an in-depth, intense study of the latest developments surrounding tire engineering. The course is designed for practicing engineers, chemists and scientists who are concerned with tires and vehicles and who have an engineering or science background at the Bachelor of Science level.

The basic and practical aspects of the mechanics of pneumatic tires will be introduced by internationally renowned experts in tire mechanics. Extensive, detailed course notes prepared by each instructor will be provided for all participants, along with a 700-page e-book, *The Pneumatic Tire*, edited by Professors Gent and Walter. Those who complete this course will receive a certificate from the University of Akron.

Welcome and introduction:

**Dr Xiaosheng Gao**, Department of Mechanical Engineering, College of Engineering and Polymer Science, the University of Akron

Tire components, tire compounds and tire materials:

**Dr Annette Lechtenböhmer**, Goodyear Innovation Center, Luxembourg (retired); associate editor, *Tire Science and Technology* journal

The tire as a vehicle component:

**Dr Gerald Potts**, GRP Consulting  
**Dr James Cuttino**, Yokohama Corporation of North America

Impact of rubber and reinforcement properties on tire footprint mechanics:

**Dr Mahmoud Assaad**, global tire performance prediction, computational mechanics, the Goodyear Tire & Rubber Co. (retired)

Virtual tire modeling for improved performance:

**Dr Ronald Kennedy**, Center for Tire Research, the University of Akron and Virginia Tech (retired); associate editor, *Tire Science and Technology* journal

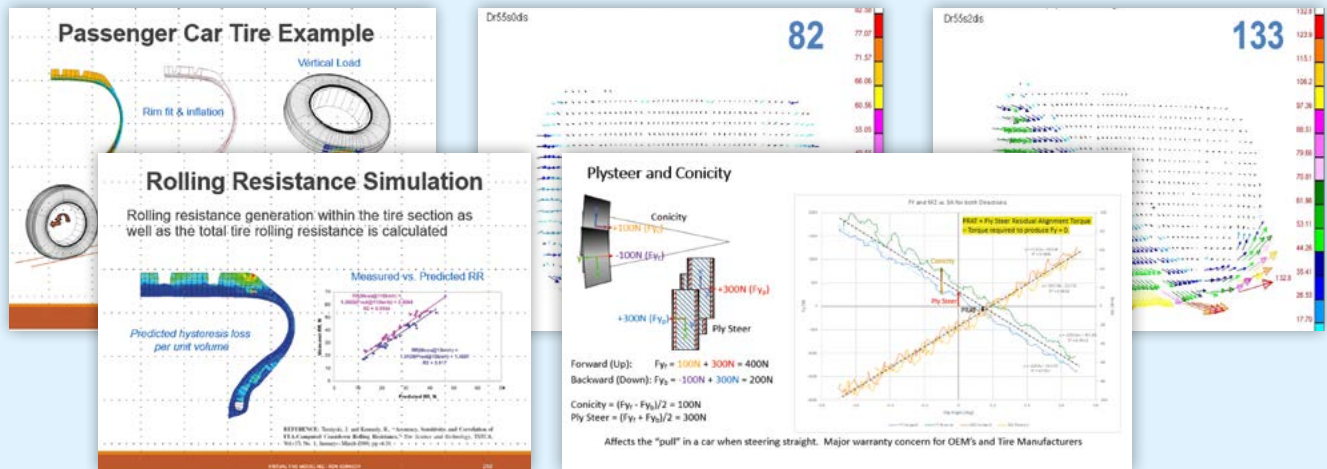
**For course information**, please contact:

Dr Xiaosheng Gao, Department of Mechanical Engineering, College of Engineering and Polymer Science, the University of Akron, Akron, OH 44325-3903, USA  
Tel: +1 330 972 2415 | xgao@uakron.edu

**For registration information**, please email:

Tim Sandford, conference director, UKi Media & Events | tim.sandford@ukimediaevents.com

**COURSE FEE: €1,950 plus German VAT**



## Testimonials: What our alumni think of the course

**“The University of Akron Tire Mechanics Symposium is very informative and provides an idea where the tire technology is heading today. It is very useful in day-to-day work”**

Haran Periyathambiy, Goodyear Tire & Rubber Company

**“This symposium is equally valuable to the expert and to the novice; the expert can interpret his micro-expertise into the macro world of tires, while the novice can get a kick-start in developing his own expertise”**

JK Valaitis, Valaitis Consulting

**“An excellent course – well run. Most people at Bentley Motors involved with tires have now completed the course”**

Dr Andrew McKinlay, Bentley Motors

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days

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renowned tutors

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hours of  
intensive learning

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## Tire Modeling and its Application in Tire and Vehicle Development Short Course

The course will be held concurrently with Tire Technology Expo 2024 in Hannover, Germany, March 18, 19 & 20, 2024 – starting the day before the exhibition opens

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TO BOOK!



Join us for this course to expand your expertise in tire technology and engage with professionals at the forefront of tire modeling and simulation. Don't miss this opportunity to stay up to date with the latest advancements in the industry.

