



AMC ASPHALTIC MIXTURE
CONDITIONER®

CAPM CONDITIONED
ASPHALTIC PAVING MIXTURE®



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PRESENTATION

ALTEX S. A.

ALTEX S.A., acronym for **ASFALTO LIQUIDO TECNOLOGÍA EXTREMA S.A.** It is a company based in Costa Rica, made up of researchers and international investors, dedicated to the development of technologies related to the asphalt sector and other hydrocarbons.

With more than 10 years of experience in research, its flagship products include the AMC® Asphaltic Mixture Conditioner and the CAPM® Conditioned Asphaltic Paving Mixture, which are PROTECTED under the PCT patent agreement.



WORLDWIDE PATENT PROTECTION



Altex is presently protecting its patents or patents applications regarding this invention in a plurality of countries all over the world, giving protection in more than 94% of the global market. Several exam reports have been very positive, giving rise to a high approval probability.

BUSINESS & TECHNOLOGY EXPERTS NETWORK / BTEN

www.bten.pt

PATENT VALUATION STUDY



AMC ASPHALTIC MIXTURE
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PRESENTATION

VISION / MISSION

The vision of ALTEX SA is to offer the global asphalt market the possibility of accessing a new technology that improves the handling and logistics in the application of hot asphalt mix, providing better alternatives in planning, cost optimization, asset optimization, and organization for the application of the same, offering FOR THE FIRST TIME IN HISTORY, the possibility of transporting the hot-manufactured asphalt mix to distant geographies, but handled at room temperature.

"To provide the asphalt world with technological tools to improve and facilitate the application of the Conditioned Asphaltic Paving Mixture (CAPM®) in an accessible way to the entire industry."



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TECHNOLOGY

OPERATION OF THE TECHNOLOGY

Our technology, which we call AMC® Asphaltic Mixture Conditioner and Conditioned Asphaltic Paving Mixture CAPM®, represents a major shift in the asphalt industry by adding AMC® to the conventional hot asphalt mix, allowing:

