

# Cargill Asphalt Solutions Case Study: Rejuvenated RAP Hits the Runway at Schiphol Airport

The reuse of asphalt is a long tradition in the Netherlands, where no stone quarries exist. This geology means expensive aggregates must be imported, necessitating the reuse of asphalt across the country. Dutch company Heijmans is no stranger to reclaiming asphalt for its applications, with a long history of expertise in innovative and sustainable asphalt solutions.

Recently, Heijmans was able to put its experience to good use, partnering with the bustling Schiphol Airport in Amsterdam, the main international airport of the Netherlands. Pre-COVID-19, over 71 million travelers passed through Schiphol every year (in 2021, there were 25,5 million travelers), making it one of the busiest airports in all of Europe. Schiphol covers a staggering area of 27.87 square kilometers.



Heijmans paving the Polderbaan with Cargill's Anova® Rejuvenator. © 2021 Heijmans

In the last 10 years the global asphalt industry has shifted as companies and agencies search for more sustainable asphalt solutions. Heijmans has worked closely with Schiphol for over 7 years, with Schiphol relying on Heijmans' expertise as their Asset Management partner in keeping their run- and taxiways available for takeoff and landing. The role of Heijmans is to optimize maintenance in costs and availability.

Schiphol Group aims to operate the most sustainable airport in the world with a focus on sustainable aviation, energy positive operations and a circular economy. To achieve this, Heijmans has been a key collaborator, and recently started integrating the use of Anova® Rejuvenator from Cargill into its asphalt revitalization initiatives for the airport.

Schiphol tasked Heijmans with the repaving of a significant landing and takeoff lane. The Schiphol technical teams desired to make the intermediate asphalt layers - directly underneath the top layer - more sustainable.

## Goal

The ultimate goal of Schiphol Airport is to move toward 100% reclaimed asphalt (RAP) and bio-based materials in its lanes and runways. This is part of an overall aspiration to operate as one of the most sustainable airports in the world.

The goal of this specific project was to deliver verified results to the technical teams at Schiphol. Safety is the paramount concern and secondarily, an unexpected shutdown of the runway would be a major disruption of the daily operations of the airport (and also impact local residents).

## Solution

The requirement of this project was to maintain the same technical performance specifications as the existing asphalt mixture for this application, while increasing the percentage of recycled ingredients from zero to 60% making the mixture more sustainable. According to Maarten van Santvoort, Innovation manager at Heijmans, to arrive at a solution the team started with the design objective - maintain the same

## CASE STUDY



The products used needed to perform: the Polderbaan needed to be repaved with as little impact as possible on Schiphol's daily operations. © 2021 Heijmans



Overview of the paving project at the Polderbaan, with Cargill's Anova® Rejuvenator. © 2021 Heijmans

functional and technical specifications as the existing asphalt solution while increasing RAP usage. This is where Cargill's Anova Rejuvenator comes into play.

Then they began mixture design which van Santvoort describes as, "like making a new recipe for an asphalt mix." This process is straightforward for Heijmans as they have extensive experience designing mixtures with reclaimed asphalt and / or secondary raw materials while maintaining the technical properties and expected service life. Because of Anova the use of a high percentage of RAP is enabled, while still achieving the desired high performance properties. The results come through a combination of exactly the right dose of Anova and an innovative and clever mixing process, according to Van Santvoort.

For several years Cargill has been the preferred supplier for asphalt rejuvenators for Heijmans. After a thorough analysis, Heijmans determined that Cargill's rejuvenator was the top choice based on performance, technical functionality, value for money and demonstrated supply chain reliability. According to van Santvoort, Cargill also brings an expertise on rejuvenators and technical support for developing high-performance mix designs.

About Cargill, van Santvoort said "They obviously had the best performing product. It was clear which way to move forward." Given Heijmans' trust in the Cargill rejuvenator product, Cargill Anova was the implemented additive.

After the mix was designed including aggregates, fillers, polymers, RAP and Cargill's Anova Rejuvenator, the Heijmans experts tested it on all possible functionalities like cracking

and rutting resistance in the laboratory environment to predict the technical performance and properties of the mixture. In the end, after rigorous testing, all teams approved of the results. Heijmans got the greenlight to use the mixture and the paving project commenced at Schiphol.

### Results

During the renovation project Heijmans paved 225,000 square meters, the equivalent to 45 soccer fields. This is approximately 30,000 tons and roughly 1,200 truck loads. The Polderbaan runway was closed from the end of January 2021 through mid-May 2021.

Ultimately with the help of Cargill's Anova Rejuvenator and the skilled team at Heijmans, both the performance and sustainability goals were achieved.

"Although it's only a small percentage in the mixture, the rejuvenator enables us to increase sustainability of the mixtures and increase the percentage of RAP from zero up to 60%. Without Anova Rejuvenator, we wouldn't have been able to do this." said van Santvoort.

Jan Struik, Business Development Manager at Cargill, says that the Schiphol project was again a valuable collaboration with Heijmans. "Heijmans and Cargill are on the same page when it comes to innovation and sustainability. We know that the maintenance program at Schiphol is not over yet. In 2022 a second runway will be renovated by Heijmans as well and we're looking forward to a continuation of our successful collaboration in this area."

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