

# 2018 ITEC TIRE MANUFACTURING Conference Guide

Organized by **Rubbers, Plastics News** a CRAIN communications inc. event CRAIN COMMUNICATIONS inc. event inter-tireshow.com



# VMI MAXX



# THE VMI MAXX RADIAL PASSENGER TIRE BUILDING MACHINE MAXIMIZES OUTPUT, QUALITY, ERGONOMICS AND FLEXIBILITY.

Set-up times, maintenance and machine complexity have been minimized, making it possible for just one person to operate multiple machines. The innovative vision system furthermore guarantees a true hands-off and eyes-off process.

- Lowest cost per tire
- Uncompromising quality
- Exceptional productivity
- Outstanding flexibility

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# technology meets success.

ITEC WELCOME





Walter Waddell



**Larry Evans** 

# **ITEC2018 TIRE MANUFACTURING WELCOMES YOU!**

Dear Returning Friends and New Colleagues:

We are again pleased to be a part of the professional staff at *Rubber & Plastics News* as returning Co-Chairs of the International Tire Exhibition & Conference. ITEC 2018 is the first meeting in over twenty years for which Harold Herzlich will not be a Chairman. Larry and Walter wish to thank him for the excellent job that he has done with ITEC over the past two decades, and personally wish him a very happy and deserved retirement.

The global tire industry has many excellent venues from which you can choose. We are happy to offer this dedicated ITEC organized for audiences here in the United States. At ITEC 2018 you have the opportunity not only to listen to, but also to meet and discuss with world leaders speaking on a wide variety of technical topics directly applicable to the tire industry. These technical advances include: new and improved tire materials, established and exploratory methods of materials characterization, tire component characterization, tire failure analysis, manufacturing equipment design, automated manufacturing processes, and standard and developing methods to test tires in the laboratory and on the track. New to this conference are two educational opportunities: a three-day 47th Tire Mechanics Symposium, and a two-day Rubber Extrusion Technology course. Finally of great importance is the adjoining ITEC exhibition which allows you to leisurely browse the show floor, or after hearing about a new material or equipment development at the conference to be able to immediately follow-up by visiting a company booth for in-depth product and equipment literature and information.

This week we have assembled nine sessions covering a wide range of technology on essentially every aspect of manufacturing a tire, from material ingredients to equipment and automation, and to testing. In addition at a special Wednesday morning session, we start with a breakfast in honor of the Harold Herzlich Award recipient, Steve Cron of Michelin Americas Research Center, followed by his Award presentation, two invited plenary presentations, and culminating with the Keynote Address by Mr. Richard Kramer, the CEO of The Goodyear Tire & Rubber Co.

This year there are nine technical and one special session.

Tuesday, September 11:

- Materials for Enhanced Tire Performance, Moderator: Christine Domer, Smithers Rapra Akron Labs
- Tire Performance Testing, Moderator: Larry Evans, Tire Technology Training Co.
- Future of Tires, Moderator: R. Christopher Napier, ExxonMobil Chemical Co.
- Advances in Tire Manufacturing, Moderator: Lawrence Gooch, Gooch Engineering Associates
- Tire Reinforcing Materials, Moderator: Larry Evans, Tire Technology Training Co. Wednesday, September 12:
- Herzlich Award Address, and Plenary and Keynote Presentations
- Tire Failure Analysis, Moderator: Joseph Ruscak, Roetzel & Andress Legal Professional Association
- Materials for Enhanced Tire Performance, Moderator: R. Christopher Napier, ExxonMobil Chemical Co. Thursday, September 13:
- Automation in Tire Manufacturing, Moderator: Lawrence Gooch, Gooch Engineering Associates
- Tire and Material Characterizations, Moderator: Walter Waddell, Tire Technology Training Co.

The Technical Notebook edited by John Dick that appears in each bi-monthly issue of *Rubber & Plastics News* will publish throughout the year the best and most interesting of these important ITEC presentation topics highlighting new material, equipment and scientific developments.

As usual, we are scheduled to be quite busy this week, but please look for us and introduce yourself as we Chair the technical sessions, deliver our papers, or walk the exposition floor during the 'Grab n' Go' luncheons to also learn about the latest important developments. Making new friends at ITEC is also one of these very important developments. Finally, please tell us what we did well and especially what you feel we can do to improve ITEC.

Thanks again!

### Larry R. Evans and Walter H. Waddell ITEC 2018 Co-Chairs



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# JOHN S. KNIGHT CENTER JOHN S. KNIGHT CENTER **UPPER LEVEL** LOWER LEVEL **Foundations** Internet Cafe **Karl S. Hay Maidenburg Concourse ITEC Exhibit Hall Bridgestone**/ Firestone -**BF Goodrich** ...... Г **OMNOVA** Solutions -**H.S. Firestone** Lunches Goodyear A/B Registration & Paper Sales Lower Corbin Rotunda PARKING Broadway Parking Garage, 120 S. Broadway Street \$7.00 per day (Attached to the John S. Knight Center via a covered walkway.) High/Market Parking Garage, 40 S. High Street \$7.00 per day (Across the street from the John S. Knight Center.) Main

Entrance

# **GETTING AROUND**

the Poling Group

# We Know Tire Testing







# **X Series** Final Finish Testers

X Series machines feature the most accurate and repeatable measurements available, along with industry-leading speed.





Compete in today's global marketplace with the Poling Group's 30+ patented ideas; making the X Series TU testers the industry's most advanced and accurate.

# **FASTER**

Accelerate the final finish area with versatile X Series TU machines with TTOC6 and TDAQ data acquisition that process tires SEVERAL seconds faster than any competing machine.



Dedicated to continually develop and update machine components and wear parts, machines manufactured by the Poling Group are durable, ensuring a long life.

# Learn more by talking to a Poling Group representative in the ITEC 2018 Refreshment area

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# SPECIAL EVENTS



# Tue., Sept. 11 5:00pm — 6:30pm

# Lower Corbin Rotunda/Maidenburg Concourse - Lower Level

# Networking Reception

After attending technical sessions and visiting the show floor during the day, stop by the Lower Corbin Rotunda / Maidenburg Concourse (Lower Level) for the opening night reception, sponsored by VMI and Safe Run. Network with other attendees, speakers, exhibitors and sponsors over drinks and appetizers. Akron Mayor Daniel Horrigan to kick-off the night with an ITEC welcome.



Cron

Wed., Sept. 12 8:00am — 9:15am

### **BF Goodrich/Bridgestone Firestone Room**

**BF Goodrich/Bridgestone Firestone Room** 

Harold Herzlich Distinguished Technology Achievement Award Ceremony Breakfast

Steve Cron, Michelin Technology Center, co-inventor of Michelin's Tweel airless tire is named ITEC's 2018 Medalist of the Harold Herzlich Distinguished Technology Achievement Award.

In 1997, Cron and longtime friend and colleague, Dr. Tim Rhyne, began to work informally, often over lunch, on various structural concepts for non-pneumatic tires. Those lunchtime conversations soon blossomed into working prototypes that proved the viability of the concepts. In 2000, Rhyne and Cron safely completed "One Lap Flat" driving from South Carolina to California and back on early prototype non-pneumatic tires. They continued to develop that early non-pneumatic technology into what would later come to be known as the Tweel<sup>™</sup> non-pneumatic tire technology. Today, Michelin produces and markets Tweel<sup>™</sup> tires for a variety of off-road applications, including ZTR mowers, skid steer loaders, golf carts, and all-terrain utility vehicles.

Cron has most recently been responsible for conception, design, analysis and testing of non-pneumatic tire technologies for automotive applications. Cron and his Michelin colleagues have filed over 100 patents for various elements of non-pneumatic tire technology.

This special event is free to all paid ITEC attendees and speakers. For anyone else wishing to attend, the cost is \$30. Please see the Registration Counters in the Lower Corbin Rotunda.



Wed., Sept. 12 11:10am — 12:00pm

Keynote Address: Miles Ahead - Tires & The New Mobility Ecosystem Rich Kramer Chairman, CEO and President Goodyear

Goodyear chairman, CEO and president Rich Kramer will describe the emergence of a "new mobility ecosystem" driven by changing consumer transportation preferences and rapid advances in technology. Kramer's view is that even with dramatic shifts in consumer attitudes and behavior toward personal transportation, the need for tires remains robust and will remain so in the new transportation environment. Significant change is real and visible on the horizon. Ultimately, a new world of transportation will be earmarked by a shift from individual vehicle ownership to ride-sharing, including the adoption of autonomous and electric vehicles. The acronym FACE – standing for Fleets, Autonomous vehicles, Connected vehicles and Electric vehicles – will give the audience an easy way to think about the new mobility ecosystem. Though mobility itself will experience profound change, Kramer sees no replacement for the tire and wheel combination on the horizon. However, changes for the tire industry must come in the areas of service for consumer fleets; innovation to meet the performance and durability demands of electric vehicles; and technology to enable connectivity between vehicles and passengers, infrastructure, data and information gathering platforms and other vehicles.

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# Join Us



Tue., Sept. 11, 5:00pm Lower Corbin Rotunda/Maidenburg Concourse - Lower Level



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# AGENDA AT A GLANCE

MONDAY, SEPTEMBER 10, 2018			
8:00 am - 4:30 pm Registration Open - John S. Knight Center, Lower Corbin Rotunda			
TUESDAY, SEPTEMBI	ER 11, 2018		
7:30 am - 6:30 pm	Registration Open - John S. Knight Center, Lower Corbin Rotunda		
8:30 am - 5:00 pm	0 am - 5:00 pm ITEC Exhibit Hall Open		
	OMNOVA Solutions/H.S. Firestone Room BF Goodrich/Bridgestone		
8:30 am - 9:00 am	TRACK: TIRE PERFORMANCE TESTING Effect of Inflation Pressure on Tire Performance	TRACK: MATERIALS FOR Comparison of States of Mix Using ASTM Dispersion Method	
9:00 am - 9:30 am	Consumer Tire Testing. Helping the Consumer to Buy the Best Tire For the Way They Drive	Recent Studies on the Micro- in Rubber Compounds	
9:30 am - 10:00 am	Development of Tire Indoor Wear Test Patterns to Match On-Road Conditions	Recovered Carbon Black -	
10:00 am - 10:30 am	Break: Prize drawings ITEC Exhibit Hall		
10:30 am - 11:00 am	Transportation Research Center Presentation	Solutions for Rolling Resistance	
11:00 am - 11:30 am	RMT Tire Failure Removal Codes	Key Financial and Environmental	
11:30 am - 12:00 pm	11:30 am - 12:00 pm Duralink HTS as Brass Coated		
12:00 pm - 1:30 pm	Lunch (Goodyear A & B) and prize drawings ITEC Exhibit Hall		
1:30 pm - 2:00 pm	<b>TRACK: FUTURE OF TIRES</b> 3 Key Automotive Trends and What it Means for Tires	TRACK: ADVANCES IN TIRE Future Mill Room Systems – Requirements	
2:00 pm - 2:30 pm	Lean-Driven Innovation	Future Generation High	
2:30 pm - 3:00 pm	Automotive Megatrends and the Importance of Air Retention	Mixing Room Automation 4.0	
3:00 pm - 3:30 pm	Break: Prize drawings ITEC Exhibit Hall		
3:30 pm - 4:00 pm	Trends and Techniques for Light Weighting in Truck Tires	The Calender Line in the Tire Plant	
4:00 pm - 4:30 pm	Operations in Year 2020	Conversion of Screw Actuator	
4:30 pm - 5:00 pm	Sustainability Trends for the U.S. Tire Manufacturing Industry	Damaged Calendar Rolls: A	
5:00 pm - 6:30 pm	5:00 pm - 6:30 pm Networking Reception (Lower Corbin Rotunda/Maidenburg Concourse - Lower Level)		
WEDNESDAY, SEPTE	MBER 12, 2018		
7:30 am - 5:30 pm	Registration Open - John S. Knight Center, Lower Corbin Rotunda		
8:00 am - 9:15 am	) am - 9:15 am Harold Herzlich Distinguished Technology Achievement Award Ceremony Breakfast (BF Goodrich/Bridgestone Firestone Room)		
9:30 am - 5:00 pm	:00 pm ITEC Exhibit Hall Open		
OMNOVA Solutions/H.S. Firestone Room BF Goodrich/Bridgestone		BF Goodrich/Bridgestone	
9:15 am - 10:00 am	<b>PLENARY SESSION</b> Green Economy - Challenges & Opportunities for the Automobile and Rubber Industry		
10:00 am - 10:20 am	Break: Prize drawings ITEC Exhibit Hall		
10:20 am - 11:00 am	PLENARY SESSION Virtual Tires - Performance Prediction Tools for Product Development		
WEDNESDAY, SEPTE	MBER 12, 2018 CONTINUED ON NEXT PAGE		

# AGENDA AT A GLANCE



Firestone Room	Karl S. Hay Room
<b>ENHANCED TIRE PERFORMANCE</b> the New ASTM Payne Effect Method versus the	
dispersion and Filler Networking of Carbon Black	
A Growing Industry	

Reduction - Non-tread Tire Application	
Benefits for Twaron Use in Tires	
Steel Cord Adhesion Promoter	
MANUFACTURING Innovative Concepts & Features for Increasing	<b>TRACK: TIRE REINFORCING MATERIALS</b> Advancements in the Production of Green and All-season Tires for SUVs

	Sinca-fined file freads. 1. Mixing
	Silica-filled Tire Treads 2. Material Performance
	Non-Silane Coupling Agents for Silica Reinforcement of Rubber
Calenders to Servo Hydraulic Operation	Evaluation of Functionalized Aluminosilicate Microspheres in Elastomer Compounds
Pressing Problem	Panel Discussion on Tire Reinforcing Materials

Firestone Room	Karl S. Hay Room



# AGENDA AT A GLANCE

WEDNESDAY, SEPTE	MBER 12, 2018 CONTINUED FROM PREVIOUS PAGE			
11:10 am - 12:00 pm	KEYNOTE: Miles Ahead – Tires & the New Mobility Ecosystem, Rich Kramer, The Goodyear Tire & Rubber			
12:00 pm - 1:30 pm	Lunch (Goodyear A & B) and prize drawings ITEC Exhibit Hall			
	OMNOVA Solutions/H.S. Firestone Room	BF Goodrich/Bridgestone		
1:30 pm - 2:00 pm	<b>TRACK: TIRE FAILURE ANALYSIS</b> Tire Data from a Legal Perspective – How to Utilize, Keep Secure and Still Maintain Privacy	TRACK: MATERIALS FOR Synthetic Rubber Market Trends:		
2:00 pm - 2:30 pm	Road Hazard Impacts, Their Effect on Radial Tires and the Forensic Signs They Leave Behind	3D Printing Elastomers and		
2:30 pm - 3:00 pm	Forensic Tire Examination in the Digital Age	Two Compounding Additives to		
3:00 pm - 3:30 pm	Break: Prize drawings ITEC Exhibit Hall			
3:30 pm - 4:00 pm	Rapid Method for Checking Potential for Long-Term Fatigue Performance of Tire Compounds	Crystex™ Cure Pro Insoluble Sulfur		
4:00 pm - 4:30 pm	FEA Evaluation of Run-flat Tire Durability	Vulkanol TOF to Improve Wet and		
4:30 pm - 5:00 pm Predicting OTR Tire Deflection Solubility of Resin in Rubber and		Solubility of Resin in Rubber and		
THURSDAY, SEPTEM	BER 13, 2018			
7:30 am - 1:00 pm	Registration Open - John S. Knight Center, Lower Corbin Rotunda			
8:30 am - 1:00 pm ITEC Exhibit Hall Open				
	OMNOVA Solutions/H.S. Firestone Room	BF Goodrich/Bridgestone		
8:30 am - 9:00 am	TRACK: AUTOMATION IN TIRE MANUFACTURING	<b>TRACK: TIRE AND MATERIAL</b> Quantitative Analysis of Additives Methylation GC/MS		
9:00 am - 9:30 am	SMART Factory a Solution for Tire Manufacturers	Laser Induced Break Down		
9:30 am - 10:00 am	Latest Trends in Automation - How to Improve Productivity in Tire Manufacturing	Prediction of Tire Performance by		
10:00 am - 10:30 am	Break: Prize drawings ITEC Exhibit Hall			
10:30 am - 11:00 am	Establishing a Solid Industry 4.0 Baseline Through Integrated Label Automation	Innovations in Shearography		
11:00 am - 11:30 am	Can Digitization Help You Achieve Your Goals?	A Multiple-Quantum Nuclear in a NR Compound		
11:30 am - 12:00 pm		Factors Influencing the Car Tire Treads		
12:00 pm - 1:00 pm	Break: Prize drawings ITEC Exhibit Hall and Grab-N-Go Lunch (Goodyear A & B)			

# **Rubber Plastics News**

# CONFERENCES IN 2019 RUBBERNEWS.COM



2019 PLASTICS & RUBBER IN AUTOMOTIVE CONFERENCE

Jan. 14-15, 2019, Suburban Collection Showplace, Novi, Mich.