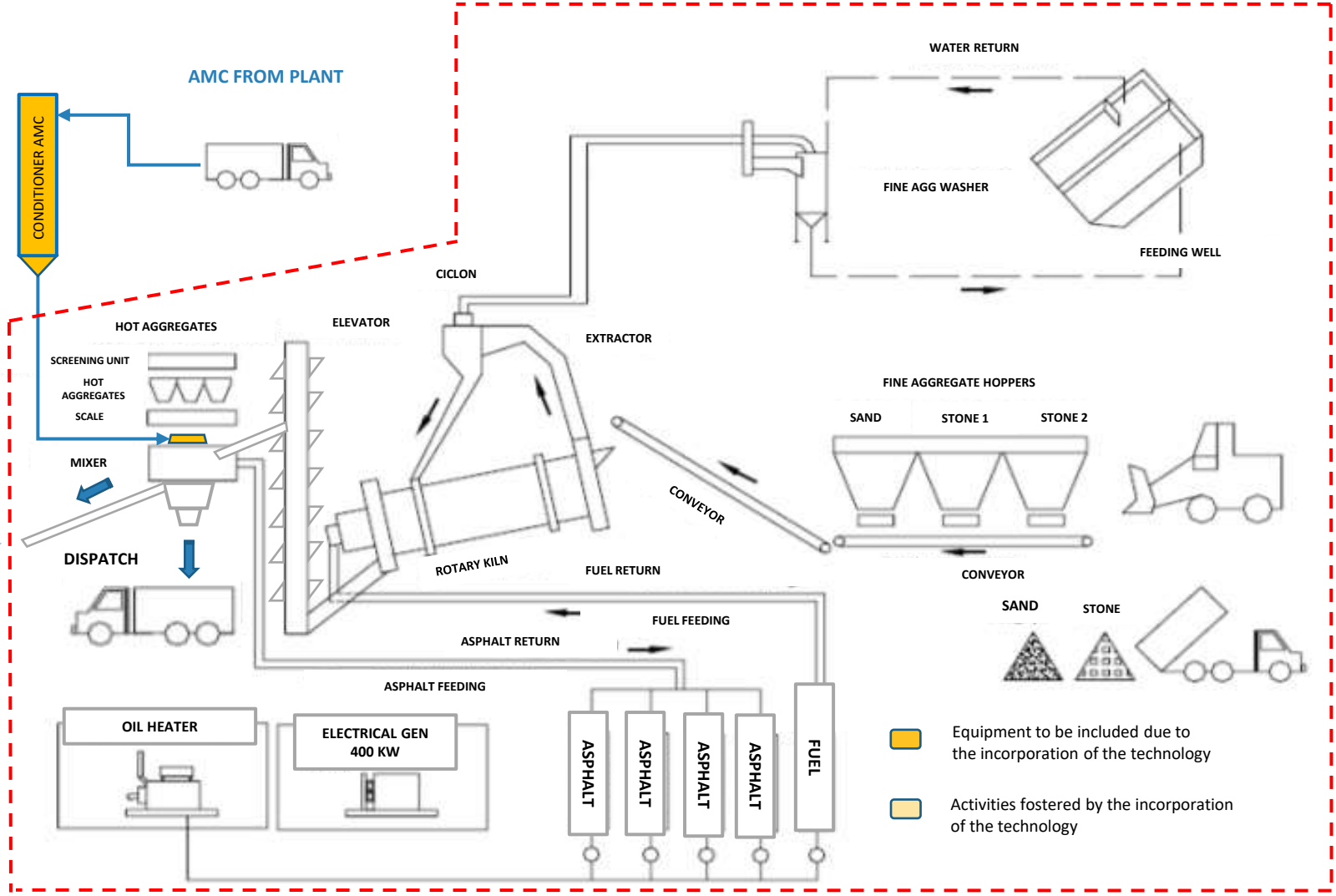
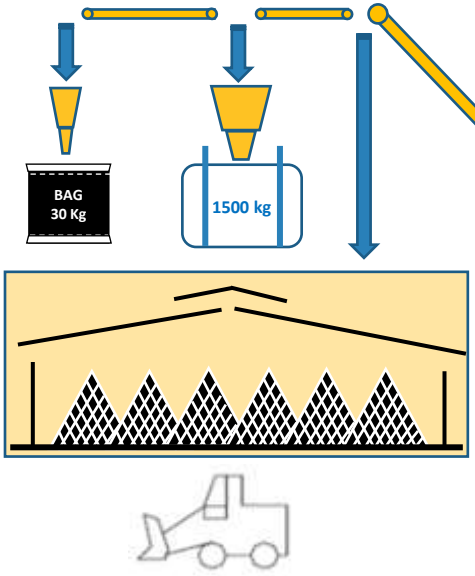
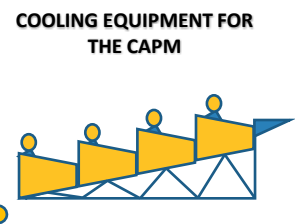
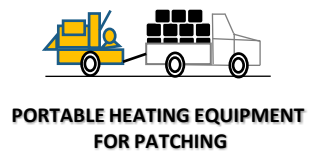
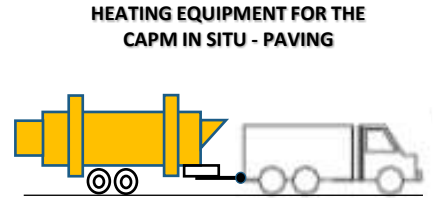
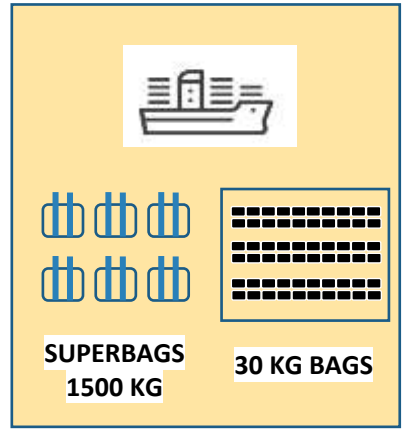
- To convert Conventional Asphalt Mixes into **CONDITIONED ASPHALT MIXES**, a non-perishable products that can be stored at room temperature.
- **Easy handling (loose mix).**
- **To STORE the CONDITIONED ASPHALTIC PAVING MIXTURE** when cooled for an indefinite period of time. It is not an asphalt emulsion (called Cold Mix Asphalt), it is a hot asphalt mix to which the **ASPHALTIC MIXTURE CONDITIONER** is added to handle it cold..
- To Preserve all its original physicochemical and mechanical properties once the Conditioned Asphaltic Paving Mixture is heated and applied.
- **To Maintain and/or improve its stability after application, according to the standard norms and tests for asphalts worldwide.**
- To definitively and completely **change the logistics** of asphalt handling worldwide.



