APSE Sustainability and Circular Economy Webinar

June 27, 2022
8:00 AM – 9:00AM US ET

Title: Implementing circular economy in road infrastructure

Abstract: Implementation of circular economy (CE) in road infrastructure can play an important role in addressing global challenges such as climate change, resource scarcity, energy efficiency and pollution. To assist the transition towards CE, the CERCOM (Circular Economy in Road Construction and Maintenance) project aims to deliver an innovative risk-based framework and management tool to facilitate the adoption of circularity and resource efficiency in procurement and multi-lifecycle management by National Road Authorities (NRAs). This webinar gives an overview of the CERCOM outcomes and presents the risk-based analysis framework, which incorporates risk, cost and circularity-based performance indicators for ranking road maintenance strategies.

Dr. A. (Katerina) Varveri
TU Delft

Bio: Dr. A. (Katerina) Varveri is an Assistant Professor of Future Pavement Materials at the Department of Engineering Structures in the Faculty of Civil Engineering and Geosciences at Delft University of Technology. Her research deals with the interactions among environment, materials and structures. Her work focuses on advanced physicochemical characterization and modelling of environmentally induced degradation processes (moisture damage, oxidative ageing, and freeze-thaw) that affect durability of (porous) asphalt pavements. In 2020 Katerina was awarded with an NWO Talent Programme VENI grant from NWO-AES (NL) on this topic. Her research interests also involve the quantification of environmental performance of materials and structures, and the development of technologies to minimizing their impact on the environment. Katerina is the Research Coordinator for the Netherlands in the Forum of European National Highway Research Laboratories (FEHRL), and she serves as the Deputy Chair in the RILEM Technical Committee 295-FBB on fingerprinting bituminous binders.

Title: Assessing the laboratory and field performance of cold in-place recycling mixtures using a balanced mix design approach

Abstract: Cold recycling technology of deteriorated asphalt pavements is an efficient method for sustaining flexible pavements and providing substantial economic and environmental benefits. Several mix designs have been developed to improve the long-term performance of cold in-place recycled mixtures (CIR) and to withstand different levels of traffic and loading conditions. This study aims to optimize the laboratory performance of CIR using a balanced mix design (BMD) approach. Accelerated pavement testing was then conducted on the balanced mixtures in the field for validation. Results showed that the BMD approach was used successfully to improve the resistance of CIR to rutting and cracking.

Dr. Ahmed Saidi
CREATEs

Bio: Ahmed Saidi is a postdoctoral research associate at the Center for Research and Education in Advanced Transportation Engineering Systems (CREATEs). Ahmed is currently

working on multiple projects funded by New Jersey Department of Transportation (NJDOT) and US department of defense (DoD). During his graduate studies at Rowan University, Ahmed worked on a DoD funded project titled "Evaluation of Cold In-Place Recycling (CIR) Under Heavy Traffic". The goal of this study was to improve this rapid, cost-beneficial, and ecofriendly technology to withstand heavy traffic conditions. Ahmed received two awards from US Army Corps of Engineers, Cold Regions Research and Engineering Laboratory (CRREL) in 2019 and 2021. He was also nominated for Award for Excellence in Graduate Research 2019 and the Medallion - Nicholas A. Peppas Sc.D. Doctoral Studies Award of Rowan University in 2022.

Title: Effects of multiple recycling on the performance characteristics of asphalt binder using different recycling agents

Abstract: The process by which RAP material is milled and reused more than one time is known as multi-recycling. This webinar will show an evaluation of the performance properties of RAP material subjected to multiple recycling processes at the asphalt binder-scale level. A reference binder was artificially aged to simulate the recycled binder from RAP. Then, the aged binder was rejuvenated using different recycling agents (RA). Initial results from this study indicate that this practice has a positive environmental and economic impacts.

Julia Amaral Rodrigues
Polytechnic School of the University of São Paulo, Brazil

Bio: Julia is a Doctoral student in the Postgraduate Program in Transport Engineering (PPGET) at USP. Julia holds a master's in civil engineering (2018) from the Graduate Program in Civil Engineering (PPGEC) at UFES, and she holds a BSc in Engineering from UFES and Technical in Roads from IFES do Espírito Santo. Her research interest includes asphalt mixtures, bituminous composites, elements designed for variables, numerical and experimental methods for the development of co-products, viscoelasticity and residues.

Title: Impact of production temperatures on the sustainability of warm mix asphalt

Abstract: In the present work, a novel workability-based approach was proposed to systematically assess the production temperatures for warm mix asphalt (WMA). Further, the impact of production temperatures on the sustainability aspects was determined. About 5°C-37°C reduction in production temperatures was obtained using the proposed workability approach. WMA was found to consume 5-13% lower energy in comparison to hot mix asphalt (HMA). Rutting, fatigue, and moisture resistance of WMAs were found to be comparable to HMA. Overall analysis (in terms of performance and energy saving) indicated that chemical-based additives are more suitable to produce WMA.

Mayank Sukhija
Indian Institute of Technology, Banaras Hindu University

Bio: Mayank is a Research Scholar in the Department of Civil Engineering at Indian Institute of Technology (Banaras Hindu University), Varanasi, India. He is working under the joint supervision of Dr. Agnivesh Pani (Assistant Professor, IIT BHU) and Dr. Nikhil Saboo (Assistant Professor, IIT Roorkee). He has worked on various research projects which mainly aimed at performance-based advanced rheological characterization of asphaltic materials, use of warm-mix asphalt technologies, development and characterization of sustainable pervious paver blocks, nano-modification of asphalt binders, and use of reclaimed asphalt pavement materials in asphalt and concrete mixtures.