29th Annual European Conference on tyre recycling

Circular Transition in Tyre Recycling

Wednesday through Friday 17 - 19 April 2024
LE LOUISE Hotel, Brussels
ETRA, the European Tyre Recycling Association, is the only European organisation devoted exclusively to tyre and rubber recycling. Membership includes both the public and private sectors involved in the environmentally sound management and valorisation of post-consumer tyres and more recently, allied industries that rely on recycled tyre materials (RTMs) to source materials or ingredients. Policy and decision makers as well as those organise and connect the links in the value-chain are represented.

With a focus on material recycling, ETRA members include those who process tyres into standardised materials or use them in an expanding array of applications and products. Support industries including collectors, equipment manufacturers, research and training institutions, product developers, governments, NGOs, investors etc., are also members.

As the tyre recycling industry has matured, ETRA, its Board and members have worked with material users, research bodies and an array of industries to develop innovative new technologies, materials, products and applications to meet the needs of current and evolving markets. In recent years, the focus has included not only new or first level secondary raw materials – but a series of recyclates. The range of these products is beginning to expand under the new Circular Economy parameters.

Since 2013 ETRA has cooperated with many organisations to introduce and train new professional audiences and familiarise them with the range of benefits that can accrue from recycled tyre materials, products and applications. In 2014 ETRA joined forces with ANTEL Italy to offer training for municipal engineers in annual day-long seminars. Other States are now interested and participate.

In 2015 a new programme was begun with ASTM, carrying on from the one initiated with CEN in 1999. 2017 saw a new ASTM committee on Recycled Carbon Black (D36) during the ETRA Conference, and EIT also made its debut. These relationships are helping to broaden the professional base of those who use, develop, exploit and recommend recycled tyre materials.

Recognised by the European Commission and Parliament, ETRA assisted in the Recycling Forum and dialogues on the Thematic Strategy for the prevention and recycling of waste and was a speaker at the Parliamentary hearings on Waste Management Policy in 2006, 2008 and 2016. ETRA contributed to the first Basel Convention ‘Guidelines for the identification and management of used tyres’ and participates in missions for UNEP and UNOPS.

ETRA works closely with member companies, industries and affiliate organisations to develop innovative concepts into viable, commercialisable projects. Participation takes many forms, from management and operations, to the development of technologies, materials, products and applications. ETRA, Vice Presidents and members are currently participating in a number of projects supported under EU funding schemes. New projects are being developed under Horizon 2020, PIC, EIT, LIFE, and others. The Partner Registry and student ESEE which will be presented during the conference, facilitate member identification and participation.

A European thrust towards sustainability and resource efficiency through the Circular Economy increasingly focuses on contributions attainable from expanded and improved material recycling. The results are evident in the cost-effectiveness, reduced carbon emissions and energy use, as well as the enhanced performance of output materials. Recent innovations have led to a vast expansion of the range and variety of materials and products available, and the sectors that can benefit from these performant and sustainable materials.

Today, the most basic recycling treatments provide viable outputs of all three of the principal material groups: rubber, steel and textiles. More sophisticated, multi-treatment processing has begun to result in materials that can effectively replace a broad range of virgin resources required by diverse, sophisticated markets.

ETRA works closely with five key industry sectors to assess material requirements, products and applications that are currently used in order to identify others which could be potentially produced from recycled tyre outputs. With a product inventory in hand, product descriptions and use-mapping options are being prepared for circulation to manufacturers and users in a broader market range.

In 2014 ETRA launched an effort to expand opportunities for member companies to network with a range of new sectors. The Industry to Industry – Business to Business programme provides opportunities to expand awareness and exposure to RTMs. The initial sectors involved were: Surface Transport, Sports and Leisure Infrastructure, and Alternative Materials, with an on-going focus on Pyrolysis. It was expanded to include mobility (roads and rails) and the automotive sector (hoses, gaskets, dashboards). The response from potential users has been very positive.

In 2016 the initiative expanded to highlight new and ongoing relationships with support programmes and professional organisations. These efforts include the EU EASME, ERMCO, ASTM, ReMine, Elastopole (France), EIT (Italy), ANTEL among others. ETRA is strongly committed in expanding contact before the Commission, Parliament and other EU government bodies. New organisational relationships have been formed in Egypt, Ghana, India, Indonesia, Israel, Morocco and others around the world.

The Conference programme consists of topical plenary sessions and focused discussions on particular issues impacting the sector e.g., data issues, Infill Ban, the Circular economy package, Green Public Procurement, Data Incoercency, as well as new markets. The objectives are to offer updated information about the activities of the sector today, within and outside the EU; to provide opportunities for colleagues to meet and to network in informal settings; to stimulate exchanges of experience and expertise; and to explore prospects to work together in a variety of research, development, commercial and sectoral activities.
Schedule of the day for Conference Delegates

09.00   RE-PLAN CITY LIFE Project Meeting *(RESERVED TO PARTNERS)*

10:00   (Set-up Exhibition and Poster Area)

14.00   RE-PLAN CITY LIFE WORKSHOP *(OPEN TO ALL)*

16.30   End of the Workshop

16.40   Coffee Break

17.00   ETRA General Assembly Meeting *(ETRA Members only)*

18.30   End of General Assembly

19.30   Cocktail Reception

20.30   Networking Dinner in honor of Speakers and Delegates
LIFE20 GIE FR 282 - RE-PLAN CITY LIFE

RElevant Audience Plan Leading to Awareness Network for Circular Economy Use of Recycled Tyre materials in city LIFE

Project Meeting (reserved to partners)

08.30 Registration and Welcome Coffee
08-50 Introduction – presentation of the Agenda
09.00 Project Financial Review
11.00 Coffee Break
11.20 Communication and dissemination
12.00 Project Management
13.00 Project Meeting Closure
13:15 Light Lunch
Today, 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050. This trend is not only growing but also accelerating.