FLOWCHART OF THE TECHNOLOGY

AMC ASPHALTIC MIXTURE
CONDITIONER®

CAPM CONDITIONED
ASPHALTIC PAVING MIXTURE®

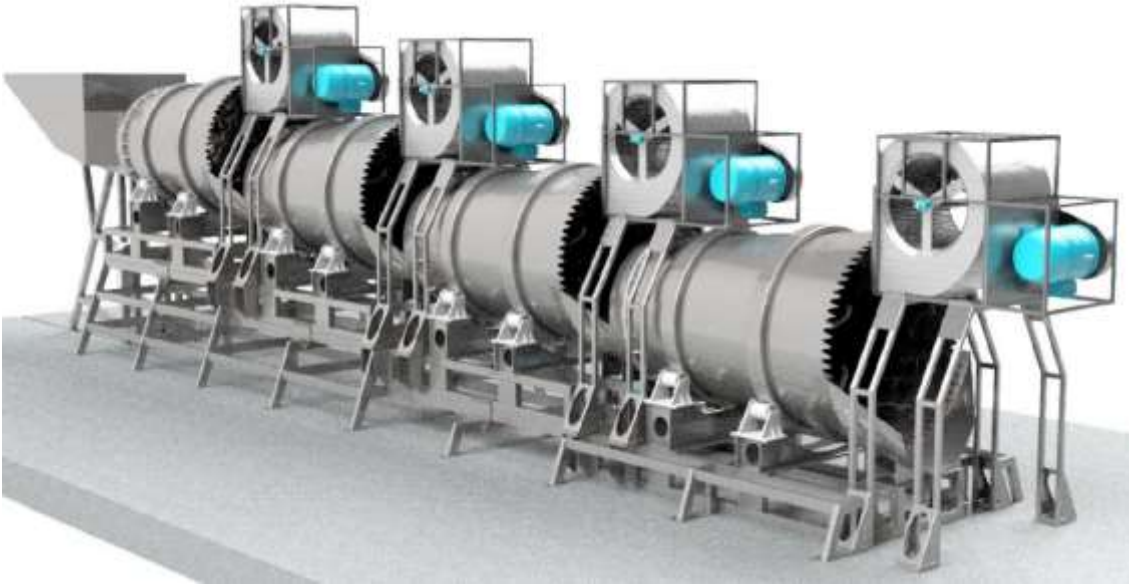


Conventional plant within the dotted line.
Outside the dotted line, RESOURCES necessary for the application of the TECHNOLOGY.



ADDITIONAL EQUIPMENT REQUIRED BY THE TECHNOLOGY

DESIGN OF COOLING EQUIPMENT FOR THE CAPM



DESIGN OF HEATING EQUIPMENT FOR THE CAPM



PORTABLE HEATING EQUIPMENT FOR CAPM FOR PATCHING





AMC ASPHALTIC MIXTURE
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TECHNOLOGY

ECONOMIC ADVANTAGES FOR THE APPLICANT

- ❑ *POSSIBILITY OF STORAGE.*
- ❑ *COST AND ASSET OPTIMIZATION.*
- ❑ *LOGISTICAL IMPROVEMENTS.*
- ❑ *INSTANT ROAD MAINTENANCE (PATCHING).*
- ❑ *TRANSPORT OF CAPM® AT ROOM TEMPERATURE.*
- ❑ *EXPORT FEASIBILITY (Special Cases).*
- ❑ *REQUIRES LOW-COST CHANGES IN THE CAPM® PRODUCTION PLANT.*