# 2019 MEDICAL ELASTOMERS CONFERENCE

May 2019, Greater Chicago area

# AGENDA AT A GLANCE



**SAVE THE DATE!** 

Company (BF Goodrich/Bridgestone Firestone Room)	
Firestone Room	Karl S. Hay Room
ENHANCED TIRE PERFORMANCE Turmoil and Change, but Will Conditions Improve?	
Rubber: Characterization and Testing	
Improve Tire Reversion Resistance	
- The Next Generation of Insoluble Sulfur	
Ice Traction in Tires	
Subsequent Impact on Compound Performance	

Firestone Room	Karl S. Hay Room
<b>CHARACTERIZATIONS</b> in SBR by Thermally Assisted Hydrolysis and	
Spectroscopy	
Dynamic Mechanical Analysis (DMA)	

Magnetic Resonance Investigation of Cure System
Effectiveness of Precipitated Silica Use in Passenger



# 2019 INTERNATIONAL LATEX CONFERENCE

Aug. 6-7, 2019, Hilton Akron Fairlawn, Akron, Ohio

# **2019 ITEC IN FOCUS: GREEN TIRE**

Sept. 25-26, 2019, Sheraton Suites Cuyahoga Falls, Ohio



**GREEN TIRE** 

# **2019 HOSE MANUFACTURERS CONFERENCE**

Nov. 12-13, 2019, Sheraton Suites Cuyahoga Falls, Ohio



**EXPO FLOOR** 



EXPO FLOOR





the Poling Group

# We Know Tire Testing







# Mill Room Equipment

The Poling Group has positioned itself as a leader of mill room equipment with innovation that focuses on the four Cs: Clean, Consistent, Controllable, and Compact.

# Conveyors

- Wig-Wag type conveyors
- Reciprocating conveyors
- Fixed conveyors

# **Splice Press**

- Electrically heated or steam heated
- ANSI-approved controls

# Accumulator

- Available in any size storage capacity
- Chrome plated rolls as required
- Easy thread option available

# Let-offs

- Dual let-offs, with or without guiding
- Liner rewind, with or without guiding
- Male or female chucks

# **Pull Roll Stands**

- Manufactured to your tension requirements
- Available with hold and cutting feature

# Wind-ups

- Surface wind-up
- Dual wind-up
- Shuttle type wind-up



- Fixed blade systems
- Reciprocating blade systems
- Multi blade systems

# **Cooling and Drying Drums**

We offer ASME-certified rubber cooling and drying drums

# ASME Code Manufacturing

• Top / bottom steam heated domes

# **Complete Control Systems**

# Learn more by talking to a Poling Group representative in the ITEC 2018 Refreshment area

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# **EXHIBITORS**



105	ACE Products & Consulting	326	Matthews Marking Systems
502	Acro Tool & Die Company	110	McLube Release Coatings
108	Akron Rubber Development Laboratory, Inc.	411	McNeil & NRM, Inc.
123	American Roller Bearing Co.	126	Mehler Engineered Products, Inc
403	Bartell / Steelastic	211	MESNAC
203	Black Donuts Engineering / WD Racing	613	Micro-Epsilon America
232	Blast-it-all	605	Micro-Poise Measurement Systems
106	Boschert LLC	227	Midwest Elastomers, Inc.
208	Budzar Indutries	306	Netzsch Instruments North America
611	C. A. Litzler Co., Inc.	432	NFM Welding Engineers
124	Calico Coatings	527	Pannier Corporation
526	CASSIOLI SRL	116	Paragon Data Systems, Inc
311	Central Marketing Inc.	230	Pinnacle Systems, Inc.
224	Chem-Trend	100	Pioneer Industrial Systems
517	Cimcorp Automation Ltd.	Internet Cafe	The Poling Group
112	Color Service s.r.l.	207	Polymer Industrial Products Company, LLC
607	COMERIO ERCOLE SPA	120	Polymer Machinery Company-U-CAN
109	Computype	601	Regloplas
609	ContiBladders	107	Renold Torque Transmission
424	CyXplus	506	RJS Corporation
626	Datalogic USA	330	RODOLFO COMERIO SRL
204	Davis-Standard, LLC	1	Rubber & Plastics News
231	Dickson PTL	503	Safe-Run Machinery (Suzhou)Co., Ltd.
122	Dings Company	426	Seifert Technologies, Inc.
525	Electro-General Plastics, Corp	427	Seika Machinery, Inc.
420	Electronic Systems	431	Siemens Industry, Inc.
117	Erhardt & Leimer Inc.	417	SINOARP Tires Equipment Technology Co LTD.
532	Eriez	325	Smithers Rapra
422	Everhard Products Inc	619	Standards Testing Labs
206	FACTS, Inc.	223	Starrett-Bytewise Measurement Systems
217	Glebus Alloys LLC	327	Symbology, Inc.
319	Gottschol Alcuilux CZ	418	Taray International Corp.
226	Herbert USA, Inc.	530	Transfergomma srl
511	HF Group	615	Tri-Power MPT
103	Himile Group	317	TROESTER Machinery, Ltd.
525	Hirata	104	UMD Automated Systems
627	Infinite Creative Enterprises, ICE Inc.	111	University of Akron - APTS
102	Intralox LLC	303	VMI Group
219	Kobelco Stewart Bolling Inc.	114	Webb-Stiles Company
127	Kuraray America Inc.	407	YXLON
523	L&T Rubber Processing Machinery	302	Zeppelin Systems
321	LANXESS Corporation	625	Zesco Inc
210	LAP Laser LLC	623	ZF Test Systems
617	LAWER S.p.A	603	Z-Laser America Inc.
118	Lehigh Fluid Power		

# TODAY COULD BE YOUR LUCKY DAY!

Exhibitors are holding daily Prize Drawings during breaks in the ITEC Exhibit Hall. Be sure to visit their booths and listen for announcements!

# **CONCURRENT MEETINGS**



### Mon., Sept. 10 — Fri., Sept. 14

# Foundations Room

# 47th Tire Mechanics Symposium

Held concurrently with the ITEC Tire Manufacturing conference. John S. Knight Center, Akron, Ohio

This five-day educational and developmental course provides engineers and scientists with an in-depth, intense study of developments surrounding tire engineering. The course is designed for practicing engineers, chemists and scientists concerned with tires and vehicles, and those who have an engineering or science background at the Bachelor of Science level. The basic and practical aspects of the mechanics of pneumatic tires is introduced by internationally renowned experts in tire mechanics.

The Tire Mechanics Symposium offers single-day rates. Visit the Registration Counters in the Lower Corbin Rotunda for more information or to register.



### Wed., Sept. 12 — Thur., Sept. 13

K-Company Room The 46th Rubber Extrusion Technology Short Course Held concurrently with the ITEC Tire Manufacturing conference. John S. Knight Center, Akron, Ohio

This two-day presentation of the Rubber Extrusion Technology course will be focused on topics of interest to tire manufacture:

• Compounding and testing of rubber compounds for tires, and

• Extrusion processing of tire components.

The course will introduce attendees to state-of-the art technology for rubber testing, processing equipment, instrumentation (laser sensors) and numerical simulation.

Visit the Registration Counters in the Lower Corbin Rotunda for more information or to register.

# Strength. From the inside out.

Underinflated tires can make it a rough road out there. That's why we invented butyl synthetic rubber in 1937 — because high-quality innerliners can make the critical difference between a delivery and a delay. From improved fuel economy to increased durability and retread ability, our halobutyl delivers air barrier performance you can count on.

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SPECIAL INDUSTRY UNITS



# **BF Goodrich/Bridgestone Firestone Room**

8:30 AM - 9:00 AM	Comparison of States of Mix Using the New ASTM Payne Effect Method versus the ASTM Dispersion Method
9:00 AM - 9:30 AM	Recent Studies on the Micro-dispersion and Filler Networking of Carbon Black in Rubber Compounds
9:30 AM - 10:00 AM	Recovered Carbon Black - A Growing Industry
10:30 AM - 11:00 AM	Solutions for Rolling Resistance Reduction - Non-tread Tire Application
11:00 AM - 11:30 AM	Key Financial and Environmental Benefits for Twaron Use in Tires
11:30 AM - 12:00 PM	Duralink HTS as Brass Coated Steel Cord Adhesion Promoter

# Tuesday, September 11, 2018 TIRE PERFORMANCE TESTING

Tuesday, September 11, 2018

MATERIALS FOR ENHANCED TIRE PERFORMANCE

**OMNOVA Solutions Room/H.S. Firestone** 

8:30 AM - 9:00 AM	Effect of Inflation Pressure on Tire Performance
9:00 AM - 9:30 AM	Consumer Tire Testing. Helping the Consumer to Buy the Best Tire For the Way They Drive
9:30 AM - 10:00 AM	Development of Tire Indoor Wear Test Patterns to Match On-Road Conditions
10:30 AM - 11:00 AM	Transportation Research Center Presentation
11:00 AM - 11:30 AM	RMT Tire Failure Removal Codes

# Tuesday, September 11, 2018 TIRE REINFORCING MATERIALS

# Karl S. Hay Room

1:30 PM - 2:00 PM	Advancements in the Production of Green and All-season Tires for SUVs
2:00 PM - 2:30 PM	Silica-filled fire freads. 1. Mixing
2:30 PM - 3:00 PM	Silica-filled Tire Treads 2. Material Performance
3:30 PM - 4:00 PM	Non-Silane Coupling Agents for Silica Reinforcement of Rubber
4:00 PM - 4:30 PM	Evaluation of Functionalized Aluminosilicate Microspheres in Elastomer Compound
4:30 PM - 5:00 PM	Panel Discussion on Tire Reinforcing Materials

# Tuesday, September 11, 2018 ADVANCES IN TIRE MANUFACTURING

# **BF Goodrich/Bridgestone Firestone Room**

1:30 PM - 2:00 PM	Future Mill Room Systems – Innovative Concepts & Features for Increasing Requirements
2:00 PM - 2:30 PM	Future Generation High Productivity Final Mixing Rotor
2:30 PM - 3:00 PM	Mixing Room Automation 4.0
3:30 PM - 4:00 PM	The Calender Line in the Tire Plant
4:00 PM - 4:30 PM	Conversion of Screw Actuator Calenders to Servo Hydraulic Operation
4:30 PM - 5:00 PM	Damaged Calendar Rolls: A Pressing Problem

# Tuesday, September 11, 2018 FUTURE OF TIRES

# **OMNOVA Solutions Room/H.S. Firestone**

1:30 PM - 2:00 PM	3 Key Automotive Trends and What it Means for Tires
2:00 PM - 2:30 PM	Lean-Driven Innovation
2:30 PM - 3:00 PM	Automotive Megatrends and the Importance of Air Retention
3:30 PM - 4:00 PM	Trends and Techniques for Light Weighting in Truck Tires
4:00 PM - 4:30 PM	Operations in Year 2020



# SPECIAL INDUSTRY UNITS

# Wednesday, September 12, 2018 MATERIALS FOR ENHANCED TIRE PERFORMANCE

**BF Goodrich/Bridgestone Firestone Room** 

1:30 PM - 2:00 PM	Synthetic Rubber Market Trends: Turmoil and Change, but Will Conditions Improve?
2:00 PM - 2:30 PM	3D Printing Elastomers and Rubber: Characterization and Testing
2:30 PM - 3:00 PM	Two Compounding Additives to Improve Tire Reversion Resistance
3:30 PM - 4:00 PM	Crystex™ Cure Pro Insoluble Sulfur – The Next Generation of Insoluble Sulfur
4:00 PM - 4:30 PM	Vulkanol TOF to Improve Wet and Ice Traction in Tires
4:30 PM - 5:00 PM	Solubility of Resin in Rubber and Subsequent Impact on Compound Performance

# Wednesday, September 12, 2018 TIRE FAILURE ANALYSIS

# **OMNOVA Solutions Room/H.S. Firestone**

1:30 PM - 2:00 PM	Tire Data from a Legal Perspective – How to Utilize, Keep Secure and Still Maintain Privacy
2:00 PM - 2:30 PM	Road Hazard Impacts, Their Effect on Radial Tires and the Forensic Signs They Leave Behind
2:30 PM - 3:00 PM	Forensic Tire Examination in the Digital Age
3:30 PM - 4:00 PM	Rapid Method for Checking Potential for Long-Term Fatigue Performance of Tire Compounds
4:00 PM - 4:30 PM	FEA Evaluation of Run-flat Tire Durability
4:30 PM - 5:00 PM	Predicting OTR Tire Deflection

# Thursday, September 13, 2018 TIRE AND MATERIAL CHARACTERIZATIONS

**BF Goodrich/Bridgestone Firestone Room** 

8:30 AM - 9:00 AM	Quantitative Analysis of Additives in SBR by Thermally Assisted Hydrolysis and Methylation GC/MS
9:00 AM - 9:30 AM	Laser Induced Break Down Spectroscopy
9:30 AM - 10:00 AM	Prediction of Tire Performance by Dynamic Mechanical Analysis (DMA)
10:30 AM - 11:00 AM	Innovations in Shearography
11:00 AM - 11:30 AM	A Multiple-Quantum Nuclear Magnetic Resonance Investigation of Cure System in a NR Compound
11:30 AM - 12:00 PM	Factors Influencing the Effectiveness of Precipitated Silica Use in Passenger Car Tire Treads

# Thursday, September 13, 2018 AUTOMATION IN TIRE MANUFACTURING

# **OMNOVA Solutions Room/H.S. Firestone**

SMART Factory a Solution for Tire Manufacturers
Latest Trends in Automation - How to Improve Productivity in Tire Manufacturing
Establishing a Solid Industry 4.0 Baseline Through Integrated Label Automation
Can Digitization Help You Achieve Your Goals?

# Don't forget to live Tweet about ITEC Tire Manufacturing! #ITF

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# **TUESDAY, SEPTEMBER 11, 2018**

**OMNOVA Solutions/H.S. Firestone Room** 



Napier

8:30 AM - 9:00 AM **Effect of Inflation Pressure on Tire Performance** 

Chris Napier, Applications Engineer Global Polymers Technology, ExxonMobil Chemical Company During the last 30 years, ExxonMobil Chemical has performed a series of surveys of passenger car and truck / bus radial tires to evaluate the influence of halobutyl rubber on inflation pressure loss rates (IPLR) of tires acquired globally. Previous studies have also evaluated the impact of innerliner compound formulations and liner gauge on inflation pressure loss rate as related to tire performance in various static and dynamic laboratory tests. The purpose of this most recent body of work is to evaluate the controlled on-vehicle performance of passenger car tires as a function of inflation pressure utilizing well known industry test methods. It was then determined if connections exist between the on-vehicle test results to laboratory testing where applicable. This presentation will demonstrate impact of inflation pressure of the tire on rolling resistance, fuel economy, treadwear, handling, and other important performance measures.



Dick

### 8:30 AM - 9:00 AM

### BF Goodrich/Bridgestone Firestone Room Comparison of States of Mix Using the New ASTM Payne Effect Method versus the ASTM Dispersion Method John Dick, Consultant, Alpha Technologies

Compounds based on different base elastomers will breakdown in different ways during the mixing process and have different degrees of interaction with carbon black which affects carbon black dispersion. This affects downstream factory performance in extruding, calendering, and molding. Last year a new standard method for measuring the Payne Effect was developed as ASTM D8059 using the RPA. Also in 2011 a standard method was developed using a special reflected light microscope to measure state of mix by percent carbon black dispersion under ASTM D7723. In this study, an RPA 2000® Rubber Process Analyzer with EDR was used to measure the differences in rheological behavior from using different base elastomers with variation in the applied work history during mixing. Model rubber compounds were prepared and tested using several different base elastomers. Processability characteristics as seen in the Payne Effect were measured for these mixed stocks with varying work histories using the RPA 2000 with EDR. Comparisons were also made with the AlphaView Dispergrader® reflected light microscope.