This condition is posing ever increasing pressure on many different issues related to urban context, such as waste recycling, pollution, housing, mobility and transport infrastructures, quality of life, just mention a few, to which Public Authorities are laying great attention trying to respond to raising demands from the population.

The EU Commission is facing them through different strategic actions and programs. One of these is the Urban Agenda for the EU which addresses problems cities are facing by setting up Partnerships between the Commission, EU organisations, national governments, city authorities and other stakeholders such as non-governmental organisations.

Other programs such as the European Urban Initiative, the Intelligent Cities Challenge Initiative, and the Circular Cities and Regions Initiative will provide key assistance to cities. Circular economy will be among the priority areas of the Green City Accord. The European Circular Economy Stakeholder Platform will continue to be the place for stakeholders to exchange information.

The Commission is working together with cities to ensure a good quality of life. See how the Commission helps cities to grow sustainably through sharing of knowledge, funding, and other urban policies and initiatives.

Several EU funds offer support to cities, including advice on implementation. Different EU program offers support and funds to address above issues: InvestEU Fund, European Structural and Investment Fund, Horizon Europe, Urban Initiative Actions, Invest EU Portal, URBACT, URBIS, Interreg, LIFE.
Under LIFE programme ETRA with the support of 12 partners is carrying on the project RE-PLAN CITY LIFE trying respond to some of above issues.

**RE-PLAN CITY LIFE** project aims to increase awareness on the use of Recycled Tyre Materials (RTMs), promote environmentally friendly behaviors in urban communities, stimulate the adoption of Circular Economy best practices, and create further opportunities of cooperation and implementation through new projects.

In the frame of the 29th ETRA Conference on Tyre Recycling the lively Workshop “RECYCLED MATERIALS and PUBLIC WORKS: HOW TO REDUCE THE GAP” has been organized.

The workshop will illustrate the tools put in place by the project to stimulate a stronger engagement from the Public Authorities to adopt best practices and Green Procurement. The workshop, is free and open to anyone interested and offers a unique opportunity of discussion and interaction with relevant Stakeholders.

The aim of the Workshop is to provide a lively forum of Stakeholders to:
- analyse the obstacle that has been identified
- present the tools that are being designed to overcome such obstacles
- propose and discuss about suitable strategies to engage Public Administrations
- identify possible synergies among EU projects and programs and enhance cooperation
- Create the basis for new projects
- Present the Replan Web Platform

A few technical presentations by experts in Green Public Procurement and Public Administration engagement will be followed by a lively Round Table discussion among Project Partners, Stakeholders and Participants.

16.30 Workshop Closure
16.40 Coffee Break

17.00 ETRA General Assembly Meeting *(ETRA Members only)*
18.30 End of General Assembly

19.30 Cocktail Reception & Networking Dinner
Thursday 18 April 2024

08.30  Registration and Welcome coffee

09.00  Introduction and Opening Comments  Ettore Musacchi

The 29th ETRA Conference focuses on the many challenges facing the tyre recycling industries today – and the new opportunities available due to the Circular Economy. Presenters and discussants will have an opportunity to highlight some of the steps that will be necessary during the transition towards the future. Key issues, options, opportunities and potential pitfalls will be presented and discussed including: the ban of polymeric infill material from artificial turf from 2031, the exports of waste towards the south of the world, the need for accurate, transparent means of assessing arisings and destinations, the development of new valorisation routes, as well identifying some of the emerging opportunities for new industry markets in construction, civil engineering, sports and leisure, mobility (roads and rails), as well as the automotive sector.

The Programme is designed to stimulate discussion on where we are today and how we can move to the future. The sessions will be presented in four parts.

**Panel 1 & 2: Circular Transition in Tyre Recycling**

**Chair** Peter Taylor OBE

- **Ewan Scott**, Tyre & Rubber Recycling, UK
- **Simon Hodson**, Astutus Research, UK
- **Dr. Federica Ghelli**, University of Turin, Italy
- **Ruud Burlet**, BurBuss, Netherlands

**Part A: The Critical Challenges we Face**

Mattia Pellegrini, DG Environment

**Keynote Address:** Mattia Pellegrini, DG Environment

Green Deal, Circular Economy policy, use of recycled materials: Role of DG ENV

Mattia Pellegrini is currently Head of Unit for «From Waste to Resources» at DG Environment, European Commission. Previously he was Head of Unit for Raw Materials, Metals, Minerals and Forest-based Industries at the European Commission’s Directorate General for Internal Market, Industry, Entrepreneurship and SMEs. Previously, he worked as Head of Cabinet of Commissioner Nelli Feroci and as a Member of the Cabinet of the Vice President of the European Commission, in charge of Enterprise and Industry. Mr Pellegrini has a Master’s Degree in European Legal Studies obtained at the College of Europe, Bruges, and a postgraduate diploma in EC Law obtained at L.U.I.S.S. “Guido Carli”, University of Rome.

Quantifying ELTs in the EU, is among the most crucial issues demanding review, revision and stability today in terms of planning for future industry development and investment. These data are imperative to understanding the flow of materials into and out of the system. Evolving issues and challenges that will impact adequate tyre supplies in future will be discussed – including how changing supply patterns could have a bearing on existing and future recycling markets.

ELTs are a fundamental waste stream for tyre recycling industry, necessary to make plans for investments and the expansion of Recycled Tyre Materials (RTMs) Markets. Despite industry and market have become more and more familiar with recycled materials, and there is growing capacity to treat these tyres inside Europe, an unfair competition is still paid by organizations focused on exporting waste tyres to countries with a lower environmental control. These practices are creating a double damage: to European companies and market and to the environment.
Questions and Discussion,

Peter Taylor OBE is Secretary General of the UK Tyre Recycling Association and an ETRA Board Member. He also sits on the Executive Council of Britain’s National Tyre Distributors Association and numerous other industry-related groups. His involvement with the tyre industry at both domestic and international levels is extensive and diverse and he brings with him five decades of market experience and vision to our conference.