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TECHNOLOGY

ECONOMIC ADVANTAGES FOR THE APPLICANT

- ❑ *THERE IS NO TECHNOLOGY REJECTION IMPACT, AS THE APPLICANT IS PART OF THE MARKET.*
- ❑ *HIGHER PROFITABILITY OF THE INDUSTRY WITHIN ITS TERRITORY.*
- ❑ *THE OPTIMIZED COST OF THE VARIOUS VARIABLES CAN EXPERIENCE A REDUCTION BETWEEN 10% AND 30% (ESTIMATED), DEPENDING ON THE CHARACTERISTICS OF THE PROJECT AND THE COMPANY APPLYING THE TECHNOLOGY, INCLUDING THE INCREASED COST PER TON WITH THE USE OF THE TECHNOLOGY BETWEEN 5% TO 9% (ESTIMATED).*



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TECHNOLOGY

TECHNICAL ADVANTAGE FOR THE END CUSTOMER

- GREATER STABILITY OF THE ASPHALT LAYER, A TECHNICAL ASPECT THAT REPRESENTS GREATER DURABILITY OF THE PAVED ROAD.
- The CAPM (Conditioned Asphaltic Paving Mixture) IS NOT A COLD ASPHALT MIX (based on asphalt emulsion); it is a hot asphalt mix that is worked and handled cold, marking a significant difference between the CAPM and cold asphalt mixes.



❖ DIFFERENCES BETWEEN HOT ASPHALT MIXES AND COLD ASPHALT MIXES (BASED ON ASPHALT EMULSIONS)

Source:

<http://www.ing.una.py/?p=28428#:~:text=La%20mayor%20desventaja%20del%20uso,las%20mezclas%20asf%C3%A1lticas%20en%20caliente.>

ADMISIÓN A LA FIUNA Acreditación de Grado Acreditación de Postgrado Resoluciones TFG y Tesis Contáctenos Webmail

UNIVERSIDAD NACIONAL DE ASUNCIÓN
FACULTAD DE INGENIERÍA

INICIO INSTITUCIONAL ACADÉMICO EVENTOS EXTENSIÓN INVESTIGACIÓN POSTGRADO FILIAL

Evaluaron el desempeño de mezclas asfálticas en frío como alternativa al método tradicional

Publicado por *Administrador* on diciembre 29th, 2017



“Evaluación del desempeño de mezclas asfálticas en frío como alternativa al método tradicional con mezcla asfálticas en caliente para bacheo”, se denomina el Trabajo Final de Grado (TFG) presentado exitosamente por los ahora ingenieros civiles David Almada Jara y Pedro Enrique Sánchez Prieto, como última prueba para egresar de la carrera Ingeniería Civil de la Facultad de Ingeniería de la Universidad Nacional de Asunción (FIUNA). La defensa del trabajo se realizó el pasado jueves 28 de diciembre en la Institución.

El asfalto, principal componente de los pavimentos flexibles, también llamado Cemento Asfáltico, es a temperatura ambiente semisólido y altamente viscoso. Para poder manipularlo debe estar en estado líquido durante las operaciones de construcción y/o mantenimiento.

En las actividades de conservación y mantenimiento de las vías urbanas de pavimento flexible, el deterioro más común es el bache; de acuerdo con el grado de severidad deben establecerse el tipo de materiales y los procedimientos constructivos adecuados para la eliminación del deterioro.

La técnica de mezclado asfáltico en frío con emulsión, objeto de estudio de este trabajo final de grado, no cuenta con suficiente experiencia en el país y las utilizaciones esporádicas no han dispuesto de fundamentos técnicos-económicos racionales. Esta investigación se centró en evaluar el comportamiento de estas mezclas confrontando los resultados obtenidos con los parámetros comparables de las mezclas en caliente usadas típicamente en nuestro medio como alternativa a los trabajos de conservación y mantenimiento de vías urbanas.