### **OMNOVA Solutions/H.S. Firestone Room** Consumer Tire Testing. Helping the Consumer to Buy the Best Tire For the Way They Drive Eugene Petersen, Tire Program Manager, Consumer Reports

Each year Consumer Reports evaluates over 50 tire models, putting them through their paces in approximately a dozen tests. Testing is done at a 327-acre Auto Test Center in Connecticut. Tire models come from over 25 tire brands sold nationally and marketed as replacement tires. There are ten tire categories currently evaluated for cars, sports cars, pickups and SUVs. Comprehensive testing covers how well tires perform on dry and wet roads, over snow covered and icy surfaces, ride comfort and quietness, fuel efficiency, and how long they last based on an exclusive vehicle treadwear test. A weighted overall score based on the tests is used to rank order tires, independent of the price paid. Consumer Reports looks forward to testing more brands and expand to new categories as they materialize. The presentation will cover the state of testing at Consumer Reports that has evolved to help consumers buy tires. Included will be highlights from a subscriber survey, and the experiences of a consumer engagement on-line panel revealing how consumers shop for tires.



Tunnicliffe

Petersen

# 9:00 AM - 9:30 AM

BF Goodrich/Bridgestone Firestone Room Recent Studies on the Micro-dispersion and Filler Networking of Carbon Black in Rubber Compounds

Lewis Tunnicliffe, Ph.D., Product Development Scientist, Birla Carbon An overview is presented of recent work undertaken at Birla Carbon to develop a deeper understanding of carbon black (CB) micro-dispersion and filler networking in relation to the constitutive behavior of CB reinforced rubbers. A key discrimination is made between the length scales of macro-dispersion and micro-dispersion of CB in rubber. Several on-going efforts in this area are highlighted including; (I) investigations of the rheology of rubber compounds which demonstrate that even for compounds with excellent CB macro-dispersion, the state of micro-dispersion and filler networking can be controlled by strain history of the green compound and can result in dramatic differences in the Payne Effect measured on the subsequent vulcanizate. This highlights the need for a more complete understanding and quantification of filler micro-dispersions; (II) a Monte Carlo method for simulating the packing/networking of CB aggregates is under development and is reviewed here. The model allows for computation of the nearest neighbor



distance distributions of aggregates and the percolation thresholds of aggregate networks; (III) recent advances in the characterization and quantification of CB micro-dispersions using atomic force microscopy and transmission electron microscopy techniques are reviewed.



Rajapakshe

### 9:30 AM - 10:00 AM

# Development of Tire Indoor Wear Test Patterns to Match On-Road Conditions

OMNOVA Solutions/H.S. Firestone Room

Madhura Rajapakshe, Ph.D., Test R & D Project Engineer, Smithers Indoor tire wear testing is helpful for fast-track, cost-effective, and reliable evaluation of new tread materials, and tread patterns in the early stages of the design process. It is also used for benchmarking tire wear performance to known references in controlled test environments. In other situations, recreation of tire wear experienced during on-road usage in a laboratory setting is important. This involves careful characterization of the on-road conditions, simplification of those conditions to manageable driving events/patterns, and meticulously controlling those drive files with careful measurement of tread loss. This is easier said than done in many such situations in which detailed instrumented data from on-road testing is unavailable or exact execution of on-road maneuvers in the laboratory is infeasible. In this study, we present on our attempts to identify methods that simulate on-road conditions as close as possible in the laboratory subjected to the limitations mentioned above. Equalizing the tire contact patch conditions on the test drum to the flat road conditions, utilizing available data on road, vehicle, and driving conditions to fine-tune typical city-highway driving patterns as well as to develop new driving patterns that more closely characterize a known test route, simplifying or smoothening of driving data from instrumented on-road test vehicles, and simulating user behavior such as inflation pressure maintenance are looked at. Although all these methods were found to be useful in achieving better correlation between on-road and indoor wear performance, the application of of them depends on the nature of a project in terms of availability of preliminary data and other resources.





BF Goodrich/Bridgestone Firestone Room



9:30 AM - 10:00 AM

# **Recovered Carbon Black - A Growing Industry**

William Cole, Director, Product Management, Delta-Energy Group, LLC

Recovered carbon black (rCB) may be on the verge of being the fastest growth segment in the carbon black industry. Carbon black consumers have expressed an interest in using more rCB if only the supply could meet demand. What has kept that from happening? Several rCB producers have joined together through the ASTM to transform a collection of companies into an industry. What issues have they collectively faced? What do they plan to do moving forward? Have they shown technical successes? Have they demonstrated financial sustainability? How well does rCB work and in what types of applications? Cole will address the status of the industry today, describing past challenges the industry has overcome and previewing some future challenges that remain.

Cole

10:30 AM - 11:00 AM **Transportation Research Center Presentation** Ron Burton, Executive Vice President, Transportation Research Center, Inc.

**Burton** 



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Bradley

# 10:30 AM - 11:00 AM

Solutions for Rolling Resistance Reduction - Non-tread Tire Application Lin Bradley, Technical Market Manager, Orion Engineering

To meet increasingly strict regulatory requirements, tire companies have spent a great deal of effort to develop lower rolling resistance tread compounds leading to significant improvements in fuel economy. Addressing rolling losses due to older tread compounds made economic sense as tire treads are responsible for 35% to 60% of total rolling losses depending on the application. However, less effort has been directed toward reducing energy dissipation from tire carcasses. Improvements have been achieved via reductions in component thickness and other design changes, but there are tradeoffs such as reduced air retention due to thinner innerliners and degraded handling due to reductions in stiffness of sidewalls. To address both of these issues, two very low surface area furnace Carbon Blacks have been developed by Orion Engineered Carbons: Ecorax® S 204 and Ecorax® S 206. The unique combination of high structure and the very low surface area of Ecorax® S 204 (19 m^2/g) allows tire designers to reduce sidewall thickness (versus N660 or N772) while maintaining required component stiffness or maintaining component thickness (versus N550) while reducing hysteresis losses. Likewise, the low structure and very low surface area of Ecorax® S 206 allows reductions of innerliner thickness while at the same time offering better air retention characteristics than available with conventional furnace Carbon Blacks. Together, Ecorax® S 204 and S 206 are an excellent toolkit in the development of compounds and components to reduce hysteresis of carcasses.



11:00 AM - 11:30 AM **RMT Tire Failure Removal Codes** 

Walter Waddell, Ph.D., Senior Technology Consultant; Consultant, Tire Technology Training Company; Oriental Silicas Corporation

The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) upgraded the Federal Motor Vehicle Safety Standard (FMVSS) No. 139 Endurance test of tires for vehicles less than 4536 kg (10,000 lbs) GVWR effective September 1, 2007. In preparation, on January 17, 2006 NHTSA issued "Tire Aging Project: Roadwheel Removal Codes v2.0" listing 27 removal codes and a photograph of each passenger car tire failure was shown as an illustration. NHTSA codes to classify each tire failure were based on the location: Bead, Innerliner, Sidewall, Carcass, Shoulder, Belt, and Tread; and also on the type of failure: blister, chunking, cracking, delamination, detachment, distortion, rupture, separation, and split. FMVSS No. 119 Endurance testing of tires for vehicles greater than 4536 kg GVWR was also studied for radial medium truck tires. Similar failure modes to the passenger car tires were observed based on laboratory roadwheel testing. We show examples of passenger car tire failures and corresponding removal codes along with examples of radial medium truck tires to show that many removal codes already established are also applicable to the larger RMT tires.





# 11:00 AM - 11:30 AM

# Key Financial and Environmental Benefits for Twaron Use in Tires

Tim Koonts, Business Development Manager, Mechanical Rubber Goods, Teijin Aramid The top 4 industry trends according to automobile executives worldwide are Battery Electric vehicles, fuel cell cars, connectivity and digitalization. As transportation continues to evolve, a key area of focus is the impact that these trends will have on the world around us, both today and in the future. The tire industry is called to meet these challenges. The world will likely need tires that are Low Weight, Low Rolling resistance, Long Lifetime and Re-treadable if we are to answer these opportunities set before us. We will discuss how these requirements are consistent with sustainability, and how this can go hand in hand with business performance and growth. We are going to talk about how these changes are seen by the Teijin Aramid Eco-economics department, as well as Twaron's role in sustainability and how we measure the financial and environmental benefits of such challenges.

# 11:30 AM - 12:00 PM

# **Duralink HTS as Brass Coated Steel Cord Adhesion Promoter**

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**OMNOVA Solutions/H.S. Firestone Room** 

Karl S. Hay Room

Sepideh Niknezhad, Ph.D., Advanced Research Scientist, Eastman Chemical Co.

The use of bis-Bunte Salts (i.e., those with 2 RSSO3- functional groups) in rubber formulations have been around for over 30 years. However, a detailed description of compound-property relationships in different compound formulations with proposed mechanism of action has not existed. Here we present how bis-Bunte salts such as Duralink Hexamethylene Thiosulfate mix, activate, and get involved in the cure in different compound formulations. We characterize the cure state and sulfur rank of the resultant compound formulation and draw a linker between Duralink Hexamethylene Thiosulfate mechanism of action to resultant compound properties such as steel cord adhesion, reversion resistance, and tear strength.



Kiesewetter

Koonts



# Advancements in the Production of Green and All-season Tires for SUVs

Jens Kiesewetter, Ph.D., Director Applied Technology Tire & Rubber, Evonik Resource Efficiency Evonik has custom-tailored a silica for use in particularly large SUV tires as well as high-mileage all-season tires. Thanks to its higher specific surface area, their silica adds further stiffness to the tire compound, yet remains relatively easy to process. It achieves a perfect balance of maximum grip and minimal rolling resistance in large-surface tires as well as tires with high mileage requirements, such as all-season tires. It also reinforces the tire compound and gives tires sufficient stiffness. The direct feedback between the tire and the steering system results in significantly greater safety especially in the case of wet braking paths. Improved abrasion resistance also contributes to an extended service life, which has a positive effect on the lifecycle assessment. In this manner, a high level of traffic safety can be combined with lower fuel consumption and reduced CO2 emissions, even in sporty tires.



# 1:30 PM - 2:00 PM

# 3 Key Automotive Trends and What it Means for Tires

Jim Popio, Ph.D., Vice President of Operations-North America, Smithers Rapra and Smithers Pira As the automotive market experiences several transformative changes around the world, the tire industry must adapt along with it. What is sometimes not recognized by tire industry outsiders is the significant role that tires can play in supporting those automotive trends. From autonomous vehicles, to vehicle electrification and new business models, the tire industry has a key role in bringing these changes to life. The presentation will explore the trends and potential directions they could take in the next 5-10 years. With this market uncertainty, a discussion of how tire manufacturers and the supply chain can adjust to support and benefit from these changes will be covered.

# Popio



Fischer

### BF Goodrich/Bridgestone Firestone Room Future Mill Room Systems – Innovative Concepts & Features for Increasing Requirements Karsten Fischer, Sales Manager, North America, HF Mixing Group

Efficient compounding requires innovative mill room systems - but what makes them innovative? It is the proper view on the overall process and workflow already in the planning phase of a project that makes the difference. "We plan the work & We work the plan" Customized and individually planned concepts provide technical solutions which consider mixing process, respective mixing room equipment and automation but respect additionally the periphery such as all aspects of material handling including logistics, intralogistics and warehousing etc.. Measures to reduce environmental pollution, concept transfer into a 3D plant layout and simplified cost break down calculations to justify expected specific mixing costs complete this package and support customers to make the right decisions. "HFMG

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Karl S. Hay Room

Millroom Solutions – Innovative Concepts make the Difference" The presentation will show the general mill room engineering procedure and discuss based on specific examples: • Importance of intelligent engineering of pneumatic material transportation and mixer feeding • Ideas and features for increased mixing line performance with regard to throughput and quality • Minimization of environmental pollution (reduction of noise level, odour emissions, and lubricant consumption) • Predictive maintenance for planned downtime by using controlled and monitored dust stop technology • Upgrade of existing mill rooms



Waddell

### 2:00 PM - 2:30 PM Silica-filled Tire Treads. 1. Mixing

nsultant: Consultant, Tire Technology Training Company: Oriental Silicas

Walter Waddell, Ph.D., Senior Technology Consultant; Consultant, Tire Technology Training Company; Oriental Silicas Corporation

This presentation discusses the use of precipitated silica in passenger car tire treads. When properly dispersed, precipitated silica can increase tangent delta at 0°C and decrease tangent delta at 60°C (lab predictors for wet traction and rolling resistance respectively). To maintain abrasion compared to a carbon black-filled compound, silica also needs to efficiently react with a bifunctional organosilane. Because European regulations mandating the labeling of all tires for rolling resistance, wet traction and noise levels are already in effect, the use of precipitated silica in treads is expected to increase even further. We have studied a model PCR tread formulation with four independent variables: two associated with mixing and two material changes. The mixing variables are achieved by using a Banbury with 2-wing tangential rotors and a mixer having intermeshing rotors, and 4-pass and 5-pass sequences are used when mixing with intermeshing rotors, and 4-pass and 5-pass sequences are used when mixing with tangential rotors. Silica dispersion is determined using ISO 11345 at 100X magnification. However, agglomerates < ~23 microns cannot be observed. Scanning electron micrographs (SEM) are obtained at 1000X magnification to examine dispersion into aggregate structures < ~1 micron. Cure, physical, and dynamic properties are measured in order to observe changes in compound performance. Results based on the mixing variables are presented.

OMNOVA Solutions/H.S. Firestone Room



Lean-Driven Innovation Norbert Majerus, Lean Champion & Author Two years ago Norbert Majerus published

2:00 PM - 2:30 PM

Two years ago Norbert Majerus published a book, called "Lean-Driven Innovation; the book won the Shingo Prize last year. The book is the Goodyear story on implementing lean in the R&D and in the innovation creation process. The lean process made a huge difference in the Goodyear innovation centers, increasing on time delivery from 20% to over 90%. It also reduced the cycle time by 75% and tripled the throughput. Majerus is telling the story all over the world but only had one small opportunity to share it with the industry it was developed for: tire development.

Majerus



# 2:00 PM - 2:30 PM

# **Future Generation High Productivity Final Mixing Rotor** *Frank Pappas, Lab Manager, Kobelco Stewart Bolling*

High silica mixing can be troublesome to the user as filler content increases, which has been a trend in recent years. Kobelco offers a range of new technologies that are able to improve issues related to high silica mixing such as explosion of silica powder from hopper, adhesion due to silane coupling agent/ resins, and corrosion of mixer side surface all while achieving uniformity of temperature and good distribution performance.

Pappas



Domer

# 2:30 PM - 3:00 PM

# Silica-filled Tire Treads 2. Material Performance

*Christine Domer, General Manager, Akron Laboratories & Tire Services, Smithers Rapra* This presentation discusses the use of precipitated silica in passenger car tire treads. When properly dispersed, precipitated silica can increase tangent delta at 0°C and decrease tangent delta at 60°C (lab predictors for wet traction and rolling resistance respectively). To maintain abrasion compared to a carbon black-filled compound, silica also needs to efficiently react with a bifunctional organosilane. The use of silica is expected to increase even further since European regulations are already in effect mandating the labeling of tires for rolling resistance, wet traction and noise levels. We have studied a model PCR tread formulation with four independent variables: two associated with mixing

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Karl S. Hay Room



(rotor type and number of mixing steps) and two material changes. A solution-polymerized SBR is used, and TDAE process oil is incorporated into the batch during the first pass mix. The second formulation uses an oil-extended SSBR. Two silicas have similar CTAB surface areas but different physical forms are studied with each SSBR type. Polymers and silicas are each studied using the mixers with different rotor types and different number of mixing passes. Compound cure, physical, and dynamic properties are measured in order to examine the effects of SSBR type and silica form on compound performance. ISO 11345 is a visual comparison of silica dispersion. However, agglomerates < ~23 microns cannot be observed at 100X magnification. Scanning electron micrographs are obtained at 1000X magnification to quantify silica aggregates < ~1 micron. The results of these material changes using the two mixing variables are presented.