Simon Hodson is Director of Analysis at Astutus Research, an automotive-focused provider of business information. He has lead responsibility for coordinating the research and analysis program across the tyre and aftermarket segments which encompasses competitive intelligence, market sizing and segmentation, pricing and channel analysis. Previous roles include Publishing Director at Progressive Media International and 15 years within the automotive business unit at Datamonitor, rising to Research and Analysis Director. He holds a BSc. and MSc. in Economics from the London School of Economics.

Ewan Scott is Editor of ‘Tyre and Rubber Recycling’, Europe’s leading publication dedicated to tyre and rubber recycling since its launch. He has written about the tyre industry for over 25 years and has a broad understanding of the sector. Interest in ELT recycling was inspired by attending an ETRA Conference in Cambridge (UK) 19 years ago. Since then he has developed a broad spectrum of knowledge about the sector and has interview participants from collectors, through producers, to representatives of tyre management agencies in several EU countries. He believes that the tyre recycling sector has an important role to play in leading the waste sector towards a sustainable solution to handling difficult waste-streams.

Federica Ghelli is a Biologist, with a bachelor's degree in Biological Sciences and a master's degree in Environmental Biology, I am completing my Ph.D. in Pharmaceutical and Biomolecular Sciences and I am currently a research fellow at the Department of Public Health and Pediatrics at the University of Turin. I focus my research activity on primary prevention, health promotion, and health literacy, with a special emphasis on the investigation of the human-environment relationship via a molecular epidemiology approach, and, specifically, through the analysis of oxidative and inflammatory status alterations.

Ruud Burlet, after spending several decades in the Tyre and Rubber Recycling industry(Rubber Resources) Mr. Burlet had the opportunity to act a few years as regional minister for the province of Limburg (Netherlands) with the topic “Circular Economy” as one of his responsibilities. Nowadays he is assisting ASL (Afval Samenwerking Limburg) a group of 30 communities in Limburg to deal with their waste streams as Program Manager. So over time he developed a very specific and dedicated view on how the recycling world works and how it can be accelerated. He was confronted with trends in industry whereas large holdings streams as Program Manager. So over time he developed a very specific and dedicated view on how the recycling world works and how it can be accelerated. He was confronted with trends in industry whereas large holdings group of companies are jockeying for position in the several waste streamcycles. This also holds for the tyre industry and the industries related to the tyre industry as raw material suppliers or suppliers of half fabricates. Several examples are shown to show and explain how “The Real Cycle” ticks and what is expected from the participants and players in the different markets. Participants of the ETRA conference will maybe due to this presentation reconsider or rethink their position in the re-cycle where they participate in.

David Shaw is the owner and Chief Executive of an international company called Tire Industry Research (TIREs). He has over 35 years' experience of the global tire industry. TIREs publishes a weekly newsletter on the tire industry in China as well as monthly reports on the global tire industry. These are regarded as some of the most influential publications in the tire industry and are essential sources of information and insight for many stakeholders. Since 2020, he has focused on sustainability in the tire industry and offers some of the most insightful commentaries on the state of sustainability actions in the global tire business. His customers include tire makers, tire wholesalers, and suppliers to the tire industry as well as financial institutions, other consultants, and government departments and industry associations. He regularly advises chief executives and corporate strategists on the future development of the global tire industry. David regularly presents at conferences and tire industry events in Asia, the Americas and Europe.

Riccardo Giovannotti has extensive experience in the automotive industry, where he has led several projects at international level, combining global and local needs. He is the Secretary General of GDSO and he has supported the its setup through strategic initiatives while keeping in mind continuous and sustainable development in the digital framework. He is able to inspire and create energy, driving through a transformation process, thanks to his engineering background and MBA.

11.30 Coffee Break

11.50 Panel 3: What will happen with the infill ban? Chair: Ettore Musacchi

Over twenty years ago, the tire recycling sector contributed to the development of artificial grass pitches, making them high-performance, accessible, sustainable and encouraging their diffusion, to the detriment of virgin materials and more expensive techniques. Now, due to a the infill ban decision, adopted in 2023 and entering in force in 2031, there is a risk that less sustainable materials will regain space and occupy a market that did not exist, created thanks to recycled materials. Instead of consolidating the principles of the circular economy, we risk a U-turn in the direction of the linear economy: disposal of old fields instead of re-use and recycling of materials, new fields with lower performance, shorter duration, more expensive materials that require long-distance transport, increased costs and greater CO2 emissions. However, considering that the average life of an artificial pitch is at least 10-12 years, most of the pitches that will be installed in the next 8 years, for replacing of pitches at the end of their life or for new systems, will still be in operation in 2043. A then? And what to do in the Meanwhile of the thousands of tonnes of tyres that were recycled to produce rubber granulate? And what to do with millions of tonnes of rubber granulate to be removed from EOL turf?
The WG of RE-PLAN CITY LIFE Project think that there are many good reasons to continue to use this unique materials and has designed some proposals that will be illustrated and commented in a round table discussion.

**The role of Sports Facilities in the spreading the sport activities**

Joze Jensterle, IASLIM, Slovenia

Infill ban: Recycled SBR infill material: it’s not time to give up

Bruno Marabotto, ETRA, Belgium

Turf Recycling will make artificial turf more sustainable

Santiago Llopis, AIMPLAS, Spain

**Questions and Discussion**

**ROUND TABLE DISCUSSION**

Dr. Roberto Bono, University of Turin, Italy

Bruno Marabotto, ETRA, Belgium

Dr. Giulia Squillacioti, University of Turin, Italy

Santiago Llopis, AIMPLAS, Spain

Joze Jensterle, IASLIM, Slovenia

Ewan Scott, Tyre & Rubber Recycling, UK

Dott. Ettore Musacchi has been involved in tyre recycling for over 25 years, during which time he set up and developed many industrial projects. He is a member of the CEN Committee on Tyre Recycling and of the Ministry of Health Commission on Artificial Turf. He has been Managing Director of an SME tyre recycler. Earlier, he worked in banking for 9 years, where he assumed roles in various departments including 4 years in foreign exchange, after which he became a Certified Accountant. He developed considerable technical skill and experience as he managed the development and production of several new products. He is president of ETRA.