### THE COURSE

The course covers the computer modeling of tires in a full vehicle system and is aimed at engineers and researchers working in industry or academia.

The subject matter will be of primary interest to vehicle dynamics engineers, for whom the tire is the primary force and moment generation element on the vehicle. The course is also useful for engineering managers who wish to understand existing tire modeling activity and its challenges, or to successfully implement new tire simulation processes in the workplace.

The course starts with an overview of tire force and moment characteristics and relates these to the physics of the tire-road interaction. Fundamental modeling approaches are discussed in such a way that participants can understand the concepts behind commercially available tire simulation

packages or even attempt their own custom solutions. Empirical, data-based tire models and the associated laboratory and field testing of tires for model fitting have a special place in tire force simulation and are also addressed in detail. Finally, several state-of-the-art commercially available tire simulation models are presented, covering families of empirical and physical models.

Join us for this course to expand your expertise in tire technology and engage with professionals at the forefront of tire modeling and simulation.

### PRESENTERS

**Mohammad Behroozi**, General Motors

**Flavio Farroni and Andrea**

**Sammartino**, MegaRide

**Axel Gallrein**, Fraunhofer ITWM

**Mathieu Grob and Julien Levray**, JEDAI

**Carlo Lugaro and Alex O'Neill**, Siemens

**George Mavros**, Loughborough University

**Henning Olsson**, Calspan Corporation

**Jan Prins**, Jaguar Land Rover

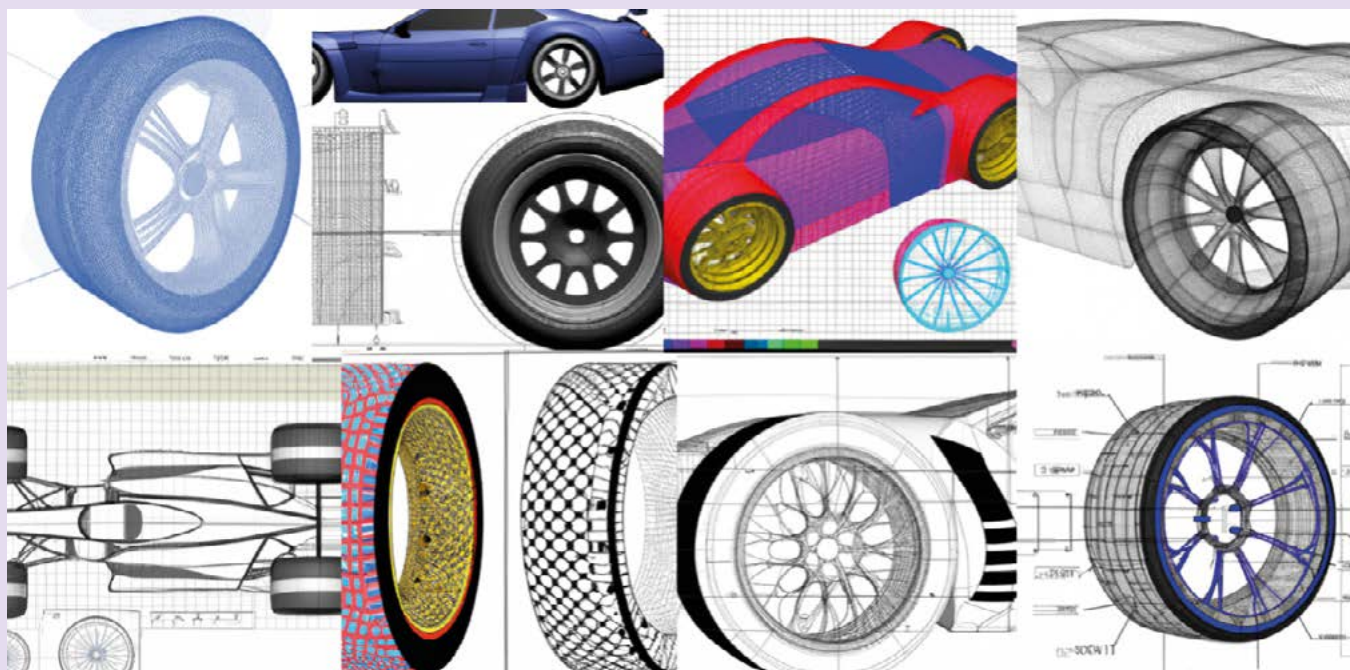
**Joachim Stallmann**, cosin scientific software

By participating in this course, delegates will:

- Gain a comprehensive overview of tire modeling and simulation, covering essential building blocks and methodologies.
- Learn about tire testing, finite element modeling and the fundamentals of tire design.
- Benefit from real-world insights from industry experts at OEMs and other leading organizations.
- Explore the role of driving simulators in tire design and their impact on real-time simulation.
- Enhance your knowledge of terramechanics tire modeling.
- Understand the use of CDTire/MF-Tire/FTire in practical applications.