# 2:30 PM - 3:00 PM

### **Automotive Megatrends and the Importance of Air Retention** Sujith Nair, Ph.D., Staff Engineer, ExxonMobil Chemical Co.

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This presentation will briefly cover: • Automotive vehicle outlook • Importance of air retention in electric and autonomous vehicles • Air retention of tires used on commercially sold Electric Vehicles • In-use "Real world" efficiency results • Opportunity to improve current labeling schemes

Nair



Akbaı

# 2:30 PM - 3:00 PM

Mixing Room Automation 4.0 Ali Akbar, Sales Manager, North America, HF Mixing Group

The mixing room, as critical part of a tire factory, finds itself in the age of Industry 4.0. We have a need for intelligent, state of the art, machines with sensors, actuators and control routines that are becoming both increasingly complex in operation and generating large amounts of data that needs to be handled and guarded against unauthorised access. Machines and machine components exchange data with each other and with IT and controls levels above them, allowing complete process and production control. The technological demands for these modern automation products and services require professional software development, not only to deliver state of the art solutions, but also to manage fast and successive change processes. Production facilities and processes can be simulated, hardware and software can be tested well in advance of their introduction to the production facilities, thereby greatly minimising the time and cost of change implementation. A holistic approach to controls and automation results in integration of various communication and diagnostic system to deliver the best on- and off-site services to customers. Innovative solutions enable us to target completely autonomous production and predictive maintenance so that production downtimes are reduced to the minimum levels possible. By efficient management of rubber products and their variants, managing raw material and mixed compound stocks and fine tuning the intralogistics, it is possible to run a mixing room that maximises its utilization by demand driven, just in time mixing. A modern mixing room, just like all other areas of our lives, generates and must manage large swaths of data. Data, which is both necessary for the operations to run in most efficient manner but must also be staunchly protected against all unauthorized access and manipulation. This 'big data' provides us the basis for running data mining and business intelligence applications so that our facilities can continue to be better.



### 3:30 PM - 4:00 PM

# Non-Silane Coupling Agents for Silica Reinforcement of Rubber

Karl S. Hay Room

*Li Jia, Ph.D., Assistant and Associate Professor, Department of Polymer Science, The University of Akron* The presentation will discuss the possibility of using catechol-based non-VOC coupling agents to replace silanes. It will be shown that the new coupling agents are equal or superior to silane coupling agents such as TESPT as dispersion aid. However, they, in their current forms, cannot form sufficient covalent bonds with the rubber chains. When a combination of the catechol-based coupling agent and TESPT are used, the resulting SBR vulcanizates have mechanical and dynamic mechanical properties similar to or slightly better than those of the standard vulcanizate that contains TESPT only.



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### 3:30 PM - 4:00 PM

# Trends and Techniques for Light Weighting in Truck Tires

Bruce Lambillotte, Vice President, Technical Consulting, Smithers Rapra

The issue of light weighting in tires has been of historical interest for materials cost control. However, with fuel costs being a major driver in the trucking industry, OEMs and fleets continue to search for ways to optimize fuel efficiency past rolling resistance. This study will employ a tire analysis database to study light weighting in truck tires with the objectives of identifying: • Whole tire vs. individual component perspectives • Target tire components for weight reduction • Weight reductions: rubber components vs. reinforcements

Lambillotte



Gooch

# 3:30 PM - 4:00 PM

**The Calender Line in the Tire Plant** Lawrence Gooch, Principal/Owner, Gooch Engineering Associates

The calender line is presented as an integrated grouping of supporting elements and systems. As framework for the discussion, a review is made of the calender applications in the production of tires and the calender technology that underlies those applications. The functional elements of the calender itself are reviewed, and the evolution of the technology underlying the present configuration of those elements is summarized. The role of the various elements of the calender in the production of product of consistent quality and the accumulative effect of those elements in productivity of the overall line is the examined. Actions which may be considered to enhance the functionality of older installed equipment are presented.







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### 4:00 PM - 4:30 PM Evaluation of Functionalized Aluminosilicate Microspheres in Elastomer Compounds Erick Sharp, CEO, ACE Products & Consulting

A multi-factor, general factorial designed experiments are performed to investigate the use of functionalized aluminosilicate ceramic microspheres in SBR-NR blends and Natural rubber compounds. The factors selected for experiments are type of organofunctionality of ceramic microspheres, part level of spheres, mixing time, mixing conditions and elastomer type. This study measured dependent variables of a) MDR properties, b) dispersion, c) physical properties; batch-batch consistency; and % yield.

Sharp



Sharma

4:00 PM - 4:30 PM **Operations in Year 2020** 

Gaurav Sharma, Manager-Purchase, Apollo Tyres

Gaurav Sharma is motivated by the vision of how Manufacturing Operations and Procurement industry will evolve in the year 2022. To Sharma, the new foundation for the role of an effective CPO and COO in 2022 has been laid out already in the year 2017. Having a core domain knowledge of Procurement and Supply Chain operations is a prerequisite. But having a hands-on understanding of Data science and Automation in business scenarios is where the strategic direction lies for CXOs. This article is summary of Sharma's opinion from his decade-long experience in Supply Chain operations and Procurement industry but also his two years journey with Data Science and Machine Learning in particular.

# 4:00 PM - 4:30 PM

# **Conversion of Screw Actuator Calenders to Servo Hydraulic Operation** Tim Fisher, Owner, FACTS, Inc.

Most calenders have conventional electric screw actuators to position the calender rolls. Converting to servo hydraulic operation can be readily accomplished and provides a number of clear advantages. Improved thickness control and safety are among the benefits. This paper will discuss the benefits then describe the actual conversion process and equipment. Examples of actual projects and equipment will be reviewed.

Karl S. Hay Room



# 4:30 PM - 5:00 PM

# **Panel Discussion on Tire Reinforcing Materials**

Larry Evans, retired from the Transportation Research Center attached to the National Highway Traffic Safety Administration will Moderate a discussion session with panelists Dr. Jens Kiesewetter, Head of Applied Technology Tire & Rubber, Evonik; and Dr. Walter Waddell, Sr. Technology Consultant, Oriental Silicas Corporation. Focus will be on current and future trends silica technology use in tires. Questions from the audience are encouraged.

Evans



# 4:30 PM - 5:00 PM

**OMNOVA Solutions/H.S. Firestone Room** Sustainability Trends for the U.S. Tire Manufacturing Industry John Sheerin, Director End of Life Tire Programs, U.S. Tire Manufacturer's Association Sustainability trends in the U.S. Tire Manufacturing Industry will include the industry's overall economic impact, it's environmental stewardship, the importance of end of use markets, and the tire sector's commitment to produce technically advanced tires.

Sheerin

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Karl S. Hay Room





Spurgeon

**Damaged Calendar Rolls: A Pressing Problem** 

4:30 PM - 5:00 PM

Ray Spurgeon, Product Manager, Metal Detection Division, Eriez Magnetics

Tire manufacturers use calendar rolls in their manufacturing processes and frequently, the rolls are damaged by tramp metal. When this occurs, it costs tens of thousands of dollars for repairs and downtime. The purpose of this White Paper is to educate tire manufacturers on the proper use of metal detectors. It details a metal detectors principle of operation, what influences detection, how they are designed and what is required for a successful installation.

# WEDNESDAY, SEPTEMBER 12, 2018

BF Goodrich/Bridgestone Firestone Room



Cron

8:00 AM - 9:15 AM BF Goodrich/Bridgestone Firestone Room SPECIAL EVENT: Harold Herzlich Distinguished Technology Achievement Award Ceremony Breakfast Steve Cron, Michelin Technology Center, co-inventor of Michelin's Tweel airless tire is named ITEC's 2018 Medalist of the Harold Herzlich Distinguished Technology Achievement Award.

In 1997, Cron and longtime friend and colleague, Dr. Tim Rhyne, began to work informally, often over lunch, on various structural concepts for non-pneumatic tires. Those lunchtime conversations soon blossomed into working prototypes that proved the viability of the concepts. In 2000, Rhyne and Cron safely completed "One Lap Flat" driving from South Carolina to California and back on early prototype non-pneumatic tires. They continued to develop that early non-pneumatic technology into what would later come to be known as the Tweel<sup>TM</sup> non-pneumatic tire technology. Today, Michelin produces and markets Tweel<sup>™</sup> tires for a variety of off-road applications, including ZTR mowers, skid steer loaders, golf carts, and all-terrain utility vehicles.

Cron has most recently been responsible for conception, design, analysis and testing of non-pneumatic tire technologies for automotive applications. Cron and his Michelin colleagues have filed over 100 patents for various elements of non-pneumatic tire technology.

This special event is free to all paid ITEC attendees and speakers. To purchase your ticket, please visit the Registration Counters in the Lower Corbin Rotunda.



Mukhopadhyay

9:15 AM - 10:00 AM **OMNOVA Solutions/H.S. Firestone Room** PLENARY SESSION: Green Economy - Challenges & Opportunities for the Automobile and Rubber Industry Rabindra Mukhopadhyay, Ph.D., Director & CE, HASETRI

Over the last few years, the concept of a "green economy" has moved into the mainstream of policy discourse across the world. The Green economy is a development strategy which harmonizes both economic development and ecological sustainability. The recent interest in a green economy has been intensified by widespread disillusionment with the prevailing economic paradigm, emanating from the many concurrent and recent crises. At the same time, increasing evidence is pointing to an alternative paradigm, in which increased wealth does not lead to growing environmental risks, ecological scarcities and social disparities. Transitioning to a green economy has sound economic and social justification. There is a strong case for governments as well as the private sector to engage in this economic transformation. For governments, this transition would involve leveling the playing field for greener products by phasing out harmful subsidies, reforming policies and incentives strengthening market infrastructure, introducing new market-based mechanisms, redirecting public investment, and greening public procurement. For the private sector, this transition would involve responding to these policy reforms and incentives through increased financing and investment, as well as building skills and innovation capacities to take advantage of opportunities arising from a green economy. The general perception among the people at large about the manufacturing industry, in particular rubber industry is that they are not environmental friendly, energy inefficient, use non-renewable resources, produce non bio degradable waste etc. To change this perception rubber industry has to work towards green economy through development of green technology (design for environment), green manufacturing practices including Resource decoupling - using less land, water, energy & materials to maintain economic growth and Impact decoupling - using resources wisely over their lifetime to reduce environmental impact. In this paper the challenges & opportunities for Automobile & Rubber Industry working towards Green Economy will be discussed.





Wheeler

10:20 AM - 11:00 AM

OMNOVA Solutions/H.S. Firestone Room Product Development

BF Goodrich/Bridgestone Firestone Room

**PLENARY SESSION: Virtual Tires - Performance Prediction Tools for Product Development** *Robert Wheeler, Head of Operations, Hankook Tire America Technical Center, Hankook Tire Co. Ltd.* The tire industry is driven to develop new and better performance products at a continuously accelerating speed with shorter times of delivery. To be competitive, one of the effective ways is through a "virtual" process. The product development process has to offer performance prediction tools that are accessible, accurate, and fast. This is achieved through advancing predictive technology capabilities with a goal to convert them to desktop tools with customer/ user focused needs. The tools should be easy to use and accessible with features conducive to both product development and the performance specialists or applied researchers, and have readily available user support. The accuracy in performance prediction should be robustly assessed and should be coupled to prediction speed and reliability. Finally, the timing should be coupled to automation. Virtual tire tools at Hankook Tire are referenced.



Kramer

### 11:10 AM - 12:00 PM **KEYNOTE: Miles Ahead - Tires & The New Mobility Ecosystem** *Rich Kramer , Chairman, CEO and President, Goodyear*

Goodyear chairman, CEO and president Rich Kramer will describe the emergence of a "new mobility ecosystem" driven by changing consumer transportation preferences and rapid advances in technology. Kramer's view is that even with dramatic shifts in consumer attitudes and behavior toward personal transportation, the need for tires remains robust and will remain so in the new transportation environment. Significant change is real and visible on the horizon. Ultimately, a new world of transportation will be earmarked by a shift from individual vehicle ownership to ride-sharing, including the adoption of autonomous and electric vehicles. The acronym FACE – standing for Fleets, Autonomous vehicles, Connected vehicles and Electric vehicles – will give the audience an easy way to think about the new mobility ecosystem. Though mobility itself will experience profound change, Kramer sees no replacement for the tire and wheel combination on the horizon. However, changes for the tire industry must come in the areas of service for consumer fleets; innovation to meet the performance and durability demands of electric vehicles; and technology to enable connectivity between vehicles and passengers, infrastructure, data and information gathering platforms and other vehicles.



Mowery



Ruscak

1:30 PM - 2:00 PM OMNOVA Solutions/H.S. Firestone Room **Tire Data from a Legal Perspective – How to Utilize, Keep Secure and Still Maintain Privacy**  *Chad Mowery, Partner, Roetzel & Andress Joseph Ruscak, Partner, Roetzel & Andress* 

Big data has come to the automotive industry, particularly tire companies. Sources include the data that companies are keeping themselves, data obtained from consumers, data interaction with the vehicle and its components, and soon data the vehicle is transferring back as it becomes autonomous. While more data can be used to a business' advantage, it can also lead to increased demands from a legal perspective, especially data security and privacy issues. As data proliferates the technical landscape and helps improve the product and customer satisfaction, the legal requirements that surround big data, both from regulations and discovery law, can be overwhelming. Mr. Ruscak and Mr. Mowery have each spent over a decade defending automotive components manufacturers, including numerous tire companies, in product liability matters as well as advising them as to best practices in dealing with big data. Topics addressed will include what the regulatory and legal requirements are, how the requirements have not changed as the magnitude of data expands, how courts have reacted to requests for large data pulls, and why recent concerns with data security and privacy could further change the landscape. The presentation will also offer best practices in dealing with the tension between companies wanting to retain data for business purposes and expelling old data for which the risk of keeping it outweighs the reward. Putting in such best practices now will help tire companies deal with the next wave of data expansion and the new challenges that come with it as the tire becomes more integrated into the vehicle as a system.





Hyde

1:30 PM - 2:00 PM

# BF Goodrich/Bridgestone Firestone Room Synthetic Rubber Market Trends: Turmoil and Change, but Will Conditions Improve?

Bill Hyde, Executive Director Olefins and Elastomers, IHS Markit Synthetic rubber markets have been extremely volatile in recent years. One significant source of this market turmoil has been from rubber feedstocks. Petrochemical markets are on the verge of significant change as the projects, especially in the US, begin to startup. This will have a variety of impacts on synthetic rubber feedstocks and not all of them will be positive. Natural Rubber markets have also put a great deal of pressure on synthetic rubber markets. Finally, over capacity in the market has removed a great deal of leverage that producers might have enjoyed. In this paper we will examine these various sources of market disturbance with an eye toward anticipating trends in the near to medium term. Our intent will be to provide tire market participants insight up their value chain to help them better prepare for trends that will certainly impact their rubber suppliers.

### 2:00 PM - 2:30 PM

**OMNOVA Solutions/H.S. Firestone Room** 



Price

# Road Hazard Impacts, Their Effect on Radial Tires and the Forensic Signs They Leave Behind Vandy Price, Senior Technical Advisor, Michelin NA

Tire impacts with road hazards have long been known to cause tire disablements. In some cases, the failure occurs instantaneously in the form of a blow-out. In others, the tire's structure is damaged, and the disablement occurs hundreds or even thousands of miles later. It is often desirable to conduct a forensic examination of a failed tire to determine the ultimate cause of disablement. The examination of a tire that has become unserviceable due to impact may expose a variety of signs of the impact depending on the evidence that remains. These forensic signs also point to conditions that exist on the damaged tire prior to failure. The ability to recreate tire damage in the lab was developed and published to a great extent in the prior decade. This presentation brings to light a previously unpublished cache of 24 impact tests conducted under a variety of conditions on new and used tires. Tire types include passenger, light truck, and heavy truck. The resulting tread detachments at the location of impact during road wheel tests and subsequent examinations provide clues to the forensic signs that may be available to an examiner after an in-service failure.