Bruno Marabotto has worked since 1982 in the Sports Plant branch of the Torino Town Council. Today, he is responsible for the design and construction of sports fields. From 2001 to 2003 he took care of the maintenance of city stadium (delle alpi). In 2002 he developed a plan to transform 30 clay sports surfaces with artificial turf. He recently transformed the Winter Olympic Stadium into a football stadium for the two local clubs: Turin and Juventus. The municipality has been Awarded as the European Capital of Sports for 2015.

Professor Roberto Bono is a full professor of Public Health (Environmental and Occupational Health) at University of Turin, Italy. Among his scientific activities, he is known for an epidemiological approach to bio-monitoring and health risk analysis in several types of populations, differing for age, gender, state of health, residence, activity and work, and for personal habits and different exposure to pollutants (tobacco smoke, airborne aldehydes and hydrocarbons, particulate matter in different living and working, indoor and outdoor environments). During more than thirty years of activity, he has had and has and has the scientific responsibility for numerous grants from private and institutional organizations. He is author and co-author of more than 140 scientific papers. He is also responsible for courses in: a) Environmental Health and Epidemiology, b) of Primary prevention, and c) Hygiene, at the Degree course of Biology and Sciences of physical activity and sports (SUISM).

Giulia Squillacioti is PhD and research fellow in Hygiene and Public health at the Department of Public Health and Pediatrics at the University of Turin (Italy). She has been conducting her research mainly focusing on environmental health, epidemiology and human biomonitoring with expertise in oxidative stress and respiratory health. She is a team member in the framework of the EU Projects: LIFE NanoExplore, Horizon Europe Plastics Fate and LIFE RE-PLAN.

Joze Jensterle is Managing Director of IASLIM, (International Association of Sport and Leisure Infrastructure Management), a consortium for sustainable development of the sport, leisure industries. IASLIM works closely with public and private sectors to ensure sports and playing fields, arenas, etc. are well-managed and maintained. IASLIM assists in designing and maintaining sports venues, providing conferences and workshops, distant education, training and consulting programs and services. Its members are within and outside the EU, North and South America and Asia. Representatives provide seminars and workshops on materials, products, applications and maintenance.

Santiago Llopis (6) Graduated in Chemistry at the University of Valencia specialized in laminar materials for energy applications. Currently, he works in the Chemical Recycling cell of AIMPLAS as a research technician. He has experience in the field of plastic materials, chemical and mechanical recycling, life cycle analysis and characterization of polymers and monomers. Experience in projects related to Circular Economy, chemical recycling of thermoplastic, thermosetting and elastomeric plastics. Within his competences he leads the research lines related to: recycling of elastomeric materials and recovery of Critical Raw Materials from electrical-electronic waste. In addition to the different polymeric waste valorisation techniques such as: gasification, pyrolysis, solvolysis, selective dissolution, biological degradation, and de-crosslinking.

13.15 Lunch

**PART B : CIRCULAR TRANSITION OPTIONS**

Tyre rubber is a highly-engineered material. The same characteristics that make it such a problem to treat as a waste, make it one of the most durable products on the market and, one of the most sought after materials to help re-build infrastructure and support products for construction, transport, etc. Until recently, economic, technological and environmental concerns delayed the development of sophisticated materials from becoming an important route for tyre and rubber recycling and following the circular path to new tyre materials.

14.15 Panel 4 : Innovations in rubberised asphalt

Chair : Ir Costis Keridis

Rubberised asphalts are technically viable and more sustainable. Experiences and demonstration works have been done in many countries confirming the feasibility and the benefits.
Recycled rubber can be used in road asphalts to improve performance and durability. Recycled rubber in powder size can be added to hot bitumen (wet method) and then mixed to aggregates, while rubber granulate can be mixed directly to aggregates (dry method). According to the process and the mix design it is possible to emphasize various features obtaining better performances. The first application dates back to the 50’s - in the USA - and continues since then, due to the successfully increased performance. In Europe we are still struggling to go beyond to demonstration works. None the less these works started in the 80’s and allowed to develop also in Europe awareness and technical skills in various countries.

EU policies on Road infrastructure and future challenges  Nilufar Lebasi, European Union Road Federation, Belgium
Behavior of asphalt binders modified with rubber powder  Ir. Luis Henrique Teixeira, Cbb Asfaltos, Brazil
Tire rolls on tire road  Hanbing Wang, Shanghai Jiao Tong University, China
The sustainable way to recycle textiles derived from ELT  ir. Przemyslaw Zaprzalski, RECYKL, Poland

Questions and Discussion

Dipl. Eng. Costis Keridis is Managing Director of Christoforos Keridis S.A. in Thessaloniki, Greece. His company operates quarries, asphalt plants and tyre recycling plants since 2011. The company uses RTMs in bitumen modification for asphalt mixes and in bales for earthworks. For the past ten years he has concentrated on developing Greek interest in the use of RTMs as a road surfacing additive material and completed several projects in Athens. He developed one of the first certified private Road Material Laboratories in Greece, and is a partner in two Life funded projects that will be presented during the conference. He is a Vice President of ETRA representing Greece and the road construction industry.

Nilufar Lebasi currently holds the position of Communications and Office Manager at the European Union Road Federation. In this role, she oversees all communication and operations efforts for the association and manages the dissemination activities. Additionally, she is also involved in research and EU-funded projects that ERF is engaged in. Nilufar also serves as the Executive Secretary for the ENBF and MPE associations. Moreover, she manages the Working Group on Road Signs and follows related policy dossiers. Prior to joining ERF in 2019, she served as a translation project manager and operations officer for an NGO.

