RECYTAL®-ARM: rehabilitation of the departmental road 670 in Gironde

by Frédéric LOUP / 2019-05-02 10:13:52 / France / 8468 / FR

Year of commitment : 2018
Address 1 - street : SAUVETERRE DE GUYENNE / SAINT JEAN DE BLAIGNAC, France
Diameter : 2000

Sustainable mobility : Roads
Circular economy and waste management : Optimization of ressources, Bio-based materials, Save of ressources

400 000 €

Builder
EIFFAGE Route

Manager / Dealer
County Council of Gironde

GENERAL INFORMATION

Eiffage Route, the road subsidiary of the Eiffage Group's Infrastructures division, attaches a strategic importance to respect for the environment. Also,

while reducing the use of fossil fuels and fossil-based resources is essential, the R & D teams of Eiffage Route, which has its own research and study centers in Ciry-Salsogne in Aisne. and at Corbas near Lyon, succeeded in substituting plant materials for bitumens and regenerating materials by means of plant binders not derived from petroleum.

Thus, in July 2018, Eiffage Route developed and tested in partnership with the bodies of the Gironde Departmental Council, the proprietary and patented Recytal®-ARM process which combines a biosourced vegetable binder derived from silviculture co-products. paper industry and a reprocessing process in place and cold.

The works carried out in Gironde aimed at rehabilitating the departmental road 670 located between Saint Jean de Blaignac and Sauveterre de Guyenne, in the heart of the Bordeaux vineyards, thanks to the 100% recycling of old damaged pavements and the use of agro-resources .

The operation consisted in taking the existing pavement and damaged using a reprocessing technique in place and using a biosourced emulsion to replace conventional solutions based on bitumen. The main characteristics of the work carried out are the following:

- Work done over 4 days in July 2018,
- Length of the site = 2 kilometers on 2 lanes,
- Depth of reprocessing = about 9 centimeters.
- Traffic recorded on the section = 150 to 300 trucks per day and per direction + passages of exceptional convoys.

This operation was part of a circular economy in the sense of Law No. 2015-992 on the energy transition of August 17, 2015. Indeed, throughout the operation were used local means of fabrication and implementation (reprocessing machine in place ARM® 2500) as well as raw materials and industrial tools from the Landes de Gascogne and Gironde basin.

Recytal®-ARM is a so- **called "zero petrochemical" generation process with a very low environmental impact** intended for in-situ maintenance of road infrastructures **thanks to the 100% recycling of old deteriorated pavements and the use of agro-resources.** (origin forestry).

This process is part of **the EIFFAGE group's** sustainable development and transversal innovation strategy, **which finances "low carbon" innovations and promotes the emergence of local "material mixes" with a low environmental footprint** (recycling, biobased materials, wood tracing). and labeled, geosourced materials, very low carbon materials).

Developed by EIFFAGE Route, this process was the **winner of the competition organized by the Roads and Streets Innovation Committee (CIRR) in July 2017** .

This system, supported by the Directorate of Transport and Materials Infrastructures (DITM) of the Ministry of Ecological and Solidarity Transition, with the assistance of IDRRIM (Institute of Roads for Streets and Infrastructures for Mobility) and Cerema (Center for Road Transport and Materials) 'Studies and Expertise on Risks, Environment, Mobility and Development', aims to support innovative projects developed by the French road industry by allowing them to benefit from a concrete experimentation on the national network.

Recytal®-ARM differs from the usual techniques because it does not use any petrochemical source and allows a 100% re-use of the existing pavement thus eliminating the withdrawal of non-renewable natural resources and the production of waste. construction site.

Progress Status

Delivered

Data Reliability

Self-declared

Funding Type

Public

Website Enterprise / Infrastructure

https://www.eiffageinfrastructures.com
https://www.eiffageinfrastructures.com/eiffage-route

Sustainable Development

Attractiveness :

The rehabilitation of departmental road 670 highlighted the following advantages of RECYTAL® - ARM technology:

- **a technique of the "zero petrochemical" generation thanks to the use of renewable agro-resources and the valorization of sylvicole co-products from the paper industry (lack of competition with the food chain / reduction of the dependence on petrochemical industry),**
- **A so-called "low temperature" technology thus enabling significant energy savings and drastically limiting greenhouse gas (GHG) emissions.**
- **A process that allows 100% in-situ recycling of old degraded bituminous pavements (simultaneous recycling, manufacturing and implementation in one place), contributing to a significant reduction in fuel costs and new materials and waste from the site.**
- **A reduction in truck traffic dedicated to the site (- 80 units / day on average for a standard construction site of 2 kilometers in length).**

Well Being :

The peculiarities of the Recytal-ARM process implemented during the rehabilitation project of the departmental road 670 contributed to to the well-being of the residents located in the perimeter of the building site, but also to the fellow-applicators.

Indeed, the "reprocessing in place" has drastically reduced the flow of trucks dedicated to the supply of new materials and the evacuation of waste from the site (- 80 trucks / day for a 2 km site), which contributes to the significant decrease in atmospheric and noise pollution around houses.

Also, the use of a vegetable emulsion at room temperature has contributed to the improvement of the working environment of the applicators by limiting their exposure to hot bituminous products (usually and mostly used techniques) and by reducing the distress of the work in summer and during hot weather.

Social Cohesion :

The restructuring of the road 670 did **not require the addition of new materials other than those present on the site: existing road deconstructed and reused 100% as it is.** Also, recycling, manufacturing and implementation are done in-situ without resort to an industrial unit away from the work area.