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# 2:00 PM - 2:30 PM

# **3D Printing Elastomers and Rubber: Characterization and Testing**

**TECHNICAL SESSIONS** 

Riaoberto Advincula, Professor, Case Western Reserve University

BF Goodrich/Bridgestone Firestone Room



2:30 PM - 3:00 PM

Forensic Tire Examination in the Digital Age Matt Bockrath, Lead Forensic Engineer, Cooper Tire & Rubber

It is the job of the forensic tire examiner to accurately capture the condition of the evidence provided. Over the years, this has evolved from using pencil/paper notes and film photography to laptops and digital cameras. Despite the obvious advantages of using digital media, are we taking full advantage of what digital has to offer? This presentation explores some areas Cooper Tire has leveraged using today's technology and software in the areas of forensic notes, photography and demonstratives.

Bockrath

Advincula



Neilsen

# 2:30 PM - 3:00 PM

# Two Compounding Additives to Improve Tire Reversion Resistance

Joel Neilsen, Technical Applications Specialist, Lanxess-Rhein Chemie

Service conditions of TBR and OTR tires are often severe. High loads, adverse terrain, and subsequent high levels of heat generation lead to compound reversion – particularly in compounds based on Natural Rubber. Reversion weakens tire properties and can lead to premature failure or early replacement. Two Rhein Chemie additives, Vulcuren® and Perkalink® 900 act in two different ways to reduce reversion thus prolonging tire service life. The features of each additive will be detailed and the way it reduces reversion will be discussed. These two additives offer the tire compounder a choice on determining the best way to reduce reversion.



Robertson

# 3:30 PM - 4:00 PM

**OMNOVA Solutions/H.S. Firestone Room** Rapid Method for Checking Potential for Long-Term Fatigue Performance of Tire Compounds Chris Robertson, Ph.D., Sales Director and Materials Expert, Endurica LLC

The long-term fatigue performance of tires is governed by the crack growth behavior of its rubber compounds, but these fundamental properties are not routinely characterized due to the complex and time-consuming testing procedure involved. A new rapid method will be described in this presentation. The intrinsic strength (fatigue threshold), and the ultimate tear strength, bracket the fatique crack growth power law response of rubber. By assigning appropriate crack growth rates to fatigue threshold and tear strength, the intermediate six decades of crack growth behavior can be estimated. Both fatigue threshold and tear strength can be evaluated within a few hours using a commercial instrument which employs the cutting method of Lake and Yeoh (G. J. Lake and O. H. Yeoh, Int. J. Fracture 14, 509 (1978)), making this method appropriate for implementing in the rubber laboratory for compound development and quality control. This approach will be demonstrated using new results for carbon black filled natural rubber (NR) and butadiene rubber (BR) – with widely dissimilar fatigue crack growth rate characteristics – along with existing data for other elastomers.

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**OMNOVA Solutions/H.S. Firestone Room** 



Penney

# 3:30 PM - 4:00 PM

4:00 PM - 4:30 PM

# Crystex<sup>™</sup> Cure Pro Insoluble Sulfur – The Next Generation of Insoluble Sulfur

Jonathan Penney, Ph.D., Group Leader Crystex Applications, Eastman Chemmical Co. Eastman Crystex<sup>™</sup> Cure Pro insoluble sulfur is a highly optimized polymeric sulfur specifically engineered for maximum performance characteristics. Crystex Cure Pro is a unique performer, because it has the important features that tire manufacturers want in insoluble sulfur: enhanced flow, superior dispersion characteristics, and improved thermal stability. Enhanced flow means easier handling and faster fill rates. Superior dispersion facilitates uniform mixing in less time. High thermal stability allows higher mixing temperatures, faster calender speeds, and avoidance of bloom. Crystex Cure Pro has distinct properties that enable tire manufacturers to improve productivity and achieve operational cost savings. Plant-scale designed experiments using thermal imaging techniques and detailed vulcanizate physical property evaluations have shown mixing efficiency improvements of 10-25% are achievable in optimized processes using Crystex Cure Pro.



Behroozinia

# MESNAC

# FEA Evaluation of Run-flat Tire Durability

Pooya Behroozinia, Ph.D., Senior Finite Element Analysis (FEA) Engineer, Maxxis International Self-supporting run-flat tires present unique design challenges. The balanced tire performances such as handling, rolling resistance, and ride comfort under normal inflated condition are highly desirable. The tire durability under the run-flat condition is also of paramount importance for run-flat tires. Through application of FEA simulations, overall tire performance trade-off can be obtained. This presentation compares the performances of run-flat tires with two different tire constructions. Simulated results using commercially available software ABAQUS and Endurica are com-



# **Global Technology for Local Solutions**







pared with test results. The fatigue life prediction analysis includes the temperature dependent material and fatigue properties. Thus, the effects of strain and temperature profile of the fatigue life of tires are taken into account in the analysis simultaneously. The comparison between the run-flat tires focuses on tire durability in the run-flat condition. Qualitative validation of results will be presented.



Weidenhaupt

### 4:00 PM - 4:30 PM

# Vulkanol TOF to Improve Wet and Ice Traction in Tires

BF Goodrich/Bridgestone Firestone Room

Hermann-Josef Weidenhaupt, Ph.D., Senior Specialist Application Technology, Lanxess Deutschland GmbH For tires the so-called magic triangle is of high importance, rolling resistance, (wet + dry) grip and abrasion resistance. By introduction of the silica technology for tread compounds of passenger tires these properties has made a significant step forward compared to the old technology for tread compounds made from E-SBR and filled with carbon black. Main focus of the silica technology also called "green tire" or Eco tire technology at the beginning was for the consumer lower rolling resistance means lower fuel consumption of the car or less carbon dioxide emission but also the wet grip was improved by the polar filler silica. So improvement in wet grip was reached by using a polar filler instead of an unpolar filler like carbon black. Coming from the other side of compounding also the right choice of polymers used will influence the wet grip behavior. Using (H)IIR in a blend with other polymers like S-SBR and BR the wet grip behavior can also be significantly improved. These tri-blends are discussed in the rubber industry since several years. Tires are safety articles and specially the wet grip and also ice traction of a tire is important in daily life of a car driver to reduce the risk of an accident beside the other properties like rolling resistance and abrasion. Beside the right selection of polymers and fillers used for the tread compound there is also the possibility to optimize the tread compound by using plasticizers with other performance in comparison to the typical plasticizer used in tires coming from the mineral oil area. A further way to improve wet and ice traction as also rolling resistance is the use of Vulkanol® TOF- a phosphorous ester compound - in silica tread formulations. Low dosage of this chemical as additive or partly replacement of mineral oils resulted in additional improvements of the discussed properties of tires.

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**OMNOVA Solutions/H.S. Firestone Room** 



Spadone

4:30 PM - 5:00 PM **Predicting OTR Tire Deflection** 

Leighton Spadone, Ph.D., President, DAAS Inc.

Predicting radial OTR Tire static deflection and footprint dimensions for OTR tires using only a few mold dimensions for input, reduces deflection-testing needs and reduces response time for deflection information feedback. These predictions also provide data across a wide range of loads and inflations that are not normally feasible to test. Footprint length, width, and area may not always be measured and of course, this data is only available for existing tires. Tire deflection could be an important and simplifying factor for more accurately calculating the Tire TMPH Capability and the Job TMPH Requirements since deflection combines both tire inflation and tire load effects in a single measurement.



Mao

# 4:30 PM - 5:00 PM

BF Goodrich/Bridgestone Firestone Room Solubility of Resin in Rubber and Subsequent Impact on Compound Performance

Yating Mao, Ph.D., Applications Research Scientist, Eastman Chemical Co. The solubility of resin in rubber impacts rubber performance significantly, but measuring the resin solubility in rubber compounds remains both labor and time-intensive. In this work, several techniques to measure resin solubility in rubber are developed and compared. Theoretical solubility of resin in rubber was predicted by the Fox equation, the solubility parameter and resin structure. Resin solubility in various rubber blends dissolved in solution was evaluated by differential scanning calorimetry (DSC), which was then compared with resin solubility in rubber compounds measured by dynamic mechanical analysis (DMA). The relationship between the resin solubility in rubber, resin properties, and the compound performance was explored.

# **THURSDAY, SEPTEMBER 13, 2018**

**OMNOVA Solutions/H.S. Firestone Room** 



Belganeh

8:30 AM - 9:00 AM

BF Goodrich/Bridgestone Firestone Room Quantitative Analysis of Additives in SBR by Thermally Assisted Hydrolysis and Methylation GC/MS Rojin Belganeh, Technical Director, Frontier Laboratories

Several additive packages are introduced into the Styrene-Butadiene Rubber (SBR) to vary the chemical and physical properties of the polymer. The qualitative and quantitative analysis of these additives requires sample pretreatment, such as solvent extraction, to isolate or concentrate the additives of interest. When analyzing SBR for the total amount of fatty acids, the sample is first extracted using ethanol/toluene followed by titration; however, this method requires large amounts of solvent, excessive analyst time, and can be prone to contamination. This additional sample handling reduces laboratory productivity and information obtained exhibits poor precision and accuracy. In response to these analytical challenges, Reactive Pyrolysis-GC/MS (RxPy) with TMAH (Tetramethylammonium hydroxide) method was developed by the multi-mode pyrolyzer. This presentation will demonstrate the efficacy and viability of reactive pyrolysis GC/MS of a vulcanized SBR sample using TMAH for rapid and straightforward determination of free fatty acids. In fact, free fatty acids contained in a vulcanized rubber product will be determined as methyl derivatives by Thermally Assisted Hydrolysis and Methylation-GC/MS with no need for solvent extraction.



# 9:00 AM - 9:30 AM

# **SMART Factory a Solution for Tire Manufacturers** Jerry Gu, CEO, MESNAC Americas

Many countries have released national strategy for future manufacture industrial, such as Germany "Industrial 4.0", China "2025". But what does "Industrial 4.0" means? And how to deploy such strategy with best ROI? Mesnac released its "SMART Factory" solution since 2015 for tire manufacture, backed by its huge investments in fundamental R&D, combined with decade's experiences in tire and rubber industrial.

Gu

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BF Goodrich/Bridgestone Firestone Room



# **TECHNICAL SESSIONS**



Klie

### 9:00 AM - 9:30 AM Laser Induced Break Down Spectroscopy

Benjamin Klie, Ph.D., Head of Processing Department, German Institute of Rubber Technology (DIK) In the rubber processing industry it is important to produce a continuous high quality concerning tires or technical rubber goods. In addition it is necessary to achieve good dispersion and a homogeneous distribution regarding the reinforcing fillers such as silica to ensure the reinforcement effect. In order to get same properties in each volume fraction of the compound also chemical additives such as zinc oxide or sulphur have to be homogeneously distributed to assure a consistent degree of vulcanization. The aim of this study is the verification of distributive mixing regarding the curing additive zinc oxide in light-colored silica-filled rubber compounds and the identification of the influence of effective filler dispersion during silanization on distributive mixing efficiency. Laser-Induced-Breakdown-Spectroscopy (LIBS) is used as a non-destructive method to evaluate the effects. The results show the efficiency of the silanization reaction and consequently the effectiveness of the mixing process affects both, the quality of dispersion of the reinforcing filler silica, as well as the quality of the distribution of other compounding additives such as zinc oxide. The correct amount of silane in the mixing cycle leads to high energy input and an efficient silanization reaction in the required temperature range. Therefore a minimum of visual surface defects and efficient filler dispersion is achieved as well as homogeneous distribution of zinc oxide.



### 9:30 AM - 10:00 AM

# **Latest Trends in Automation - How to Improve Productivity in Tire Manufacturing** Don Heelis, Sales Manager, Cimcorp Automation

Cimcorp's Sales Manager Don Heelis covers the latest trends in automation, challenges in tire manufacturing, solutions to these challenges and the future of automation. The seminar will address the pain points faced by tire manufacturers and will explore how islands of automation can be integrated together through a variety of technologies and software solutions to provide a seamless end-to-end manufacturing process. Key takeaways include improving productivity/utilization to meet customer demands and the benefits of a modular approach to automation.

Heelis



Zhang

# 9:30 AM - 10:00 AM

# Prediction of Tire Performance by Dynamic Mechanical Analysis (DMA)

Yanxi Zhang, Ph.D., Technical Sales Support, Netzsch Instruments North America Development of new tires with optimized rolling resistance is a main target of the tire industry. One standard method for the determination of the rolling resistance is the drum test which directly analyzes the tire. This testing method requires the production of a prototype and is therefore time-consuming and cost-intensive. Dynamic Mechanic Analysis now provides a new useful tool in order to reduce the amount of drum tests by the application of a predictive test procedure with tan  $\delta$ , which can be used to quickly differentiate a series of experimental compounds. The dynamic heat build-up test is widely-used in the tire industry. These special tests provide data about the thermal fatigue properties of the tested elastomers. Blowout is the extension of heat build-up test. The main target is to analyze the limiting temperatures where disintegrations, respectively destructions or even "explosions" within the samples take place. Reducing the temperature rise as well as the inner friction within the sample will increase the durability of the products. In addition, DMA cord test provides data to verify if tire cords embedded and vulcanized inside a rubber block show a high mechanically stability against pulling out using universal tests procedures and dynamic fatigue test.



Boddy

### 10:30 AM - 11:00 AM

# **Establishing a Solid Industry 4.0 Baseline Through Integrated Label Automation** Simon Boddy, Global Product Manager, Industrial Markets, Computype

The Industrial Internet of Things and Industry 4.0 rely on capturing data at multiple stages of the manufacturing process. Driving this is the need for a secure and efficient product branding and identification network capable of facilitating the increased demand for data interrogation and communication. The speaker will discuss how integration of automated label systems support improved data management and communication to enable process improvements related to Industry 4.0.

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### 10:30 AM - 11:00 AM Innovations in Shearography

Bernward Mähner , Mechanical Engineer, SDS Systemtechnik GmbH / Central Marketing, Inc.

The data acquisition and result presentation of interferometric tire test systems subdivides the tire in a plurality of sectors along its circumference and its cross section. This leads to problems when it comes to visual or automatic evaluation of detected flaws in a tire that stretch of several sectors. To overcome these problems a new sector mapping strategy transfers all sector images into one common diagram.

Mähner



Paul

# 11:00 AM - 11:30 AM

**Can Digitization Help You Achieve Your Goals?** Dan Paul, Global Business Leader - Tire Industry, Rockwell Automation

Today, businesses are challenged to improve quality and performance while reducing costs in a very competitive landscape. Technology is making it possible for tire manufacturers to gather enormous amounts of information from across an expanding number of sources, but many struggle to analyze that data and make informed decisions. Putting context to information collected is key to identifying where there are opportunities to further improve metrics. Learn how leaders in the tire industry are utilizing technology to manage their workforce and discover the potential to reduce downtime and mitigate risk - by delivering actionable information to the appropriate person.



Tire360 scans tires for tread wear analysis, section width, tread radius, circumference, profile geometry, treadwear indicators, and RRO harmonics.









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### 11:00 AM - 11:30 AM BF Goodrich/Bridgestone Firestone Room **A Multiple-Quantum Nuclear Magnetic Resonance Investigation of Cure System in a NR Compound** Jonathan Martens, Staff Engineer, ARDL

The multiple-quantum (MQ) Nuclear Magnetic Resonance (NMR) technique is a useful tool for measuring the crosslink density of a material and also its distribution of molecular weight between crosslinks. In this study, a natural rubber (NR) compound was considered using two different cure systems; namely sulfur and peroxide. Six compounds were made for each cure system for a total of 12 compounds, where the amount of sulfur or peroxide was varied across each set of six. These compounds were tested by a low field Time-Domain (TD) NMR by both Hahn Echo and MQ test methods.