Luiz Henrique Teixeira is a Civil Engineer and has a master's degree in engineering and mechanical sciences. He has been operating in the Brazilian highway infrastructure segment for over 25 years. Head Coach at Cbb Asfaltos, manufacturer of asphalt binders, where he coordinates several areas of Engineering, including Chemical, Production, Civil and Mechanical. It also works with research and development of new raw materials and asphalt mixtures that are used on Brazil’s main highways. He is a permanent member of the Paving Committee of ABEDA-Brazilian Association of Asphalt Distributors where he plays the role of co-author in the preparation of technical material for the highway construction segment. At the Asphalt Commission of the Brazilian Petroleum Institute, he works as co-author of technical standards for asphalt binders and in the development of guidelines for materials used in flexible pavements. At the Latin American Asphalt Congress he is the current representative of the Brazilian highway infrastructure industry. Introduced in Latin America the process of modifying asphalt binders with unusable tires due to high shear.

Hanbing Wang is a Road Engineer. He is interested in material and chemical engineering specialized in rubber degradation and multiple application in civil engineering. He has published over 12 papers on sustainable road. He works as a ph.d candidate in Rubber, Plastics& Asphalt Center directed by Prof. Shifeng Wang from Shanghai Jiao Tong University. The center dedicated to the upcycling of waste rubber and achieved precise control and green deconstruction of the triple cross-linked network inside ground tire rubber (GTR), and used as functional materials.

Przemyslaw Zaprzalski (9) is an engineer and leads the business development unit at Recykl Group, the major player on the eastern European market in ELT processing, running 3 plants with annual capacity of 120.000 MT. He has over 20 years of experience in product development and innovation management. His interdisciplinary education in applied physics, telecommunication, electronics and nanotechnology resulted in dozen of patents in respective fields covering ultrasonic applications in polymer processing and devulcanisation of rubber, additives to asphalt for road construction, fire retardant polymer composites, prediction models for shredding machines maintenance cycles and detection of hazardous impurities in shredded ELTs. His current involvement covers development of value added applications for ELT derived rubber compounds, thermoplastic compounds, thermosonic continuous devulcanisation method, as well as ELT derived additives for roads construction.

15.30 Panel 5: Building and Constructions  Chair: Ir. Alessandro Fantilli

Concrete is a construction material composed by water, cement, aggregate (sand and gravel), and additives. After water, concrete is the most widely consumed substance on Earth. Producing a ton of Portland cement requires about 4 GJ energy, and releases about 1 ton of CO2 into the atmosphere, accounting for about 5% of the global loading of CO2 into the atmosphere. Improve the quality of the concrete is important in relation to the environment impact and sustainability. One way to achieve this goal is the introduction of high performance recycled materials in the concrete, such as RTMs, (Recycled Tyre Materials), Recycled Aggregates. These materials into concrete mix have the multi-fold effect of a dramatic reduction of the Primary energy (PE), GHG and CO2 loads.

Three interesting experience will be presented:

Developing the building materials of the future  Johan Engdahl, RubberConcrete, Sweden
Tyre Recycling in Eco-friendly Cementitious Sandwich structures  Matteo Sambucci, La Sapienza, Italy
More significant uses of Recycled Tyre Materials in Concrete  Ir. Alessandro Fantilli, Politecnico di Turin, Italy

Questions and Discussion
Alessandro P. Fantilli is Associate Professor in the Department of Structural, Building and Geotechnical Engineering of Politecnico di Torino, Italy. He received his MS and PhD from Politecnico di Torino. He is a member of ACI committee 544 - Fiber-reinforced concrete - and 555 - Concrete with Recycled Materials. His research interests include nonlinear analysis of reinforced concrete structures and structural application of high performance fiber-reinforced cementitious concrete. He is the technical leader of GreenDealles project. The aim of this project is to create a prototype of a new precast slab used to cast partially precast floors of civil and industrial buildings.

Johan Engdahl is a serial entrepreneur with over 15 years of experience in concrete production. Together with Lars Roepstorff, veterinary professor in functional anatomy of domestic animals at the Swedish University of Agricultural Sciences, in 2020 established a company to develop, produce and sell rubber concrete products based on recycled rubber from tires. Based on Lars’ knowledge about the necessary and wanted properties of equine footings in different equine disciplines and Johan’s practical competence in concrete production, joint development of rubber concrete based products started. During this process a number of other possible and suitable applications not only for the equestrian industry have been discovered and developed. Rubber Concrete is an innovative construction industry company with the goal of manufacturing innovative products where sustainability and reduced environmental impact are in focus.

Matteo Sambucci is a researcher in Materials Engineering at the Department of Chemical Engineering, Materials, and Environment (DICMA) of “Sapienza” University of Rome. In 2022, he holds the PhD degree in Electrical, Materials, Raw Materials and Nanotechnology Engineering with a research project based on the study and characterization of more eco-friendly cement and alkali-activated composites engineered with ground waste tire rubber and optimized for additive manufacturing processes. His research interests include cement-matrix composites incorporating waste aggregates, 3D concrete printing technology, alkali-activated materials, compatibilization of waste materials in concrete, mechanical properties, thermal and acoustic performances, and finite element modelling (FEM) analysis.

16.30 Coffee – Break

17.00 The Spotlight – Innovation Showcase

Chair: Ir. Marco Mangiantini

Future retreading opportunities
The importance of tyre identification before valorization
Best practice for a high-quality devulcanize
Devulcanised Rubber from GUMIIMPEX
Tire to Tire to Tire
Global networking and knowledge sharing to increase circularity
Horizon Europe

Questions and Discussion.

Ioannis Karagiannidis is the managing director of RETIRE, a Greek company specialised in tyre retreading and recycling. The company produce rubber granulate and rubber tiles and it keep innovating its process.