Esta investigación analizó la viabilidad de la utilización de las mezclas en frío, desarrollando conceptos y propiedades del material, teniendo en cuenta las principales ventajas y desventajas oriundas de su uso y un comparativo de costos con la tradicional y principal técnica utilizada para el mantenimiento rutinario. La mayor desventaja del uso de la mezcla en frío es el desarrollo de resistencia, fenómeno regulado por la pérdida de humedad de la mezcla, motivo por el cual no serán más duraderos y no podrán soportar el tráfico pesado en comparación con las mezclas asfálticas en caliente. Así, este trabajo concluye que el premezclado en frío teniendo un buen proyecto y bien ejecutado, puede ser utilizado como material de mantenimiento en vías de bajo y medio volumen de tráfico.

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Admisión a la FIUNA 2023



Admisión CETUNA 2023



Bolsa de trabajo FIUNA



www.altextechnology.com



VALIDATION OF THE TECHNOLOGY

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UNIVERSIDAD DE LOS ANDES / MÉRIDA

TESTS



Mérida 20 Mayo de 2022

RESUMEN DE ENSAYOS DE LABORATORIO

Obra: Diseño de Mezcla Asfáltica con Acondicionador (AMA)
Ubicación: Particular
Solicitante: Asfalto Líquido Tecnología Extrema Altex S.A

El presente estudio se basó en la realización de una mezcla asfáltica en caliente tipo IV con granulometría construida en el laboratorio, con material granular procedente de una planta procesadora de la ciudad de Mérida. Las condiciones del diseño las estableció el solicitante, en donde se partió de una mezcla diseñada por el método Marshall según Norma ASTM D 1559, con un porcentaje óptimo de cemento asfáltico tipo 60/70 del 5%. Posteriormente, se construyeron nuevas briquetas donde una proporción del asfalto fue sustituido por un asfalto modificado con un acondicionador, denominado por el solicitante como acondicionador de mezcla (AMA).

Las actividades del laboratorio se limitaron a proporcionar el diseño original de la mezcla sin acondicionador, luego a la fabricación de las briquetas con mezcla asfáltica con el acondicionador. Según lo refirió al solicitante, los ensayos se realizaron a diferentes temperaturas y los resultados muestran una mezcla suelta manejable, trabajable a temperatura ambiente, con estabilidad y flujo según se muestra en la tabla anexa.

MSc. Ing. Johannes Briceño
Jefe de Laboratorio



Nota: El material asfáltico modificado fue suministrado por el solicitante.



LABORATORIO DE SUELOS Y PAVIMENTOS
Escuela de Ingeniería Civil, Departamento de Vías,
Avenida Tullio Febres Cordero, Nudo de Medicina - Ingeniería, Mérida
5101 A, Venezuela
Teléfono/Fax: (+58) 274 240 2875 / (+58) 274 240 2875
www.ula.ve/ingenieria/via/laboratorios

The laboratory activities were limited to providing the original design of the mix without conditioner, followed by the manufacture of briquettes with the asphalt mix with the conditioner. As the applicant stated, the tests were carried out at different temperatures and the results show a manageable, workable loose mix at room temperature, with stability and flow as shown in the attached table.





ASPHALT COMPANY IN BELGIUM

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UNIVERSITY OF AMBERES UNIVERSITEIT ANTWERPEN

The screenshot shows the website for the University of Antwerp, specifically the page for the Asphalt Innovation Symposium. The header includes the university logo and name, a search bar, and navigation links for 'ENERGY AND MATERIALS IN INFRASTRUCTURE AND BUILDINGS', 'Sustainable Buildings', 'Sustainable Road Engineering', 'News', and 'Contact'. A breadcrumb trail indicates the current page is 'Asphalt Innovation Symposium'. The main content area features a large title 'Asphalt Innovation Symposium' with the subtitle 'Research meets Industry'. A sidebar on the left lists various activities under 'Sustainable Road Engineering', with 'Asphalt Innovation Symposium 2022' highlighted. The main text area contains two sections: 'AIS 2022 was terug!' and 'AIS 2022 was back!', both describing the return of the physical symposium after two years of virtual events.

