



KONFERENCJA - Nowoczesne nawierzchnie drogowe

Recykling w konstrukcjach nawierzchni drogowych

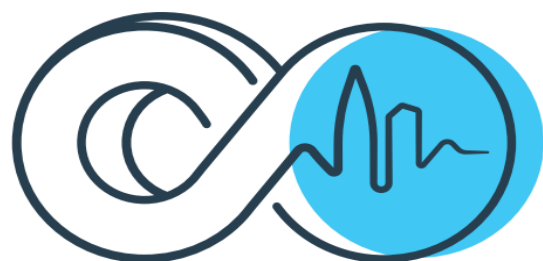
Warszawa, 18 października 2023

CONFERENCE - Modern road pavements

Recycling in road pavement structures

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Replan
City Life

Shaping Circular Cities

The use of Recycled Tyre Materials (RTMs) in Roads

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www.re-plancitylife.eu

The RE-PLAN CITY LIFE project has received funding from the LIFE Programme of the European Union



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RTMs and Roads

Recycled Tyre Material (RTMS) include, among the others, **rubber granulate, rubber powder, textile fibers.**

They 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.



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A bit of history

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. Nonetheless these works started in the 80's and allowed to develop also in Europe awareness and technical skills in various countries.

Rubberised asphalts are technically viable and more sustainable. Experiences and demonstration works have been done in many countries confirming the feasibility and the benefits. However this application is **not well spread and implemented** as it should be owing to lot of **resistances and obstacles**.



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Potential Market

The asphalt market is a huge market which could absorb large quantities of recycled rubber:

- 1 Ton of Asphalt mix contains about 5% of binder = 50 kg bitumen
- In WET Method we can use (mix) **5-20% rubber powder** in the binder (between **2,5 to up 10 kg of rubber powder per ton of asphalt mix**)
- **208.3 million tonnes** of all asphalt mixes are produced In the EU-27 (data 2020 E.A.P.A.), so they can be used from **520.750 to 2.083.000 Tons of Rubber Powder**

These data show that even a minor addition of **rubber powder in the road asphalt in just the 10% of the EU asphalt market would allow to recycle 10% of the annual European post consumer tyre arising.**



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Performances

- ✓ Reduce Thermal Cracking
- ✓ Reduce rutting
- ✓ Reduce Reflective Cracking
- ✓ Reduce Ice Disbonding
- ✓ Reduce Flushing
- ✓ Reduce noise up to 3dB
- ✓ Increase aging Resistance
- ✓ Increase Chip Retention
- ✓ Increase Flexibility
- ✓ Increase Ravelling
- ✓ Improved surface texture.
- ✓ Improved fatigue resistance



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Contractors' Myths

- We will ruin bitumen storage tanks
- We need special equipment
- Viscosity testing procedure is standard
- Asphalt mix blend design cannot be varied
- Pavement cannot be performed during night



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Contractors' Reality

- ✓ Plant production reduction by approx.30%
- ✓ Higher asphalt mix production temperatures
- ✓ Small projects have larger cost
- ✓ Application cost is similar to other modified mixes (SBS,EVA etc)
- ✓ SPECIAL CARE TO MAINTAIN HIGH TEMPRATURES



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Obstacles

- ✓ Insufficient awareness of public officers and experience of public technicians
- ✓ Public tenders not suitable or not up to date
- ✓ Environmental criteria and GPP not yet implemented and applied by the specific P.A.
- ✓ Limited trust to materials and products made of or containing recycled ones
- ✓ Lack of end-user friendly database of good practices and realizations



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Solutions

- ✓ Personal contacts
- ✓ Accurate mix design
- ✓ Appropriate training for contractors and municipalities
- ✓ Good paving practices (temperature-controlled asphalt mixing equipment)
- ✓ Demonstration of the better performance (more crack, rut and skid resistant, reduced traffic noise and smoother roads) than conventional asphalt



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THE PROJECT



RE-PLAN CITY LIFE project aims to raise awareness about the Circular Economy opportunities for Materials, Products and applications obtained from tyre recycling to adopt environmentally friendly behavior and practice in urban communities.

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THE NUMBERS

6 COUNTRIES:

FR IT ES GR PL SI

BUDGET INFO:

Total amount: EUR 2.641.170
EC Co-funding: EUR 1.430.090



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RE-PLAN CITY LIFE
Relevant Audience Plan
Leading to Awareness
Network for Circular
Economy Use of Recycled
TYre materials in city LIFE

DURATION: 42 Months
Start: 01 Jan 22 - End: 30 Jun 25



Still low awareness about RTM



EXAMPLES
OF RTMs
PRODUCTS
AND
APPLICATIONS

Road safety



Urban furniture



Rails



Sport facilities



Rubberised asphalt



Building



- ∞ Raise awareness among Technicians of P.A., Stakeholders, Policy Makers, on the use of RTMs in Buildings, Transport Infrastructures, Urban Areas, and Sport Facilities.
- ∞ Promote Circular Economy principles for RTMs in the Urban Environment.
- ∞ Develop and Promote GPP guidelines in collaboration with companies and public administrations.
- ∞ Expand the visibility of RTMs works through a web application.



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RTMs



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CONTINUATION

REPLICATION - TRANSFER - MARKET UPTAKE

A series of tools will be implemented and made available and working through a web portal after the project end:

- ∞ RE-PLAN Community
- ∞ RTMs Inventory
- ∞ Circular Economy Enablers
- ∞ GPP Guidelines

2022

2023

2024

2025

And will allow the expansion of the project impact after its end.

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OPPORTUNITIES

- ❖ Join **RE-PLAN Community** and **Working Groups** to share **knowledge**,
- ❖ Take part to **events** and **meetings** with companies and Stakeholders,
- ❖ **Training** sessions and on site visits
- ❖ Access to **RE-PLAN tools** (Circular Economy Enablers, GPP Guidelines)
- ❖ See best practices and expand visibility through the **web platform**

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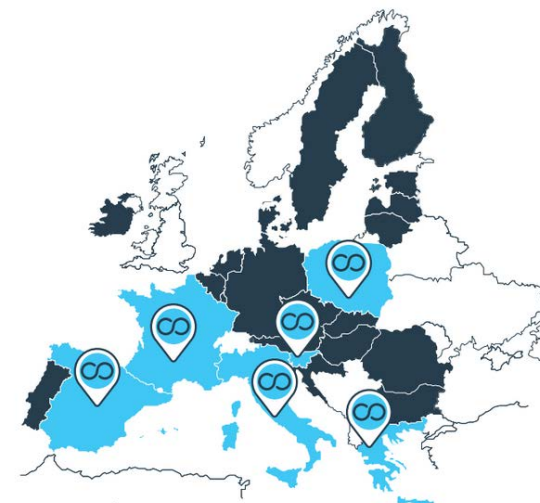
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Coordinating beneficiary



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Associated beneficiaries



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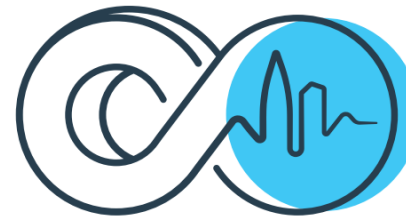
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