Lucile Cassier, graduated at ESDES Business School. She joined REGOM for an amazing adventure in the tire recycling industry. REGOM was created in 2020 to find solutions for end-of-life tires. REGOM started to manufacture semi-automated sorting machines for end-of-life tires and commercialization solutions. Drawing on our experience in collecting and sorting used tires, REGOM have been working for many years to develop a tool capable of simplifying operations. The MTP-TRI machine facilitates and automates the switching of tires to the destinations corresponding to the exit criteria configured and defined by market needs (PR, PUNR).

Wilma K. Dierkes is Associate Professor at the University of Twente, Enschede with promotion right and chairing the group of Sustainable Elastomer Systems. From 2009 till 2013 she also held a part-time professorship at the Tampere Technical University, Finland. Her key research areas are reinforcing filler technology, with emphasis on silica filler systems, and recycling and re-utilization of elastomers. Other research areas are polymer networks and fiber reinforcement. Since she started her research work at the university, she published more than 100 reviewed papers, 13 book chapters, and she holds 5 patents. For about 10 years, she was a board member of the Dutch Association of Plastics and Rubber Technologists (VKRT), and from 2005 till 2014 she was the chairman of this association.

Franjo Florijanic is an Engineer educated at Faculty of Chemical Engineering in Zagreb, Croatia on material and science engineering specializing in polymer science. Working in rubber industry for last 11 years during which he was involved in many pilot and industrial projects, ranging from production of rubber goods, development and compounding of new materials to rubber recycling. Before that he worked few years on different administrative jobs in legal department for Croatian authors society. Last few years he is dedicated to development, implementation and furthering of devulcanisation technology. Working in Gumiiempex GRP, Croatia, as rubber compounding manager.

Enrico Fiore (9) is the Chairman of the Steering Committee of Rover Research, trusted advisor in several companies, serial entrepreneur and philanthropist with over 30 years of diversified international work experience. His focus is on investments and innovation with a fervent pursuit of economic, environmental, and social sustainability. Strongly advocate of the need for corporations’ success to be measured based on the triple bottom line concept and to establish criteria to measure their social impact. 3P+ is People Planet Profitability (Profit+Sustainability) is a mantra in all his projects. He always looks at the second, or better third horizon because seeking the future is his attitude.

Enrico Koggel is co-founder of The Circular Rubber Platform is an online network and consists of engineers, developers and companies that contribute to a circular rubber economy. By centralizing people, information and enabling all parties to collaborate towards circular rubber materials and products; we create inspiration, new markets and demand for these products and services.
Ir. Marco Mangiantini has been coordinator of a large number of European projects, and has large experience in managing consortia with a high number of partners. Furthermore, he has been involved in FP7/H2020 and Life projects as financial and administrative manager supporting the project coordinators. He works with ETRA on R&D projects.

Dr Marina Martinez is programme officer at the Spanish Innovation Agency (CDTI – Centro para el Desarrollo Tecnológico e Industrial, Ministry of Research and Innovation) in Brussels. She is responsible for the capacity building activities on EU R&I Programmes addressed to Spanish entities. She is National Contact Point for the Cluster-3 Civil Security (and previously, Secure Societies Societal Challenge in H2020) and she is also following all the clusters of Pillar-II in Horizon Europe. Before joining The Spanish Innovation Agency she has worked in the private sector developing Earth Observation based products and applications. She has been lecturer at the Technical University of Catalonia (UPC) for thirteen years and Vice-director of the Institute of Geomatics. She is PhD in Physics (GNSS systems and satellites) and she has been researcher at the Technical University of Delft, as well as invited researcher at the Jet Propulsion Laboratory of NASA (Caltech, Pasadena). In addition of different working groups of the EC and the EU Council, she has been the EC expert conducting the Framework Programme infodays in South America since 2017.

19.00 Cocktail Reception & Networking Opportunities
Programme

Friday 19 April 2024

08.30 Registration and Welcome coffee

08.50 Keynote Address: Sander Vermeulen, Michelin

Tyre industry’s challenge to use recycled materials

Sander Vermeulen joined Michelin in 1993, upon his graduation from the Polytechnic School of Automobile Technics in Apeldoorn, the Netherlands. He started his career at Michelin in the Netherlands where he held several commercial assignments. Since 1998, Sander held various positions in Sales, Marketing, Business Development as well as Purchasing roles. He has been based in Beijing, Seoul, Shanghai and in France at the Michelin Group’s French headquarters. At present he is Vice President – End-of-Life Rubber Products Recycling Business. In this role he has been developing the Strategic Roadmap for End-of-Life-Tire valorisation for the Michelin Group.

PART C : UPCYCLED RUBBER MATERIALS

09.10 Panel 6: Materials and Products

Chair: Dr. Claude Janin

Today successful and new promising technologies are available on the market and others are under development disclosing realistic possibilities to integrate a more complete Circular Economy. These new systems produce high quality, economically viable, and commercially desirable materials and products that utilise automatic, continuous processes,

Some of the latest systems are represented in these panels including water jetting, de-vulcanisation agents, bio-devulcanisation, surface modification, TPEs, among others. These technologies and developments have become more and more important as during the last few years owing to the war in Ukraine and others international political crisis and conflicts Europe discovered the weakness of the rubber value chain. The European industrial strategy proposes strengthening Europe’s open strategic autonomy.

Today, Europe relies almost entirely on natural rubber imports from South-East Asian countries and growing demand from Africa, which increases the vulnerability of local production of finished products, including tires. Furthermore, since 2017, NR is among the Critical Raw Materials (CRM) identified by the European Commission, for which global competition is becoming increasingly fierce (EC- Critical Raw Materials Resilience 2020). Moreover, a "New Circular Economy Action Plan" has been proposed by European Commission in line with the achievement of climate neutrality by 2050 and recycling as a strategic and necessary step to delivering the EU Green Deal, the deforestation policies, and SDGs. Doubtlessly, the tire industry will have to evolve towards being replaced by more efficient alternatives that aim to reduce raw materials and carbon emissions.