University of Antwerp Login

↑ ENERGY AND MATERIALS IN INFRASTRUCTURE AND BUILDINGS 🔍

Sustainable Buildings Sustainable Road Engineering News Contact

UAntwerp > Research groups > Energy and Materials in Infrastructure and Buildings > Sustainable Road Engineering > Activities > Asphalt Innovation Symposium

Sustainable Road Engineering

- About us
- Consultancy
- Projects
- Publications
- Activities
 - Asphalt Innovation Symposium
 - Asphalt Innovation Symposium 2022**
 - Asphalt Innovation Symposium 2021
 - Asphalt Innovation Symposium 2020
 - Asphalt Innovation Symposium 2019
 - Asphalt Innovation Symposium 2018
- Asphalt courses
- Other activities
- Exchange opportunities

Asphalt Innovation Symposium

Research meets Industry

AIS 2022 was terug!

Na 2 jaar online-edities hielden we op donderdag 15 december opnieuw een fysieke editie van het asfalt innovatie symposium. Op deze dag brachten onderzoekers van de Universiteit Antwerpen en gastsprekers uit binnen- en buitenland ons op de hoogte van hun onderzoek en innovatieve ontwikkelingen in de asfaltsector. Met dit symposium werd een verbinding gemaakt tussen het werkveld en onderzoek om samen verder te werken aan nieuwe trends in de wegenbouw.

AIS 2022 was back!

We are excited that after two years of virtual symposiums, we could go back to the physical format this year. The fifth edition of the asphalt innovation symposium was held on December 15, 2022, at the city campus of the University of Antwerp. During this event, researchers from the University of Antwerp, international guest speakers, and industry stakeholders presented their work and passion. We covered a wide range of topics on this day, including the recent innovations from the University of Antwerp, innovations in mix design, advancements in the bitumen industry, BIM and LCA.

We also had a surprise parallel session this year. One of our PhD researchers, [Georgios Papatrakos](#), defended his PhD thesis in front of an international jury.

HOST OF THE
**Asphalt Innovation
Symposium Since
2018**

<https://www.uantwerpen.be/en/research-groups/emib/rers/activities/ais/ais2022>

<https://www.uantwerpen.be/en/>

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ASPHALT FOLDER OUTSIDE THE STANDARD SB250 v.4.1



ASPHALT FOLDER IN STANDARD SB250 v.4.1
(WITH ASPHALTIC MIXTURE CONDITIONER)

CERTIFICATION

We hereby confirm that

An extensive lab test program on AC and EME-asphalt mixtures show that it is feasible to produce a qualitative asphalt mixture with the ALTEX ASPHALTIC MIXTURE CONDITIONER (AMC) at standard production temperature, cool down to environmental condition, store the mixture during several days and weeks and reheat the mixture at standard temperatures to compact. The lab study demonstrated that the mixtures meet the requirements of the Flemish road specifications SB250 v.4.1. in Belgium.

The AMC was added to the reference mixtures without any optimization needed.

8.5 Market potential

Lab-tests on the asphalt mixtures show that it is possible to produce an asphalt with the Altex conditioner, store it and reheat it, and perform a lab study on it, that meets the requirements of the Flemish road specifications SB250 v.4.1.

	Air voids (%)	ITS _{uncond} (MPa)	ITS _{cond} (MPa)	ITS-R (%)	Rutting (%)	Stiffness (GPa)	E ₆ (μS)
Requirements SB250 v.4.1 for APT-C	3 < ... < 8	/	/	> 80	< 20 (B6-B8) < 10 (B4-B5)	7 < ... < 14	/
APT-C REF	3,7	2,1	1,8	83	5,7	8,1	/
APT-C CAPM	5,4	2,2	1,8	83	6,7		/
Requirements SB250 v.4.1 for AVS-B	2 < ... < 7	/	/	> 80	< 7,5 (B4-B5) < 5 (B1-B3)	> 11 (15 °C) > 4 (30 °C)	> 115 (B4-B5) > 130 (B1-B3)
AVS-B REF	3,4	3,3	3,2	96	1,6	13,1 (15 °C) 6,9 (30 °C)	180
AVS-B CAPM	5,0	2,2	1,9	88	3,1	13,8 (15 °C) 7,6 (30 °C)	164