Martens



Waddell

# 11:30 AM - 12:00 PM Factors Influencing the Effectiveness of Precipitated Silica Lise in Passenger Car Tire Treads

**Factors Influencing the Effectiveness of Precipitated Silica Use in Passenger Car Tire Treads** Walter Waddell, Ph.D., Senior Technology Consultant; Consultant, Tire Technology Training Company; Oriental Silicas Corporation

Precipitated silica use can improve the in-service performance of passenger car radial tires by increasing wet traction, reducing rolling resistance, and maintaining tread wear life if dispersed to the same degree as carbon black. Maximizing tread properties requires using high-performance materials and optimizing the mix sequence to: (a) disperse the dust-free silica granule into reinforcing aggregates while minimizing larger agglomerate structures, and (b) chemically react the silica aggregate with a bifunctional organosilane to effectively couple to the elastomer during curing. Using a highly dispersable silica is one key high-performance ingredient, thus Oriental Silicas Corporation developed Eecosil 350MG for PCR treads. Previously we addressed silica dispersion in treads by developing a 10-point rating system based on %-white areas from SEM micrographs obtained at 1000X magnification in order to determine the reinforcing aggregate population >  $\sim$ 0.3 µm. Here we present 29Si NMR results to quantify the silanol (Si-O-H) types that promote efficient hydrophobation: single (isolated and vicinal) versus two (geminal). Easily dispersable and highly dispersable silicas of similar CTAB surface areas are used to prepare model passenger car tire treads using varying mixing sequences. Silica and tread compound properties are correlated using SAS statistical software.

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Chem-Trend is a global leader in the development and production of high-performance release agents, purging compounds and other ancillary molding products.

### Products and Services:

• Molds and Mold Release Treatments, Maintenance, etc.

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# **Cimcorp Automation Ltd.**

Booth 517 Lori Vaughan 635 South Service Road Grimsby I3m 4e8 ON Canada 905-643-9700 Iori.vaughan@cimcorp.com http://www.cimcorp.com

# ABOUT CIMCORP —

We solve our clients' material flow challenges by simplifying intralogistics with innovative solutions. We get more out of less. For more than 30 years we have partnered with customers on warehouse, distribution center and tire manufacturing facility projects to produce strategic, streamlined solutions. What drives us? Passion for optimized material flow.

### **Products and Services:**

- Warehouse Encoding and Inventory Technologies
- Tire Assembly and support machinery/guidance systems, etc.
- Final Finish and Inspection

# Color Service s.r.l.

Booth 112 Tony Gowan PO Box 7781, Myrtle Beach, SC 29572 USA 704-998-7662 teeismegts1@gmail.com http://www.colorservice.net

Manufacturer of automatic chemical weighing systems for the tire and rubber industries.

# **Products and Services:**

Automatic chemical weighing systems
Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# **COMERIO ERCOLE SPA**

Booth 607 Comerio Riccardo Via Castellanza 100 Busto Arsizio 21052 VA Italy 331488481 331488421 valentina.airoldi@comercole.it http://www.comercole.it

Internal Mixer MCC Series 2÷270 L-Roll Mixing Mill MGC/MGP/ MGS/MGU Series 200÷2540 MM–Complete Mixing Plants–2,3,4, 5 Roll Calendars I, L, F, S, Inclined Configuration – Complete Fabrics Steel,Textile Cord Rubberizing Calenderlines – Complete Rubber Sheeting Calenderlines – Complete Tire Calenderlines – Complete Calenderlines for CONVEYOR BELTS up to 3500 MM–Engineering & know how – Revumping of Existing Mixing and Calenderlines – Turn Key Plants Existing

# Products and Services:

· Calenders and support machinery/hardware, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.



# **EXHIBITOR PROFILES**

### Computype Booth 109

Kelly Rodencal 2281 West County Road C, St Paul, MN 55113 USA 651-635-1223 kelly.rodencal@computype.com http://www.computype.com

For over 40 years, Computype has delivered robust automation systems, labeling solutions, and collaborative partnership to the global tire industry. Our cross-functional, focused teams help customers achieve process improvements through innovative labeling strategies.

# Products and Services:

 Integrated Labeling Automation, Barcodes and Labels Warehouse Labeling and Packaging

# ContiBladders

Booth 609 Steve Bellenger 1830 MacMillan Park Drive, Fort Mill, SC 29707 USA 704-583-8772 steven.bellenger@conti-na.com http://conti-bladders.com

Continental Business Field Bladders was established to focus on all bladder related expertise and resources from various areas of our Continental Tire Corporation to better serve our worldwide customers. Offering a wide range of both curing and tire building bladders utilizing our full range of R&D resources.

# Products and Services:

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# CyXplus

Booth 424 Bérengère Gay 20 avenue Lamartine Les Pennes Mirabeau 13170 Bouches-du-Rhône France +33(0)442074222 +33(0)442074236 info@cyxplus.fr http://www.cyxplus.com

As a specialist in Non-Destructive Testing,CyXplus supplies tire manufacturers with solutions from fully automated implementations to off-line analysis:for the final finishing area CyXplus supplies a full range of X-Ray inspection machines for sizes from 12' up to 69'ID,and CyXpert<sup>™</sup>, the reference software for Automatic Defect Detection.

# **Products and Services:**

Non Destructive Tire Testing Machinery

# Datalogic USA

Booth 626 Karen Phillips 511 School House Road, Telford, PA 18969 USA 215-721-0561 marketing.na@datalogic.com http://www.datalogic.com

Datalogic is a global technology leader in the automatic data capture and process automation markets, specialized in the design and production of bar code readers, mobile computers, sensors for detection, measurement and safety, RFID, vision and laser marking systems. Datalogic's cutting edge solutions help to increase efficiencies and quality of processes in the retail, manufacturing, transportation & logistics and healthcare industries. **Products and Services:** 

· Bar code readers, laser markers and vision systems

# Davis-Standard, LLC

Booth 204 Christine Maxam 1 Extrusion Drive Pawcatuck, CT 06379 USA 860-599-1010 cmaxam@davis-standard.com http://www.davis-standard.com

Davis-Standard, LLC manufactures a range of elastomer extrusion systems including multipurpose, hot and cold feed, silicone, vacuum vented, pin barrel, smooth barrel and custom designs, as well as gear strainers, pressure -stabilizing gear pumps and feed sections. Davis-Standard also supplies extrusion heads, custom feedscrew designs, curing systems, laboratory and downstream equipment, and process control systems.

# Products and Services:

• Bead Forming and support machinery, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

• Calenders and support machinery/hardware, etc.

# **Dickson PTL**

Booth 231 Loic Rocaboy 5625 N Wayne, Chicago, IL 60660 USA 336-260-0451 Irocaboy@dickson-ptl.com http://www.dickson-ptl.com

Dickson PTL is a French manufacturer of technical textiles with over 60 years of experience. We are worldwide leaders in coating and lamination technology.

We proudly manufacture unique fabrics for tire release liners, sold worldwide to major tire manufacturers. Our goal is to provide superior products with easy release and decrease costs of maintenance.

# **Products and Services:**

- Calenders and support machinery/hardware, etc.
- Tire Assembly and support machinery/guidance systems, etc.

# EXHIBITOR PROFILES

# Dings Company

Booth 122 Jeff Berger 4740 W. Electric Avenue, Milwaukee, WI 53219 USA 414-672-7830 414-672-5354 jberger@dingsco.com http://www.dingsbrakes.com

Direct Acting Spring-Set Electric Brakes for Tire Curing Presses, Bias Cutters, Conveyors, Mixers and Over Head Cranes.

# Products and Services:

Tire Assembly and support machinery/guidance systems, etc.
Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.
Curing Process and Support Supplies (Machinery (in bladder)

Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

### Electro-General Plastics, Corp Booth 525 Patrick Castro 6200 Enterprise Pkwy, Grove City, OH 43123 USA 614-871-2915 patrick@electro-generalplastics.com

http://www.electro-generalplastics.com

We have been manufacturing parts used in the production of tires since the early 1970's. From custom bead and apex separators that withstand the daily production needs without cracking like the low cost injection molded ones. Green Tire Seats for Buggies and High Bay Storage Systems. Die cut or CNC cut slip sheets for racks and flat bead separators.

# **Products and Services:**

- Bead Forming and support machinery, etc.
- Tire Assembly and support machinery/guidance systems, etc.
- Warehouse Encoding and Inventory Technologies

# **Electronic Systems**

Booth 420 HU HUI S.R. 229 KM 12,200 MOMO 28015 Novara Italy -928494 hu.hui@electronicsystems.it

http://www.electronicsystems.it

Automation, rework, mills, turn-key plant, complete revamping of calander and extrusion lines. Inspection systems, on line thickness and weight measurements with no-contact sensor, radioactive or radiation free sensor (ESSAIR® PATENTED, IR or microwaves) for adhesive tape, coating and laminating, extrusion coating, composites, cast and blown film, biax-extrusion, sheet and foil, nonwovens, paper, pvc calendering, rubber.

# **Products and Services:**

• Final Finish and Inspection

Factory In-Process Assurance Data Collection and Analysis Technology

• Tire Performance Testing Equipment/ Testing Services



# Y.MTIS – The Industry Benchmark in X-ray Tire Inspection



- Excellent image quality compliant with industry standards
- Field-proven automatic defect recognition
- Seamlessly integrates into your manufacturing chain
- Customizable upgrade path for adapting your system to changing requirements

yxlon@yxlon.com

www.yxlon.com



# **EXHIBITOR PROFILES**

Erhardt & Leimer Inc. Booth 117 Maulik Desai 350 Tucpau Road, Duncan, SC 29334 USA 864-486-3000 864-486-3011 mkdesai@erhardt-leimer.com http://www.erhardt-leimer.com

The world of Erhardt-Leimer revolves around the world of its customers. Their demands for even faster, more accurate and costsaving equipment are our inspiration. We focus on sophisticated, up to date equipment for web guiding systems, web spreading systems, web tension measurement and control, width measurement with CCD line cameras, control of breaker strips, automation solutions for the tire industry.

# Products and Services:

- Tire Assembly and support machinery/guidance systems, etc.
- · Calenders and support machinery/hardware, etc.
- Final Finish and Inspection

# Eriez

Booth 532 Ray Spurgeon 2200 Asbury Road, Erie, PA 16506 USA 814-835-6000 814-838-4960 Iwhaling@eriez.com http://www.eriez.com

Eriez<sup>®</sup> offers an extensive range of high sensitivity metal detectors for the rubber industry to improve product purity. Eriez metal detection equipment is THE trusted technology for nearly all major rubber processors around the globe. For more information, visit www.eriez.com.

# Products and Services:

Recycling

# **Everhard Products Inc**

Booth 422 Rob Lucas 1016 9th St SW, Canton, OH 44707 USA 330-453-7786 rglucas@everhard.com https://Tire.Everhard.com

Everhard Products designs and manufactures hand tools and equipment for the tire manufacturing industry. Products we manufacture include: hand rollers, hand knives, machine knives, knife heaters, industrial shears, line projectors, calender shells, service cores, and material handling carts. Everhard is ISO 9001 registered.

# **Products and Services:**

- · Calenders and support machinery/hardware, etc.
- Skiving, Cutting, Trimming, Gum Edging, Splitting Equipment

# FACTS, Inc.

Booth 206 Scott Hall 2737 Front St., Cuyahoga Falls, OH 44221 USA 330-928-2332 shall@facts-inc.com http://www.facts-inc.com

FACTS is a supplier to the global tire industry. We specialize in: Calender Gauge Control, Calender Line Control, Calender Actutator Upgrades, Extrusion Control, Batch Mixing Control, Tread Profile Measurement, Mill Knife Servo Systems, Blister Breaker Bubble Relief Systems, Servo Trim Knife Systems, Cord Spacing Measurement Systems Technical support 24/7

# **Products and Services:**

- Calenders and support machinery/hardware, etc.
- Factory In-Process Assurance Data Collection and Analysis Technology
- Factory In-Process Assurance Laboratory Testing Equipment

# **Glebus Alloys LLC**

Booth 217 Michael Stefanidis 887 Hampshire Road, Stow, OH 44224 USA 330-867-9999 mike.stefanidis@glebusalloys.com http://www.glebusalloys.com

Glebus Alloys has three product lines: Glebus is owner and manufacturer of the patented 3-piece spring vents, official seller and service provider. The second is the G-Metal self lubricating sliding materials: wear plates, Bushings, Disks, Pads etc. The third one is a new technology weekly (DOT) plugs from a patented material that is un-parallel to steel or aluminum. **Products and Services:** 

Cured Tire Uniformity and Balance Machines

Molds and Mold Release Treatments, Maintenance, etc.

# **EXHIBITOR PROFILES**



# Gottschol Alcuilux CZ Booth 319

Marek Zatloukal Zahlinicka 1325 Hulin 76824 EUROPE Czech Republic +420 573 350 060 zatloukal@gacz.cz http://www.gacz.eu

Gottschol Alcuilux (GACZ) is the largest Spring Vent manufacturer and its developer for almost 20 years. GACZ offers both available solutions: 1-piece and 2-piece Spring Vents. GACZ proudly supplies its product to prominent world tire manufacturers. GACZ manufactures all components itself, under one roof. Product customization, exceptional product and customer service quality make GACZ the leader in mold venting market worldwide.

# Products and Services:

• Skiving, Cutting, Trimming, Gum Edging, Splitting Equipment

• Molds and Mold Release Treatments, Maintenance, etc.

# Herbert USA, Inc.

Booth 226 Martin Grosch 1480 Industrial Parkway, Akron, OH 44310 USA 330-929-4297 martin.grosch@herbert.eu http://www.herbert.eu

Only the best solutions are good enough to top the market. HER-BERT<sup>®</sup> is your partner for success.

HERBERT<sup>®</sup> is a supplier for tire manufacturing and tooling – from the smallest to the biggest tire-molds, containers, drums and transfer-rings.

HERBERT® provides turn-key curing-presses and PCIs.

Everything is completely engineered and custom made according your demands.

We are looking forward to meet in Akron (booth 226).

# **Products and Services:**

• Tire Assembly and support machinery/guidance systems, etc.

Molds and Mold Release Treatments, Maintenance, etc.

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# HF Group

# Booth 511

Nora Grupe Harburg-Freudenberger Maschinenbau GmbH, Seevestra Hamburg 21079 Hamburg Germany 0049-40 77179-361 nora.grupe@hf-group.com http://www.hf-group.com

The HF Group is the leading partner of the Tire and Rubber Industry worldwide.

Since 160 years we provide innovative solutions for all purposes in the Mixing, Extrusion,

Tire Building and Curing Press segments. We not only supply state of the art equipment and a worldwide service, we provide complete systems enhanced product lines and modernization packages.

# Products and Services:

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# **Himile Group**

Booth 103 Will Wang No1 Himile Road Gaomi 261500 Shandong Province China +86 158 5440 6506 willwang@himile.com http://www.himile.com

Himile is a global leading company in areas of capacity, technology, equipment, category and brand influence and the world's R&D and manufacturing base for tire mold business. With a sound aftersales service system in China, Asia, Europe, North America and South America, Himile has developed comprehensive cooperation with many world's famous customers, including all of Top 10 tire plants.

### **Products and Services:**

• Molds and Mold Release Treatments, Maintenance, etc.



# **EXHIBITOR PROFILES**

### Hirata Booth 525

Bill Rottmiller 5625 Decatur Blvd., Indianapolis, IN 46241 USA 317-857-3019 317-856-2500 bill.rottmiller@hirata.com http://www.hirata.com

# Infinite Creative Enterprises, ICE Inc.

Booth 627 Miranda Lynch 72 Stard Rd, Seabrook, NH 03874 USA 603-347-6006 mlynch@infinitymassagechairs.com http://www.icesigns.com

# LED Signs

# Products and Services:

Marketing/Sale Signs
 Information Technologies for Improved Interaction with Consumers

# Intralox LLC

Booth 102 Erin O'Leary 301 Plantation Road, Harahan, LA 70123 USA 504-570-2522 erin.o'leary@intralox.com http://www.intralox.com

Tire manufacturers around the world have used Intralox belting in tire transport applications for over twenty years. Our high-performance belts solve traditional conveyance problems throughout tire plants and have proven to be strong, durable, easy to maintain, and simple to operate.

# Products and Services:

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# Kobelco Stewart Bolling Inc.

Booth 219 Brian Howard 1600 Terex Road, Hudson, OH 44236 USA 330-655-3111 330-655-2982 b.howard@ksbi.com http://ksbiusa.com

Kobelco Stewart Bolling, Inc. is a world leader in the manufacturing of tire, rubber and plastics machinery. A global company in both capability and resources, KSBI will help you respond in a changing and competitive environment.