UHPW Micronisation for optimizing the surface chemistry of rubber
Prof. Geoff Fowler, Imperial College London, UK

Controlling devulcanization and revulcanization of recycled rubber
J.R. Innes, University of Bradford, UK

The devulcanization technology of LIFE Green Vulcan project
Roberto De Simone, Rubber Conversion, Italy

Transforming ground tire rubber into the chemicals of tomorrow
Yanou Fishel, University of Antwerpen, Belgium

Scaling-up devulcanisation
Dr. William Guan, RI-TIRE, China

Mines of natural rubber: LIFE InReGEO
Dr. Ettore Musacchi, ETRA

A new initiative to support R&D projects
Santiago Llopis, AIMPLAS, Spain

Questions and Discussion
Ir. Jean Paul Bouysset, France
Claude Janin (9) is Engineer and Doctor of Physical Sciences. At Michelin Tires he covered various R&D positions: textile reinforcements, synthetic elastomers, formulations. From 1994 to 2007 was Director of Materials Research (raw and semi-finished material). Then he retired and became Research Director of the LRCCP (Rubber and Plastics Research and Control Laboratory). Since 2015 is Consultant for the LRCCP with a mission on rubber recycling. He is also Board member of GFP (French Polymers Group) and Member of the Scientific Council of POLYMERIS. Previously a member of the CS of PLASTIPOLIS and ELASTOPOLE (president of the CS of ELASTOPOLE from 2008 to 2013.

Geoff Fowler (8) is Senior Research Fellow at Imperial College. Tyres have been a strong focus for his research. He is an expert in solid carbon materials (production and characterisation), Water treatment, pyrolysis and environmental analysis, of which Geoff has authored numerous journal articles of international significance. Geoff is a Chartered Chemist, a Trustee and Honorary Treasurer of the Society of Chemical Industry and is Chairman of the British Carbon Group.

James Rober Innes, is a post-doctoral researcher focused on the recycling of sulfur vulcanized rubbers, working at the University of Bradford. He completed his PhD within the National Graphene Institute at the University of Manchester in 2019 and then spent 4 years working on the €1m joint UK-China Low Carbon grant reprocessing mixed polymers.

Roberto De Simone, is Chief Sales Officer at Rubber Conversion. He got a Master Degree in Chemical Engineer, MBA at Luxembourg School of Business. Solid technical as well as managerial background. Proven experience in structuring direct and indirect sales channels for advanced materials for the rubber industry. In addition he has larger sales and business development experience in Elastomers, Theroset composite and nanostructured material.

Dr. William Guan with technical background in polymer processing and years of management experience is the managing director of global cooperation from Ri-Tire (Germany), as future European presence for Qingdao GAOJI Technology, specialised in devulcanization technology and pushing circular economy through cooperation.

Yanou Fishel, is a PhD Researcher, finding new ways to chemically recycle vulcanized rubbers, at iPRACS group at the University of Antwerp. He has a background in polymer recycling and he is developing new ways to recycle rubber. They provided an alternative recycling route based on heterogeneous ozonolysis to break down the rubber granulate into polyfunctional oxygenated compounds, while recovering all other constituents (i.e. carbon black). Ozonolysis allows for sustainable chemical transformations which can be completely electrified, posing a great application potential in the strive for carbon neutrality.

11.10 – Coffee Break

11.30 Panel 7 : PYROLYSIS - The state of Play

Chair : Dr. Elsa Weiss

Pyrolysis has had a long-term, consistent influence on ETRA members and activities from the first project in 1992 and the first Conference in 1994. Throughout the years, the ETRA Team has studied and assessed pyrolysis technologies in the laboratory as well as in plants to identify those systems that could provide the most commercially productive. The Team has authored several reports over the years which describe the most timely and effective practices and equipment in batch / or continuous format at that particular point in time. Today, pyrolysis has come to the forefront of tyre recycling treatments. The range of technologies is being culled to delineate those that are the most economically and environmentally performant over the long-term. The programme marked the beginning of a new focus – the transition from a focus on the technology itself, to one concentrated on the end-products and outcomes.

Two years of war in Ukraine have revealed Europe weakness in many value chains. One of these is the rubber value chain. Europe is strongly depending from the import not only of natural rubber but also of carbon black. Tyres rubber contain up to 60 % carbon black, necessary to give to tyres the required performance. Tyre industry is one of the bigger user of such material of which Russia is one of the bigger producers. Its export amount at about 700,000 tonnes per year. The EU decision, announced on 25 February 2023, introduces import quotas of a maximum of 562,973 tonnes of synthetic rubber and 752,475 tonnes of carbon black.

Despite the ban will be implemented gradually and global trade flows tend to look for alternative paths to by pass barriers, the decision is stimulating and encouraging a more intensive recourse to rCB obtained from EOL tyres Pyrolysis.

The session will present updated developments and new perspectives in the field of tyre thermal valorisation with a special focus on the value of the outcomes. Characterisation of the products and applications is of great value in determining their potential use for different applications. The range of applications has expanded from char and raw rCB to up-graded rCB and TPO that have broader potential markets.

BlackCycle: A major European project for recycling EOL tyres into new tyres  Jean Michel Douarre, Michelin, France

How to come, together, to a sustainable and circular solution for ELT's AD van Oorschot, Black Bear Carbon, NL

Positioning of TPO and rCB on a global commodity market  Tilien Milicevic, L4T Group, Ireland

Questions and Discussion  Ir. Jean Paul Bouysset, France

Ir Jean-Paul Bouysset (8,9) has 38 years experience in the Rubber and Carbon-Black Industries including production, laboratory control, technical assistance and marketing, in Western Europe and Africa. He holds a degree of Rubber Engineer and has been working for different international companies including Phillips-Petroleum, Continental carbon, Columbian chemicals. In 1992 he created his own company D.Z.S for Rubber chemicals, Carbon-Black and laboratory equipment. He retired in 2005 and since then has been a consulting engineer in rubber recycling, pyrolysis, rubber regeneration and partner of Phenix-Technologies SA, G3CT technical advisor. He is member
of AFICEP (French rubber engineers association), ASTM (D36 r CB committee) and has been an ETRA Vice-President –Pyrolysis forum for more than 25 years (European Tire Recycling Association-Brussels).