B1: <128 Mio ESAL100kN B3: <32 Mio ESAL100kN B4: <16 Mio ESAL100kN
B5: <8 Mio ESAL100kN B6: <4Mio Mio ESAL100kN B8: <1 Mio ESAL100kN

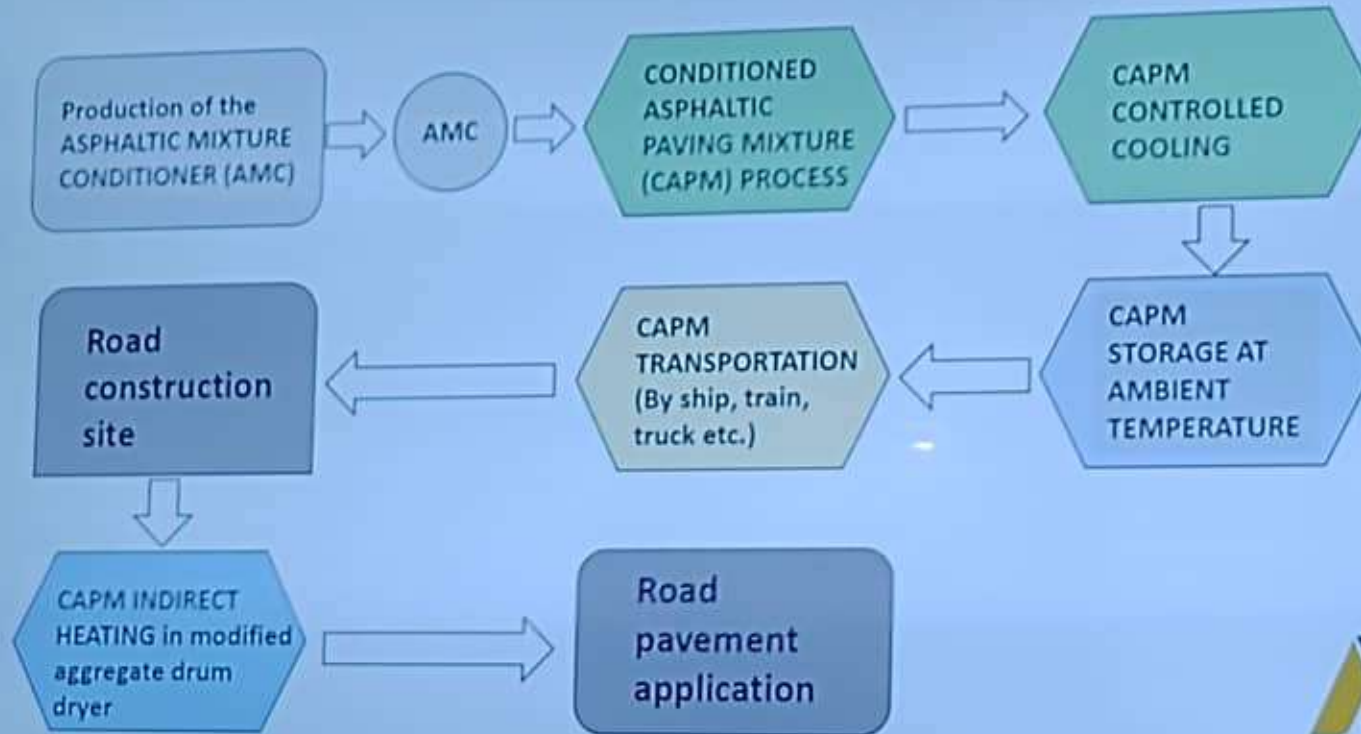
Antwerp, July 5th 2023



Prof. Dr. Wim Van den Bergh



CONDITIONED ASPHALTIC PAVING MIXTURE (CAPM)





ALTEX
AMC®
ASPHALTIC MIXTURE CONDITIONER

Revolutionizing asphalt logistics, our patented conditioner is a game-changer in the industry. By seamlessly integrating with conventional asphalt, it metamorphoses into a cutting-edge Conditioned Asphaltic Mixture, unlocking a plethora of advantages:

Stability at Room Temperature: Non-perishable and stable mixture that can be stored and used months after being prepared.

