New strides in road building
Jean-Louis Marchand

Sustainable Development

Variways, eco-comparator for road variants
Variways is a design and decision-making tool that helps clients choose between different road and motorway variants for a given project. It aims to propose a design approach that minimizes greenhouse gas (GHG) emissions and energy consumption generated by traffic using the road. More than just a tool for comparing conventional costs, Variways offers a sustainable development ranking of variants for all vehicle types using the infrastructure.
Eric Locquet, Mireille Lattuati

3E Warm Mix Asphalt Assessment of mechanical performances and workability
The studies on 3E Warm Mixes Asphalt (WMA) are a major topic in Colas Group. We try to introduce new techniques and to verify that mechanical performances are maintained. It is proved that the use of WMA rather than Hot Mix Asphalt (HMA) allows obtaining similar characteristics in term of compacity, water resistance, modulus, rutting and fatigue resistances. Examples of worksites for which a high level of performances is needed are presented.
Xavier Carbonneau, Julien Van Rampa, Olivier Mainardis, Stéphane Michel

GB5®: eco-friendly alternative to EME2 for long-life & cost-effective base courses
Aggregate packing concepts initially developed in the field of high-performance cement concretes were adapted and transposed to the field of asphalts. These innovative mixes are characterized by single or double gap-graded curves and great coarse aggregate interlock, as well as no need for hard bitumens to obtain the European EME2 specifications requirements, in particular the 14,000 MPa stiffness modulus value at 15°C.
François Olard, Jérôme Dherbecourt, Hervé Dumont

Application of 14,000-tonnes of Warm Mix Asphalt (WMA) on a new highway near Strasbourg
In Europe, Eurovia and MeadWestvaco have been working together since 2006 in the development and promotion of warm mix asphalt (WMA). Since then, nearly one million tones of WMA have been manufactured and applied on different types of roads, under different climates, and with various types of aggregates and asphalt binders.
Frédéric Delfosse, Stéphane Faucon Dumont, Thomas Gianetti, Mathieu Wallez, Everett Crews, Claude Giorgi

Highly Modified Asphalt Binder allows pavement thickness reductions
The use of highly polymer modified asphalt binder (HiMA) in mix design can reduce total pavement thickness requirements while matching or exceeding the performance of significantly thicker non-HiMA mixes — even under extreme traffic loading conditions — according to results of pavement testing by the National Center for Asphalt Technology (NCAT).
Erik J. Scholten, Bob Kluttz
A new method for aging bitumen in the laboratory
This article describes progress towards development of a new thin film (300µm) short- and long-term aging test suggested as an alternative to the standard rolling thin film oven (RTFO) and pressure aging vessel (PAV) tests. The new test, referred to as the Simple Aging Test (SAT), can be applied to neat and modified bitumens, and emulsion residues. Before the Strategic Highway Research Program, there was considerable interest in static thin film aging.

Michael J. Farrar, R. William Grimes, Changping Sui, Jean-Pascal Planche, Shin-Che Huang, Thomas F. Turner, Ron Glaser

Increasing the durability of asphalt mixtures by hydrated lime addition: what evidence?
Hydrated lime has been known as an additive for asphalt mixtures from their very beginning. It experienced a strong interest during the 1970s in the USA, when moisture damage and frost became some of the most pressing pavement failure modes of the time. Given its extensive use in the past 40 years in the USA, hydrated lime has been seen to be more than a moisture damage additive: hydrated lime reduces chemical aging of the bitumen and stiffens the mastic more than usual mineral filler above room temperature, which can in turn improve the mechanical properties of the mix.

Didier Lesueur, Joëlle Petit, Hans-Josef Ritter

Warm and Half-Warm Asphalt Mixes with Super Absorbent Polymers
An Innovative Technology
This article presents new technology to produce Warm and Half-Warm Mix Asphalt based on the use of superabsorbent polymers (SAP). SAPs are well known for their very high water absorption capacity and are commonly used as absorbing materials in different applications, e.g. agriculture. The concept is based on the absorption of water by the SAP and then the progressive release of this water during the mixing of the aggregates and the hot bitumen.

Hassan Baaj, Mohsen Ech, Emmanuel Villard, Nicolas Richard

Motorway PPP
Public-Private Partnership for motorway in Poland
Research at the national and European levels
Segment II of the A2 motorway between Swiecko and Novy Tomysl in western Poland, is Poland’s largest concession project investment using a Public-Private Partnership (PPP) model for construction and operation of a toll motorway. The concessionaire Autostrada Wielkopolska II opted in favour of a cement concrete pavement structure despite the initial higher cost.

Angelika Staebner, Jean-Pierre Marchand

Freight Transport & Mobility
SCUTUM: EGNOS for the tracking & tracing of dangerous goods transport
The availability of EGNOS (European Geostationary Navigation Overlay Service) over Europe enables guaranteed and more accurate positioning. For the tracking & tracing of the transport of dangerous goods, EGNOS added value lies in a more precise and reliable localisation and in the ability to qualify the position information, generating benefits due to higher safety and efficiency of operations.

Antonella Di Fazio, Irene Fusco

Safer Roads by Design
A Campaign to End Turned-Down Ends
The “Decade of Action” for Road Safety must also be a “Decade of Change” for highway engineering practices
Road authorities and safety specialists worldwide recognize that the most dangerous part of a longitudinal barrier can be its end. A crashworthy end treatment must be able to act both as a redirecting anchor and an impact cushion to errant motorists.

Michael Dreznes, Brendan Halleman

In 2008, a collision with this turned-down end resulted in incapacitating injuries