# Products and Services:

· Calenders and support machinery/hardware, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# Kuraray America Inc.

Booth 127 Osamu Yoneji 2625 Bay Area Blvd. Ste 600, Houston, TX 77058 USA 281-283-1714 osamu.yoneji@kuraray.com https://www.elastomer.kuraray.com/

We (Kuraray America) produce Kuraray Liquid Rubber (KLR) which is widely used globally for a number of rubber applications including tires, automotive parts and more.

The use of KLR in rubber compounds helps improve processing time (reduce costs), surface smoothness, physical properties and more.

# **Products and Services:**

Compounding Tire Performance Ingredients

- Compounding and Lubrication Additives for Improved Processing
- Elastomers

# L&T Rubber Processing Machinery Booth 523

Sivaramanan Sundar Post bag #2 Chennai Bangalore Highway Kanchipuram, India

TX 48075 Tamilnadu India 847-220-3032

sivaramanan.s@larsentoubro.com http://www.larsentoubro.com

L&T Rubber Processing Machinery is a Multinational Corporation that infuses engineering with imagination, offering a wide range of machines catering to Tire Manufacturers. With over 4 decades of experience in manufacturing World Class Rubber Machinery on a global scale, LTRPM offers end -end comprehensive machinery solutions to its customers. LTRPM is represented by M. Sacks International in the Americas.

# **Products and Services:**

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# **EXHIBITOR PROFILES**

### LANXESS Corporation Booth 321 Leanne Trevelline 111 RIDC Park West Drive, Pittsburgh, PA 15275 USA 412-809-1515 leanne.trevelline@lanxess.com http://www.lanxess.us

LANXESS is a leading specialty chemicals company with sales of EUR 9.7 billion in 2017 and about 19,200 employees in 25 countries. The company is currently represented at 74 production sites worldwide. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics.

# Products and Services:

 Compounding and Lubrication Additives for Improved Processing

Compounding Tire Performance Ingredients

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# LAP Laser LLC

Booth 210 Liz Nguyen 1830 Airport Exchange Blvd, Erlanger, KY 41018 USA 859-283-5222 I.nguyen@lap-laser.com http://www.lap-laser.com

LAP Laser manufactures industrial laser projectors and sensors, including the SERVOLASER Xpert. The system, with fixed and moving laser lines, has been developed and designed according to requirements of tire producers and manufacturers of tire building machines. On tire building machines the SERVOLASER shows the center line and the edges of the next layer, controlled by the machines system control.

# **Products and Services:**

• Tire Assembly and support machinery/guidance systems, etc.

# LAWER S.p.A

Booth 617 Luca Mariuzzo Via Amendola 12/14 Cossato 13836 Bl Italy ++39 0159899511 ++39 0159842211 sales@lawer.com http://www.lawer.com

# QUALITY PERFORMS.



The demands on tires are growing steadily, in terms of both performance and environmental protection. With this in mind, products from the LANXESS Rhein Chemie business unit ensure that, as a tire producer, you always enjoy innovative and efficient solutions. As the only global player, we offer release agents and bladders, as well as additives for tire manufacture. Our wide range of products includes Aflux<sup>®</sup>, Aktiplast<sup>®</sup>, Antilux<sup>®</sup>, Cohedur<sup>®</sup>, Perkalink<sup>®</sup>, Rhenocure<sup>®</sup>, Rhenodiv<sup>®</sup>, Rhenofit<sup>®</sup>, Rhenogran<sup>®</sup>, Rhenomark<sup>®</sup>, and Vulkasil<sup>®</sup>. LANXESS quality ensures more innovation on the roads and greater profitability for your company. rch.lanxess.com



# QUALITY WORKS.



**EXHIBITOR PROFILES** 



Lawer provides products, solutions and services to the industry to increase the reliability, safety and efficiency of dosing and dispensing operations for powders and liquids.

Our core market position, that of a leading global product and solution provider together with our aim to set strong standards in all areas of our business, are both reflected in our company motto: 'the true accuracy'

We have almost 50 years' experience in supporting the industry to ensure the highest quality of the products. Our ability to do this is based on the 'Italian Quality' of our **Products and Services:** combined with our continuous investment in developing leading technology. As a result, more than 2500 customers put their trust in our company having allowed us to supply them with thousands of systems and solutions during our long history.

Via our world-wide presence, we stand beside our customers around the globe and through the whole life cycle of our products, from the assistance with selecting the right equipment, design-in support, installation and after sale service.

# Products and Services:

Dosing & Dispensing systems

Laboratory Chemical Testing and/or Consulting Services

# Lehigh Fluid Power

Booth 118 David Sims 1413 Route 179, Lambertville, NJ 08530 USA 800-257-9515 609-397-0932 simsd@lehighfluidpower.com http://www.lehighfluidpower.com

Lehigh Fluid Power is one of the leading manufacturers of NFPA and custom pneumatic and hydraulic cylinders for a wide range of applications. Some of the industries include the tire, nuclear, trash to steam to name a few.

# **Products and Services:**

• Supplier of pneumatic and hydraulic cylinders for several of the processes in the production of tires.

# **Matthews Marking Systems**

Booth 326 Jennifer Adams 6515 Penn Ave, Pittsburgh, PA 15206 USA 800-775-7775 info@matw.com http://www.matthewsmarking.com

Matthews Marking Systems offers a unique large character ink jet printing system developed specifically for printing onto uncured rubber, where the ink must withstand the curing process; including tire and tread marking. Print and record real time information, such as shift codes, time, and date for traceability, as well as barcodes and 2D codes.

### **Products and Services:**

Factory In-Process Assurance Data Collection and Analysis Technology

# **McLube Release Coatings**

Booth 110 Evan Silo 9 Crozerville Rd, Aston, PA 19014 USA 610-459-1890 610-459-9538 evan@mclube.com http://www.mclube.com

McLube, offers high-performance release agent systems, anti-tack coatings and lubricants. We believe superior results do not come from generalized coatings. Our products are made to specific materials and processes with varying attributes that allow for seamless integration. McLube Employees around the globe work in tandem to solve problems and provide unparalleled customer satisfaction.

# **Products and Services:**

Anti-tack & Slab-dip

- Compounding and Lubrication Additives for Improved Processing
- Molds and Mold Release Treatments, Maintenance, etc.

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# McNeil & NRM, Inc.

Booth 411 Barbara Hahn 96 East Crosier St. Akron, OH 44311 USA 330-253-2525 bhahn@mcneilnrm.com http://www.mcneilnrm.com

McNeil & NRM, Inc. has been one of the foundations in machinery supply to the tire industry. Together with McNeil Akron Repiquet of France, McNeil & NRM, Inc. offers a wide range of **Products and Services:** to the tire industry. Curing presses, tire assembly equipment, mills, calendars, strip winding and cutting machinery. **Products and Services:** 

• Tire Assembly and support machinery/guidance systems, etc.

• Calenders and support machinery/hardware, etc.

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# **EXHIBITOR PROFILES**



### Mehler Engineered Products, Inc Booth 126 Todd Philcox 175 Mehler Lane, Martinsville, VA 24112 USA 864-344-6889 todd.philcox@mehler-ep.com http://www.mehler-ep.com

Mehler Engineered Products has made a name for itself as a specialist in the worldwide development, production, and sales of treated yarns and dimensional fabrics for technical products focused on the rubber industry. With six production sites on three continents we have a global presence in the marketplace. **Products and Services:** 

Compounding Tire Performance Ingredients

# MESNAC

Booth 211 Gilberto Gonzalez 2620 Ridgewood Rd, Akron, OH 44313 USA 865-856-2317 ggonzalez@mesnac.us http://mesnac.com

MESNAC is one of the top worldwide company specialized in designing and manufacturing equipment and solutions for the tire and rubber industry. MESNAC makes equipment from the Mixing Room up to Automated warehouse systems. MESNAC also provides IT Solutions and management control systems. The main Headquarters are in Qingdao China and regional Headquarters/ Service in South Asia, India, Europe and America.

# Products and Services:

• Tire Assembly and support machinery/guidance systems, etc.

• Tire Performance Testing Equipment/ Testing Services

 Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# Micro-Epsilon America

Booth 613 Martin Dumberger 8120 Brownleigh Dr., Raleigh, NC 27617 USA 919-787-9707 919-787-9706 me-usa@micro-epsilon.com http://www.micro-epsilon.com

Micro-Epsilon is a worldwide known specialist for precise sensors and measurement systems. All core competences and the knowledge related in the field of the tire and rubber industry reflect in innovative and reliable products arising from one company. Measurement and inspection systems from Micro-Epsilon are used in the preparation area and the final finishing of tire production covering the complete process of an extrusion line, e.g. tire surface inspection systems (detection of bulges and depressions), extruder line profilometers or thickness and profile measurement of rubber.

# Products and Services:

• Tire Assembly and support machinery/guidance systems, etc.

• Final Finish and Inspection

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

### Micro-Poise Measurement Systems Booth 605

Linda OShea 555 Mondial Parkway, Streetsboro, OH 44241 USA 330-541-9102 linda.oshea@ametek.com http://www.micropoise.com

Micro-Poise Measurement Systems, a Business Unit of AMETEK, Inc. manufactures tire uniformity machines, dynamic balancers, X-ray equipment with Automatic Defect Recognition capability, geometry laser measurement systems and software for tire manufacturers. Micro-Poise's global headquarters and manufacturing facility is located in Streetsboro, Ohio, USA. With sales offices located throughout the world, Micro-Poise offers local sales and service support.

### **Products and Services:**

Cured Tire Uniformity and Balance Machines



# ITEC EXHIBITION & CONFERENCE

**EXHIBITOR PROFILES** 

Midwest Elastomers, Inc. Booth 227 Ronald Clark P.O. Box 412, Wapakoneta, OH 45895 USA 419-738-5430 419-738-4411 rclark@midwestelastomers.com http://www.midwestelastomers.com

MEI produces rubber powders from scrap and virgin rubber and plastic polymers. MEI supports our customers through generic and tolling programs. MEI is a global supplier. **Products and Services:** 

Elastomers

# Netzsch Instruments North America Booth 306

Katharina Klein 129 Middlesex Turnpike, Burlington, MA 01803 USA 781-418-1801 nib-sales@netzsch.com http://www.netzsch.com/ta

Featuring the famous GABO EPLEXOR DMA/DMTA dynamic mechanical analyzers with forces from 25 N to 8000 N for determination of the absolute values of the E modulus. Flexometers for thermal fatigue of rubber, instruments for dynamic shore hardness of the adhesive properties of pre-vulcanized rubber compounds, thermogravimetric analysis (TGA), thermal conductivity, DSC, conventional DMA, TMA for thermal expansion, and more. **Products and Services:** 

Laboratory Physical Testing Equipment and/or Consulting Services

Laboratory Chemical Testing and/or Consulting Services

Factory In-Process Assurance Laboratory Testing Equipment

# NFM Welding Engineers

Booth 432 Tim Boron 577 Oberlin Rd SW, Massillon, OH 44647 USA 330-837-3868 tboron@nfm.net http://www.nfm.net

With manufacturing locations in Massillon Ohio and Leyland England, NFM has over 100 years of experience servicing the tire & rubber marketplace. Whether you're looking for a new extrusion system or rebuilding existing equipment, NFM is a full service OEM. NFM engineers and manufactures rubber extruders of all types & sizes and can also provide rebuild components of any OEM.

### Products and Services:

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

Pannier Corporation Booth 527 Erica Robinson 207 Sandusky Street, Pittsburgh, PA 15212 USA 412-323-4900 412-323-4962 erobinson@pannier.com http://www.pannier.com

World leader in tire component marking systems. Rubber Printing System used by the world's largest tire manufacturers prints with co-curable, rubber-based inks. Automatically print recipe and date codes to eliminate marking errors, reduce scrap and ensure accuracy in tire building. Pannier also offers a range of complementary marking systems including rotary printers, indent markers, and dot/stripe printers. Visit www.pannier.com/tire.

Products and Services:
 Marking Systems

# Paragon Data Systems, Inc

Booth 116 Larry Laurenzi 2218 Superior Avenue, Cleveland, OH 44114 USA 216-621-7571 216-621-2651 I.laurenzi@paragondsi.com http://www.paragondsi.com

Paragon Data Systems, Inc. is a bar code system integrator and the world's only provider of LOMEL Labels. Our EVA 160 labels are designed to be applied to Batch Inclusion Bags for complete lot tracking of all rubber mixing with absolute no contamination of the rubber mix. Our international customer base is comprised of the worlds leading custom compounders.

# Pinnacle Systems, Inc.

Booth 230 Pete Sielski P.O. Box 100088, Pittsburgh, PA 15233 USA 800-569-7697 412-262-1197 petesielski@pinnaclesystems.com http://www.pinnaclesystems.com

Pinnacle Systems manufactures a family of machine safety products including safety light curtains, pressure sensitive safety mats/ controllers, safety PLC's, ergonomic palm buttons and safety fencing. All products are designed, manufactured and supported in the USA. Long warranty, quick delivery and competitive pricing are standard with all products.

# Products and Services:

Safety Systems and Consultations

# **EXHIBITOR PROFILES**



### Pioneer Industrial Systems Booth 100 Todd Hendricks 16442 US HWY 20, Alvordton, OH 43501 USA

16442 US HWY 20, Alvordton, OH 43501 ( 419-737-9506 thendricks@pioneerindsys.com http://www.pioneerindsys.com

PIONEER INDUSTRIAL SYSTEMS specializes in Tire Spraying and Handling equipment incorporating our Precision Fluid Delivery System for green tire spraying, white letter or highpoint paint. Pioneer is an authorized Fanuc Robot Integrator. Our systems improve quality, reduce defects, improve productivity, and save material cost. Pioneer currently has over 124 units, 52 robots, in 37 different tire plants around the world.

# Products and Services:

• Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

- Molds and Mold Release Treatments, Maintenance, etc.
- Final Finish and Inspection

### Polymer Industrial Products Company, LLC Booth 207 Keith Carter

P.O. Box 310, Piney Flats, TN 37686 USA 423-538-5105 keith@pipcousa.com http://pipcousa.com

Polymer Industrial Products Company, LLC specializes in tire curing bladders, turn up bladders and a host of custom rubber products. PIPCO manufactures elastomeric products for tire and other industrial applications. We have been in the rubber business since 1915 and manufacturing in Piney Flats, TN since 1985.

# **Products and Services:**

Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

• Tire Assembly and support machinery/guidance systems, etc.





# **EXHIBITOR PROFILES**

# Polymer Machinery Company-U-CAN Booth 120 James Chiofolo

154-B Patomac Ave, Tallmadge, OH 44278 USA 330-618-7956 jchiofolo@polymermachineryco.com http://www.polymermachineryco.com

U-CAN DYNATEX INC. is a worldwide supplier of analytical instruments and testing equipment for polymer industries with near-30-year experience. Rheometer is mainly used to detect physical property changes of polymer materials induced by chemical reactions during processing.

# Products and Services:

- Factory In-Process Assurance Laboratory Testing Equipment
   Elastomers
- Tire Failure Analysis

### Regloplas Booth 601

Henry Van Gemert 1088 Miners Road, St. Joseph, MI 49085 USA 2964281100 hvangemert@regloplasusa.com http://www.regloplasusa.com

Regloplas has been designing and manufacturing Temperature Control Units for the Rubber and Tire Industry for over 50 years. With Oil units up to 650 degrees F and Water Units up to 400 degrees F we have a TCU for your application. With a large assortment of accessories you will have an easy and economical installation. **Products and Services:** 

Calenders and support machinery/hardware, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# Renold Torque Transmission

Booth 107 Rich Landgraf 100 Bourne Street, Westfield, NY 14787 USA 724-496-8602 rich.landgraf@renold.com http://www.renoldajax.com

Renold Torque Transmission is a leading manufacturer of power transmission products for the rubber, metals, and mining industries. Renold Torque Transmission manufactures couplings, drive spindles, universal joints, and gearboxes to the highest quality standards. We have decades of experience supplying custom and engineered solutions to customers across the globe.