As a result, truck traffic (~ 80 units / day on average) dedicated to the aforementioned operations, the supply of materials (aggregates and asphalt) has been reduced by 90% and waste disposal zero.

The resulting societal impacts are therefore:

- **Reduced inconvenience to road users** due to the decrease in local truck traffic.
- **Significant reduction of greenhouse gases and exhaust pollution** following the removal of most truck traffic around and on the site.
- **Reduced damage to roads used by construction trucks** . The result is greater sustainability of the RD670 related infrastructure and, as a result, a positive impact on local and regional government spending, municipalities, metropolises and therefore taxpayers.
- **Securing the traffic of road users** during work thanks to the realization of the construction site in a alternating traffic.

Preservation / Environmental Improvement :

The environmental gains related to the use of Recytal-ARM technology as part of the RD670 maintenance project are significant compared to conventional techniques based on hot bitumen (petrochemicals), that is:

- A **50% reduction in energy consumption** ,
- A **70% reduction in greenhouse gas emissions** ,
- A **90% reduction in the levies on non-renewable natural resources** ,
- **Almost absolute independence from the use of petrochemical products** .

In addition, the use of a biosourced emulsion in a recurring manner contributes to the valorization of a co-product derived from sylviculture and the paper industry mainly used as a fuel additive.

Resilience :

The RD670 rehabilitation works carried out using the Recytal®-ARM process aim at **a resilience equivalent to the techniques it replaces** , such as hot bituminous mixes, mainly used on the roads of France, Europe and the world.

In this context, an experimentation framework was set up between the **Departmental Council of the Gironde** , **CEREMA** (Ministry of Ecological and Solidarity Transition and the Ministry of Territorial Cohesion and Relations with Local Authorities) and **EIFFAGE Infrastructures** . It aims to test the restructured pavement over a period of 3 years in order to check the resilience.

Responsible use of resources :

The project carried out using the **Recytal®-ARM process has reduced by more than 90% the extraction of non-renewable natural resources** because of the exclusive use of materials from the road to be rehabilitated.

In addition, the additives used (vegetable binder emulsion) are derived from bio-based resources (100% biogenic carbon), renewable and which also contribute to the valorization of an industrial co-product (raw material derived from sylviculture) usually intended for energy consumption.

Testimony / Feedback

2 testimonies are offered:

- *The first is that of the President of the Departmental Council of the Gironde (Mr Jean-Luc GLEYZE) through a news report made by France 3 Gironde (broadcast of 007/2018).*
- *The second (film EIFFAGE Route) includes the interventions of Mr Jean-Luc GLEYZE (President of the County Council of Gironde), Mr Alain RENARD (Vice-President of the Gironde Department), Mr Nicolas PEZAS (Director of Infrastructure of the Gironde) and Mr Cédric TAJCHNER (Deputy Director, Infrastructure Operations Division of the Gironde Department).*

These 2 testimonials reflect the issues, the context, the stakes and the solutions implemented in the maintenance of the departmental road 670 from the Recytal-ARM process.

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Governance

County Council of Gironde

Holder Type : Regional Authority

EIFFAGE Route

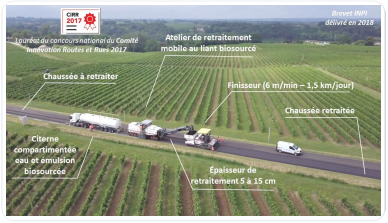
Builder Type : Construction Industry

County Council of Gironde

Manager / Dealer Type : Public

Sustainable Solutions

Emulsion biosourcée Recytal



Description :

The innovative solution deployed during the rehabilitation of the departmental road 670 by reprocessing in situ the biosourced emulsion, the first on an international scale.

This technique makes it possible to substitute 100% of the bituminous products (hot bitumens and bitumen emulsions) usually used for road maintenance, by an emulsion containing mainly a co-product of the paper industry, of plant origin, 100% bio-based and renewable.

The combination of this biosourced emulsion (Recytal) with a reprocessing workshop in place (ARM 2500) makes it possible to develop a global solution (Recytal-ARM) with many environmental and societal benefits:

- This technique makes it possible to valorize a co-product of plant origin (sylviculture) mainly used as an additive or substitute for fossil fuels: **objective "zero petrochemistry"** .
- The use of an emulsion at room temperature in place of a hot bituminous product makes it possible to **significantly reduce VOC emissions** , but also contributes to **improving the safety and comfort of the people in charge of the work** (product at room temperature limiting the risk of burns and hardship during periods of high temperatures).
- Recytal-ARM technology **recycles 100% of the road to be rehabilitated**. Therefore:
- A "zero waste" site result from the rehabilitation: the "deconstructed" road is entirely reused to build the new roadway.
- Non-renewable natural resources have been required (quarry materials & bitumen).
- A significant reduction in the circulation of trucks dedicated to the site (supply of new materials, disposal of waste) with a consequent reduction of inconvenience to residents of the site (air pollution, GHG emissions and noise pollution) and the preservation of existing infrastructure (reduction of maintenance costs by local authorities, therefore by the taxpayer). For example, a rehabilitation of 1 Km equals 2,000 T of non-renewable resources saved and the removal of 80 trucks per day.

- Circular economy
- Infrastructure
- Waste management
- Low-carbon materials/ infrastructure

Company (es) Website :

Eiffage Infrastructure

78140 -

Company (es) Website :

Contest

Building candidate in the category

Grand Prix Infrastructure Durable

Prix du public

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