For registration information, please email: Tim Sandford, conference director, UKi Media & Events | [tim.sandford@ukimediaevents.com](mailto:tim.sandford@ukimediaevents.com)

**COURSE FEE: €1,575 plus German VAT**



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OEMs and leading  
organizations

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short course

# 10<sup>th</sup> Tire Reinforcement Materials, Applications and Fatigue Testing Short Course

The one-day course will be held on March 18, the day before the exhibition opens

SCAN CODE TO BOOK!



## THE COURSE

This one-day course provides an understanding of the use of materials and constructions for rubber reinforcement in the tire. This course is intended for tire reinforcement engineers from design and material laboratory departments of tire manufacturers and their reinforcement suppliers.

The specific requirements of reinforcement are explained for the different tire components. The generic steel and textile cord material properties, constructions and manufacturing are introduced. Industry specialists from leading reinforcement manufacturers will give

further in-depth presentations specifically for steel cord, polyamide, polyester, rayon and aramid reinforcement. The course also includes static and fatigue test methods to validate the tire reinforcement in material laboratories for relevant application in the tire.

- Applications of steel cord
- Overview: textile constructions and basic processes
- Applications of PA & PET
- Applications of rayon
- Applications of aramid
- Material fatigue test technology

## PRESENTERS

**Danil Vaganov, Yunfang Tang, Bekaert**  
**Philippe van Bogaert, Bogimac**  
**Britta Zimmerer, Sonia S Schreiner, Cordenka**  
**Patrick De Keyser, DeKeP**  
**Seda Araci, Kordsa**  
**Michel van den Tweel, Teijin**

For registration information, please email:  
 Tim Sandford, conference director, UKi Media & Events | [tim.sandford@ukimediamevents.com](mailto:tim.sandford@ukimediamevents.com)

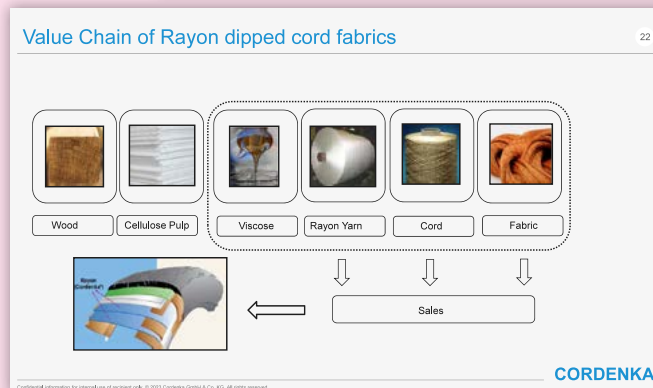
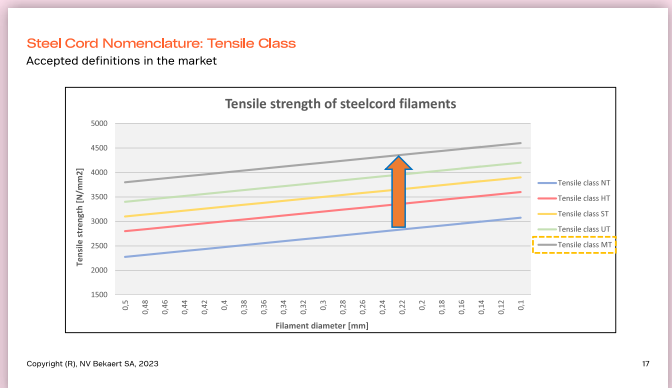
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**5 Radial tire construction**

Tire reinforcement components :

- Longitudinal cap ply**
  - contain centrifugal deformation
- Biased belt plies**
  - base to the tread cap
  - lateral & longitudinal stiffness
  - resistance to puncture & impact
- Radial carcass, body plies**
  - torus structure under air pressure
  - transfer axle load to ground
  - transmit traction & braking effort
- Multi-wound bead bundle**
  - base of carcass structure
  - tire seat on rim

**bogimac** TTX 2023 Introduction to the "Tire & Reinforcement Materials Course" Bekaert-bogimac-Cordenka-DeKep-Kordsa-Teijin



**69 > FER also enables the change from Relative to Absolute Testing**

FER validates now also the underlying physics of the test method

**bogimac** Material Fatigue Testing Equipment for Rubber & Tire Reinforcement

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Access to the Tire Technology  
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## CONTINUED LEARNING

You will also receive the  
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## TECHNOLOGY AND NETWORKING

The course includes a visit to the  
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 the entire industry with 240 exhibitors  
 covering every facet of tire design  
 and tire manufacturing technology



# THE WORLD'S PREMIER TIRE TECHNOLOGY SHOWCASE **240+ EXHIBITORS**

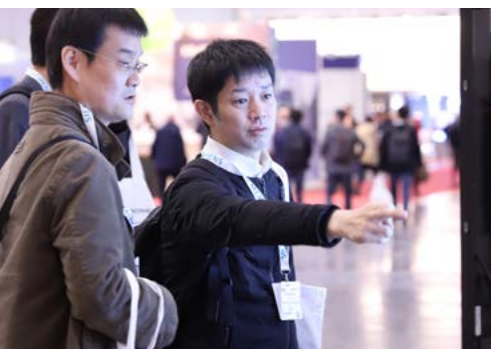
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