# **Products and Services:**

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

- Internal Mixers and Mills with support machinery such as weigh-
- ing systems, batch offs, conveyor systems, etc.
- Curing Presses and Support Supplies/Machine

# **RJS Corporation**

Booth 506 Paul Kapper 3400 Massillon Rd, Akron, OH 44312 USA 330-896-2387 pkapper@rjscorp.com http://rjscorp.com

RJS Corporation manufactures supporting machinery for the tire industry, specializing in complete steel cord creel systems for tire manufacturing, creel loading systems, and tension controllers. Our products are well known to tire companies world-wide. Other products offered by RJS are: OTR band building machines, bead covering machines, tire plunger/bead unseating test machines, and conveyor belt tracking devices.

Products and Services:

- Calenders and support machinery/hardware, etc.
- Non Destructive Tire Testing Machinery

# **RODOLFO COMERIO SRL**

Booth 330 Martina Crugnola via IV Novembre 21058 Solbiate Olona 21058 Varese Italy 3.9033164168e+11 comm@comerio.it http://www.comerio.it

RODOLFO COMERIO 1878. Current annual capacity of 25 calendering plants for PVC and RUBBER, RC is the leading Italian company for the manufacturing of roll calenders for RUBBER sheet lamination.

Always attentive to Customers requests, RODOLFO COMERIO is now working on adopting new technologies to reach absolutely the highest accuracy and repeatability on its calenders. **Products and Services:** 

• Calenders and support machinery/hardware, etc.

**EXHIBITOR PROFILES** 



# Safe-Run Machinery (Suzhou)Co., Ltd.

Booth 503 Zhu Zhen No. 111 Hengchangjing Road, Kunshan Jiangsu Province 215337 Jiangsu Province China +86 512 8618 1888 zhuzhen@safe-run.cn. http://www.safe-run.cn

Safe-Run is a global technologically-leading high-end machinery manufacturer and solutions provider for tire building machines and curing presses. The continuous development of new technologies and their fast integration into our products allows Safe-Run's customers to enjoy reductions in manufacturing costs, enhanced product quality and improved manufacturing efficiency.

# **Products and Services:**

· Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

· Bead Forming and support machinery, etc.

# Seifert Technologies, Inc.

Booth 426 Zachary Glass 2323 Nave Road SE, Massillon, OH 44646 USA 330-833-2700 330-833-2793 zalass@seifert.com http://www.seifert.com

Seifert Technologies has worked with large Fortune 500 companies and small manufacturers in the Tire and Rubber Industries since 1985. We specialize in machine design, automation, 3D solid modeling, systems integration and finite element analysis. We have over 50 mechanical and electrical engineers in our Massillon, OH and Nashville, TN offices. Let Seifert Technologies help your company be more productive.

# **Products and Services:**

• Tire Assembly and support machinery/guidance systems, etc.

Warehouse Encoding and Inventory Technologies

 Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

# Seika Machinery, Inc.

Booth 427 Tim Cappoen 1580 Boggs Rd. Suite 900, Dululth, GA 30096 USA 770-446-3116 tim@seikausa.com http://www.seikausa.com

We supply a line of advanced testing equipment manufactured by Ueshima, a Japanese specialist in the tire and plastics industry. Products include testers for fatigue, strain, abrasion, wear, friction and much more.

# **Products and Services:**

· Laboratory Physical Testing Equipment and/or Consulting Services

• Field Performance Data Collection and Analysis Technology

Siemens Industry, Inc. Booth 431 Ed Bailey 6540 Wooded View Dr, Hudson, OH 44236 USA 330-274-7510 edward.bailey@siemens.com http://www.siemens.com/tire

Siemens Corporation is a U.S. subsidiary of Siemens AG, a global powerhouse focusing on the areas of electrification, automation and digitalization. Siemens is your partner in all aspects of tire manufacturing offering a comprehensive portfolio of seamlessly integrated hardware, software and technology-based services. Siemens supports tire manufacturing on an enterprise level enhancing flexibility, efficiency and production transparency. **Products and Services:** 

Automation and Digitalization solutions for Tire

# SINOARP Tires Equipment Technology Company LTD.

Booth 417 Aileen ZHao Ping Sheng Road18, Suzhou Industry Park. Suzhou AR 215126 Jiangsu China -62815688 -62812978 aileenzhao@sinoarp.com http://www.sinoarp.com

SINOARP has deep experience in Curing Press manufacturing business. To better serve the world top tire manufacturers and to provide our customers with curing press of high quality, we constructed a modern plant in Suzhou Industrial Park in 2005. We are an integrated company of R&D, production and sale, and curing press is our core business.

### **Products and Services:**

 Curing Presses and Support Supplies/Machinery, (ie bladders, lubricants).

# TTEC EXHIBITOR & CONFERENCE

# Smithers Rapra

Booth 325 Maggie Olson 425 W. Market Street, Akron, OH 44303 USA 330-762-7441 molson@smithers.com http://www.smithersrapra.com

Smithers Rapra delivers a complete portfolio of rubber and plastic testing services to support industries including tire, automotive, polymer products, oil and gas, medical, packaging and consumer products among others. Smithers' goal is to add value throughout the life cycle of our clients' products through consulting, information and compliance services. Learn more about our full range of services at www.smithersrapra.com.

# Products and Services:

Laboratory Physical Testing Equipment and/or Consulting Services

- Laboratory Chemical Testing and/or Consulting Services
- Tire Performance Testing Equipment/ Testing Services

### Standards Testing Labs Booth 619

Cheryl Schnuth 1845 Harsh Ave, Massillon, OH 44646 USA 330-833-8548 cschnuth@stllabs.com http://www.stllabs.com

Standards Testing Labs provides testing services for tires and wheels, and test to industry standards. This testing is conducted at our in-house laboratories and on vehicle using varying climates and road conditions. Rolling resistance continues to be our top importance and we can test to all specifications. Outdoor testing also includes UTQG treadwear and traction. STL manufacturers tire testing equipment.

# **Products and Services:**

• Tire Performance Testing Equipment/ Testing Services

# Starrett-Bytewise Measurement Systems Booth 223

Dennis Reynolds 1245 Broadway, Columbus, GA 31901 USA 706-593-3091 dreynolds@starrett.com http://www.starrett.com/bytewise

Starrett-Bytewise designs and builds quality measurement systems that employ our own line laser triangulation sensors. Our products include GEO-360 for bulge and depression measurement with SL3 sensors, the Tire360 tire scanner for tire testing, on-line and off-line profile measurement systems for tread extrusion, GTU systems for checking tire building splices and component alignment, and ply and belt monitors.

# **Products and Services:**

**EXHIBITOR PROFILES** 

- Tread Wear Measurement Systems
- Tire Assembly and support machinery/guidance systems, etc.
- Final Finish and Inspection

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

# Symbology, Inc.

Booth 327 John Gorowsky 7351 Kirkwood Lane N., Minneapolis, MN 55369 USA 763-315-8080 763-315-8088 jgorowsky@symbology.com http://www.symbology.com

Symbology offers bar code and tread label products to the new tire and retread tire industries. Let us help you uniquely identify tires and track components in your processes for better quality control and efficiency.

We have several unique tire and rubber label products for a wide variety of applications.

# **Products and Services:**

Factory In-Process Assurance Data Collection and Analysis Technology

- Warehouse Encoding and Inventory Technologies
- Warehouse Labeling and Packaging

# Taray International Corp.

Booth 418 Jerol Ayasun 1112 N. Collier Blvd, Marco Island, FL 34145 USA 239-394-6099 sales@taray.com http://www.taray.com

Taray International Corporation is a global supplier serving the Tire Industry worldwide since 1979.

Our expertise is fabricating and supplying tire molds and related products including presses for the Americas marketplace. **Products and Services:** 

• Tire Assembly and support machinery/guidance systems, etc.

Molds and Mold Release Treatments, Maintenance, etc.

### Transfergomma srl Booth 530

giovanni marcolin via mattei 5 saccolongo 35030 padova Italy 3.933553104e+11 giovanni.marcolin@transfergomma.com http://www.transfergomma.com **EXHIBITOR PROFILES** 



Transfer Gomma has produced successfully for 30 years, heat transfer labels for any kinds of applications, with the last generation technology

We are focused on customer satisfaction and our sales network gets to our customers, both nationally and internationally, quickly and skillfully.

# Products and Services:

Tire decoration system

# **Tri-Power MPT**

Booth 615 Richard Wiley 1447 S. Main St., Akron, OH 44301 USA 330-773-3307 ricw@tri-power.com http://www.tri-power.com

Industrial distributor of Mechanical Power Transmission, Sensors, Motion Control and Drives, Pumps and Seals, Packing and Rubber Products, Fluid Power, and Machine Safety Products.

We have served the Tire and Rubber industry in Akron since 1954. **Products and Services:** 

Factory In-Process Assurance Data Collection and Analysis
Technology

Safety Systems and Consultations

# TROESTER Machinery, Ltd.

Booth 317 Zach Boaz 300 Loomis Ave, Cuyahoga Falls, OH 44221 USA 330-928-7790 zach.boaz@troester.us.com http://www.troester.de

TROESTER is a leading global supplier to the tire industry headquartered in Hanover Germany. The company supplies complete extrusion lines for tread, sidewall, innerliner, apex bead etc. Individual machines like extruders, extrusion heads, CoEx heads, Roller Heads, Single Roll Roller Dies, profile and cushion calenders etc. round out the offering for tire manufacturers. Visit www.troester.de for more information.

# **Products and Services:**

Skiving, Cutting, Trimming, Gum Edging, Splitting Equipment

• Calenders and support machinery/hardware, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

# **UMD Automated Systems**

Booth 104 Jake Esola 9855 Salem Rd., Fredericktown, OH 43019 USA 740-694-8614 jesola@umdinc.net http://www.umdautomatedsystems.com UMD creates complete state-of-the-art material handling solutions for leading manufacturers in various industries with special emphasis in Tire and Rubber and Tier 1 Automotive. UMD offers extensive product offerings from Mixing, Component Prep, Tire building & Green Tire Handling and Curing through Final Inspection & Warehouse. Our team of dedicated industry experts are here to assist you.

# Products and Services:

• Final Finish and Inspection

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

Skiving, Cutting, Trimming, Gum Edging, Splitting Equipment

### University of Akron - APTS Booth 111

Crittenden Ohlemacher APTC 116, Akron, OH 44325-5404 USA 330-972-7265 cjohlem@uakron.edu https://www.uakron.edu/apts/

The University of Akron's Akron Polymer Technology Services (APTS) supports all sectors of the polymer industry through the delivery of training, testing, and processing services that enrich learning and optimize industrial performance. The College of Polymer Science and Polymer Engineering is organized for teaching and research at the graduate level, granting M.S. and Ph.D. degrees in Polymer Science or Polymer Engineering.

# Products and Services:

Training

Reverse Engineering Chemical Analysis Testing/Consulting
Services

Laboratory Physical Testing Equipment and/or Consulting Services

Laboratory Chemical Testing and/or Consulting Services

# VMI Group

Booth 303 Arie Kroeze 4670 Allen Road, Stow, OH 44224 USA 330-929-6800 akroeze@vmi-group.com http://www.vmi-group.com

Market leader in tire production machinery

People feel a real pride when they create technical innovations that keep manufacturers ahead in their markets. That's the passion behind the VMI Group and the reason VMI is the market leader in complex tire production machinery.

VMI employs more than 1200 people worldwide dedicated to meeting your current and future tire manufacturing demands. **Products and Services:** 

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling, controls, etc.

- Tire Assembly and support machinery/guidance systems, etc.
- Tire Performance Testing Equipment/Testing Services



# **EXHIBITOR PROFILES**

# Webb-Stiles Company

Booth 114 Rebekah Jenne 675 Liverpool Drive, Valley City, OH 44280 USA 330-225-7761 rjenne@webb-stiles.com http://www.webb-stiles.com

WEBB-STILES offers more than 60 years of practical expertise in the Overhead Conveyor and Custom Engineered Conveyor Systems. Whether you are looking for a new system or having problems with a current system, contact a WEBB-STILES Sales Engineer for all your Conveyor needs.

# Products and Services:

Final Finish and Inspection

• Tire Assembly and support machinery/guidance systems, etc.

# YXLON

Booth 407 Connie Hanzlik 5675 Hudson Industrial Parkway, Hudson, OH 44236 USA 234-287-7867 connie.hanzlik@yxlon.com http://www.yxlon.com

YXLON is the leading supplier of industrial X-ray inspection for the NDT testing of materials including X-ray solutions for the special requirements of tire inspection. YXLON X-ray systems allow outstanding detail detectability, achieving a high throughput while still enabling the operator to obtain inspection decisions with certainty. The result is efficient X-ray inspection in real time.

# Products and Services:

- Tire Assembly and support machinery/guidance systems, etc.
- Tire Failure Analysis

Tire Performance Testing Equipment/ Testing Services

### Zeppelin Systems Booth 302

Christian Tittensor 13330 Byrd Drive, Odessa, FL 33556 USA 610-282-5848 christian.tittensor@zeppelin-usa.com http://www.zeppelin-systems.us

Zeppelin is recognized worldwide as the leading manufacturer of bulk material handling equipment for the Tire Industry. To be successful in the tire industry, you need equipment that guarantees consistent, high quality, accurate feeding, and precise weighing. That's where Zeppelin can help.

# **Products and Services:**

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

- Pneumatic Conveying Systems
- Weighing and Feeding Systems for Solids and Liquids
- Small Chemical Preparation Systems

Zesco Inc Booth 625 Ed Sustersic 6500 Miller Road, Brecksville, OH 44141 USA 440-526-0603 edsus@zescoinc.com http://www.zescoinc.com

Zesco Inc. is a supplier and an integrator to the rubber industry of drive and motion control solutions. Company has extensive experience in extrusion VFD drive processes and servo motion control applications used in various mixing, mill room, and tire room machine designs.

# Products and Services:

• Tire Assembly and support machinery/guidance systems, etc.

• Internal Mixers and Mills with support machinery such as weighing systems, batch offs, conveyor systems, etc.

• Extruders and Extruder Mixers including feed screw design, barrel design, cooling,

# **ZF Test Systems**

Booth 623 Nara Subramanian 28 Titlinger Strasse Passsau 94034 Bavaria Germany 498-514-9455 narayanan.subramanian@zf.com https://www.zf.com/corporate/en\_de/products/further\_product\_ ranges/testsystems/index.html

R & D and production test benches for tires made by ZF offer all kinds of test procedures required by tire manufacturers to ensure a fast development and a certified quality assurance. ZF tests Uniformity, run out, rolling resistance, dynamic and static characteristics, tire noise, static spring rate, dynamic spring rate and Endurance according to customer requirements. **Products and Services:** 

# Cured Tire Uniformity and Balance Machines

Final Finish and Inspection

• Tire Performance Testing Equipment/ Testing Service

# Z-Laser America Inc.

Booth 603

Ralph Tesson 15-101 Boul. Don Quichotte LIIe Perrot' J7V 7X4 QC Canada 800-958-1572 ralph@z-laser-america.com http://www.z-laser.com

The world's leading manufacturer for lasers for the tire industry. Robust lasers built for the factory floor for layout guidance and machine vision systems. Precision mounts and lasers in red, green, blue and infra-red from 1mW to 6000mW

# Products and Services:

• Tire Assembly and support machinery/guidance systems, etc.













# SR-PUD1 PCR UNI-STAGE TIRE BUILDING MACHINE

SRS-PUD<sub>1</sub> integrates many automatic and intelligent technologies which independently developed by Safe-run, all steps are fully automatic except manual steel rim placement, only one operator is needed for the whole equipment. SRS-PUD<sub>1</sub> equipped with advanced technology of intelligent material rectifying system, to ensure high accuracy plying-up the material on the building drum; it is also equipped with a 3D visual joint inspection system developed by Safe-run, which ensures the quality of the tire when no one is around.

> www.safe-run.cn sales@safe-run.cn Tel : +86 512-8618 1888 No.111 Hengchangjing Road Kunshan City, Jiangsu Province, China

# VMI EDGIQ Steel belt cutter

The VMI EDGIQ steel belt cutter is a revolutionary cutting and splicing system producing high quality steel belt and chafer material for radial passenger tires.

The system has an unprecedented daily production output, while at the same time gives you full flexibility in your production process.

Incorporating VMI's MAXX technology, the EDGIQ, in its most automated configuration, is optimally suited for hands-off, eyes of production.

vmi-group.com

How technology meets Success.