Jean-Michel DOUARRE, has a PhD of Physico-Chemistry. I has been working for Michelin for 32 Years with different job positions in Research, Pre development and development of Materials especially for passenger car tyres as a team manager or technical expert. Before his current position, he was fellow on rubber materials. Since November 2021, he is the Research program leader on sustainable Raw materials and director of the consortium Blackcycle.

Ad van Oorschot (9) after finishing his chemical education (BSc/MSc level) he started working as a R&D chemist and applications laboratory group leader. Later in his career he also finished an executive MBA in strategic marketing/general management. Contacting customers and the market he decided to give his career a commercial twist and since then he has been working at the edges of sales, marketing and technical service, including a position at Cabot as technical service manager. In these positions he also gained a lot of international carbon black experience. He has been working for over 40 years in polymer, ink & coating related industries.

Tilen Milicivic is an international executive with over a decade of industry experience. Working with key political business, regulatory, financial and community stakeholders. Globally to develop, implement and operate sustainable and circular economy investments including complex and challenging environments. Focused on decarbonization of the energy and tyre sector, sustainable commodity markets as well as circular economy implementation. Responsible for L4FGROUP development and establishing L4T strategy directions.

12.45 Lunch

14.00 Panel 8 : PYROLYSIS - Moving ahead

Chair : Dr. Elsa Weiss - Ir. JP Bouysset

Analysing the modifications of carbon black and other fillers after pyrolysis of model tyres

Dr. Elsa Weiss, IMT Mines Albi, France

Ludovic Moulin, Alpha Carbone

Perspectives on Pyrolysis – After 25 years work, what is the future?

Prof. Geoff Fowler, Imperial College London

rCB – The journey to commoditisation, yesterday, today & tomorrow

Ir. Martin von Woltersdorff, Germany

Questions and Discussion

Dr. C. Gisèle Jung, Belgium – Ir. JP Bouysset, France

Dr. Elsa Weiss, PhD in the field of Chemical Engineering and Environment at Toulouse University (2006), is Assistant professor at Ecole des Mines d’Albi-Carmaux (from 2007) and working in the field of biomass and waste valorisation. Her domain of research is based on the use of thermochemical routes (wet and dry) to convert biomass and waste (composite, black liquor, tires, MSW) into energetic vectors and/or useful materials. She is focusing her research on the characterization of carbonaceous solid (using advanced techniques) and on its functionalization.

Ir. Martin von Woltersdorff (9) is an independent advisor to the chemical industry. He has over 20 years experience in global chemical industries with 14 plus years in titanium dioxide pigment, 2 years in custom colour masterbatch for fibres, artificial turf, packaging and automotive interiors and 3 years in carbon black for tyre and rubber applications. Since 2014, he has worked with the global tyre pyrolysis industry on market and product development of recycled carbon black. For 10 years, he has specialised in sales leadership, effectiveness and commercial excellence including accelerated business development, key account management, pricing and sales process optimisation. He holds a German "Diplom Ingenieur" (Univ.) master degree in chemical and process engineering from Friedrich Alexander Univ. in Erlangen-Nuremberg, (DE) and did his thesis at the University of Surrey in Guildford, UK in collaboration with Imperial Chemical Industries.

Dr. C. Gisèle JUNG, PhD in Chemistry, is Senior Researcher at the Centre Emile Bernheim of the Solvay Brussels School of Economy and Management and in the Faculty of Applied Sciences, “4MAT” department, at Université Libre de Bruxelles (ULB). Her research interests are related to general problems concerning material and energy valorisation of (carbon containing) waste. She works in research programmes for the scientific development of carbon products issued of solid waste thermal treatments for the valorisation of the end-products with respect of the economic, social and environmental aspects. She is lecturer in international Universities, author of more than 85 articles, active speaker in Conferences, referee for articles and consultant as expert to promote pyrolysis/gasification for specific solid waste. Her research is oriented towards the evaluation of existing thermal processes of specific carbon containing waste with the objective to characterize technically (ASTM standards) the issued end-products (r-CB) to be used for specific and economical viable applications.

PART D : ROUND TABLE

15.20 Panel 9 : - What future ahead ?

Chair : Jean Paul Bouysset

Sander Vermeulen, France

Claude Janin, France

Martin von Woltersdorff, Germany

Enrico Fiore, Italy

AD van Oorschot, Netherlands

Przemyslaw Zaprzaziski, Poland

Please complete and return the Conference Evaluation to the Registration Desk – we look forward to your input – AND

We look forward to seeing you during the coming year
We hope that you enjoyed the 29th ETRA Conference

The Board and members of ETRA wish to thank the following people for their efforts in making this conference a success

Jean Paul Bouysset (Senior Consultant)
Bruno Marabotto (ETRA)
Marco Mangiantini (RE-PLAN CITY LIFE Team)
Anna Voronova (RE-PLAN CITY LIFE Team)

The ETRA Back-Office
Isabella D’Alimonte

All of the Panel Chair and Speakers, delegates and guests who made this a lively, inter-active and informative event

KN – Mattia Pellegrini, DG Environment
Panel 1-2 : Peter Taylor OBE, Circular Transition in Tyre recycling
Panel 3 : Ettore Musacchi, What will happen with the infill ban?
Panel 4 : Costis Keridis, Innovations in Rubberised Asphalts
Panel 5 : Ir. Alessandro Fantilli, Building and Constructions
Panel 6 : Ir Claude Janin, Upcycled Rubber Materials
Panel 7-8 : Dr. Elas Weiss - Ir. Jean Paul Bouysset, Pyrolysis
Panel 9 : Ir. Jean Paul Bouysset – Round Table

We thank the 2024 Conference Committee who planned and helped to organise the event that we have just enjoyed