Ease of Handling: Its loose mixture form simplifies the logistics of transportation and application at ambient temperatures.

Extended Shelf Life: Boasting an indefinite shelf life, our conditioned asphalt maintains its efficacy over time.

Preservation of Original Properties: Retains all original physical, chemical, and mechanical attributes.

Enhanced Post-Application Performance: Demonstrates either the maintenance or improvement of stability and rigidity post-application, aligning seamlessly with global standards for asphalt.

Stringent Certification: Fully compliant with American and European standards, ensuring the highest quality and safety.

Cost-Effective Solution: With a minimal initial investment, our conditioned asphalt brings cost reduction due to a much more efficient process, making it an economically viable choice.

www.altextechnology.com







AMC ASPHALTIC MIXTURE
CONDITIONER®

CAPM CONDITIONED
ASPHALTIC PAVING MIXTURE®

COMERCIALIZATION

SCOPE / MARKET SEGMENTS

- ❖ ***ROAD MAINTENANCE (PATCHING)***
- ❖ ***LONG DISTANCE ROAD PAVING***
- ❖ ***RESOURCES/ASSETS OPTIMIZATION.***



AMC ASPHALTIC MIXTURE
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❖ *RAOD MAINTENANCE (PATCHING)*

It provides the possibility of instant road maintenance at any time, as the CAPM product can be stored in Super Sacks (Big Bag) or 25-kilogram bags, ready to be transported to the site and heated using a portable heater. There is no need to start up an asphalt plant that requires producing a high minimum number of tons, nor wait for enough holes to open to justify its ignition, as well as leaving these holes profiled for a long time with high risks to road users.

It encourages with the 25-kilogram bag, the patching in housing developments, condominiums, and private areas.

THE WAY IT SHOULD BE IS THE PROFILING OF THE HOLES AND THEIR IMMEDIATE PATCHING.

ACTION THAT IS CURRENTLY LOGISTICALLY IMPOSSIBLE TO ACHIEVE AT LOW COSTS.



Portable Heating Equipment for
CAPM for PATCHING.



AMC ASPHALTIC MIXTURE
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❖ *LONG DISTANCE ROAD PAVING*

To pave distant roads, it is necessary to transport complete asphalt plants (mobile or fixed), their assembly and subsequent disassembly on-site, the transport of bitumen in special heating tankers, the installation of a bitumen heating system on-site, and the hauling of the different types of aggregates. All these aspects result in high execution costs for the work.

With our technology, only the CAPM and the Heater for the mix need to be transported.

❖ *RESOURCE/ASSET OPTIMIZATION*

The fact that currently a vehicle with hot asphalt mix has a time and distance limit means that with this Technology, the asphalt industry can pave roads without these limitations; that is, the range of contracts for the same plant grows to its maximum production capacity and not to contracts with distance and time limits.

Over time, the technology will bring a reorganization of the market and greater use of it.



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PROPOSAL

Altex S.A., aiming to operationalize its technology, has decided to implement it in any country that preferably has the following characteristics:

- A country with experience and technical capacity in the analysis and behavior of asphalts.

Objective: To locate the asphalt consortium with the highest number of asphalt plants for the granting of a LICENSE or the establishment of a strategic alliance for the exploitation of the technology in a zone of a country, for the entirety of a country, or for multiple countries.



AMC ASPHALTIC MIXTURE
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Exclusive Use License:

It is the authorization through a contract to operate with the technology in a specific territory.

This License transfers the technology with:

- Education and training in the technology for the licensee's personnel.
- Transfer of KNOW HOW in the process of production, storage, and application of the Asphaltic Mixture Conditioner A.M.C. and the Conditioned Asphaltic Paving Mixture C.A.P.M.



ALTEX WORLD MARKET

- License of use Contracts
- ROYALTY



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ASPHALTIC MIXTURE CONDITIONER®

CONDITIONED ASPHALTIC PAVING MIXTURE®