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SGS INTRON first to certify
biobased-content building products

High value reuse of prefabricated
concrete girders possible for at least
100 years

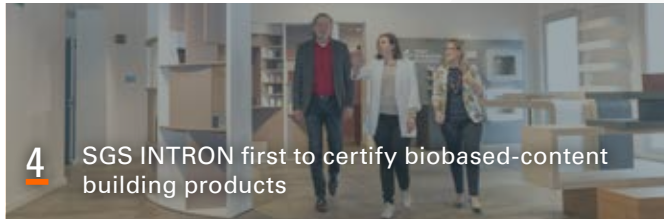
Heros Sluiskil gives urban waste a
second life in construction products

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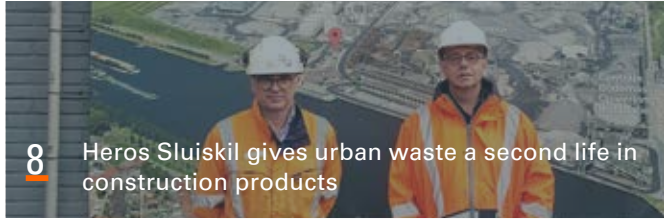
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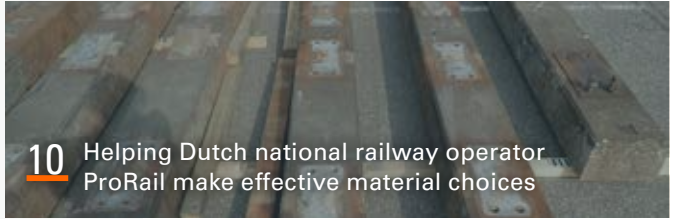
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Hydrogen and nitrogen

Over recent months, two issues have consistently made headlines in Belgium and the Netherlands: nitrogen and hydrogen. Although the ongoing conflict in Ukraine and massive price fluctuations have sadly dominated the news, these two topics have also been ongoing themes – not only creating a stir in the national and international political arenas but also catching the attention of the general public.

Agriculture is often singled out as the primary cause of the nitrogen issue, although this sector is at pains to point out the significant reductions it has already achieved in recent decades. Others see our slow transition to renewable energy as the root of the problem. Whatever the cause, an excess of nitrogen has detrimental effects on the environment. The adoption of consistent values across Europe would be immensely helpful. Although there is a guideline in place, discrepancies in its implementation between member states sometimes lead to differences of up to a factor of 100, with far-reaching consequences.

Both the Netherlands and our southern neighboring country have at times been slow to address this issue, potentially undermining our competitiveness in certain sectors.

Hydrogen, on the other hand, is seen by some as a silver bullet for addressing certain aspects of the climate problem. Others disagree, citing the energy required to generate hydrogen, and its low efficiency and high costs as potential stumbling blocks. Practical applications thus remain limited for the time being. Hydrogen is available in different 'colors' depending on its method of production, with options now including green, gray, blue and pink.

This complexity makes it difficult for individuals to develop a well-informed opinion on the matter. Clear guidance is often lacking, and decision-makers do not always have the expertise that might be desired. Thankfully, both the Netherlands and Belgium are taking a leading role in hydrogen within Europe, with targeted investments being made at the local level.

We can also make a difference by communicating clearly and effectively with our customers and community. This is a complex topic, and a solid grounding in the subject is needed before making an informed decision.

DANNY BODEN

**BUSINESS MANAGER INDUSTRIES
& ENVIRONMENT BENELUX**



SGS INTRON first to certify biobased-content building products

For more information, contact: Marco de Kok marco.dekok@sgs.com

biobased 

We are always ready to go the extra mile for our valued customers. This sometimes includes accommodating requests for services that are not part of our existing offerings. For example, when we were asked to certify the 'biobased content' of products, we were up for the challenge. No such certificate existed at that time so we applied to the scheme manager of the NEN (Netherlands Standardization Institute) for a license. They welcomed our application because, if successful, SGS INTRON would be the first licensee for biobased certification in the construction sector. And we recently achieved that goal. The first biobased content certificate has now been awarded to Arpa Industriale, TRESPA's sister company, which produces thin laminates for interior use. On April 12, our Account Manager, Marco de Kok, made a personal visit to Arpa Industriale in Italy to present the certificate.

RENEWABLE RESOURCES

TRESPA itself is very interested in biobased certification. "Our Toplab® Plus Align product, featuring natural resin, contains 85 percent biobased material. Our customers value sustainability, so we are keen to let them know about this," Christine Klomp of TRESPA explained in our latest bulletin. Marco de Kok anticipates a significant increase in demand for biobased certification: "As we move towards a circular economy, the use of both recycled and renewable or biobased raw materials

will be increasingly incentivized and often mandated. SGS INTRON can now issue product labels for both recycled and biobased content. The biobased content certification scheme NCS 16785 has the advantage that the analysis can be carried out on the product family as a whole, rather than on each individual product. Grouping similar products with different dimensions or finishes together into product families allows companies to obtain biobased content certification for multiple products at the same time."





Pictured, from left to right: Marco de Kok, Erica Scaglia (Arpa) en Francesca Montefusco (Arpa)

NATURAL INSTEAD OF PLASTIC

“Biobased certification can be obtained for all kinds of construction products and other items,” adds testing specialist and analytical chemist Stefan Benders of SGS INTRON. “Examples include paints, resins, binders, bitumen, insulation materials and roofing materials. Plastics and resins used in construction products will increasingly be replaced by materials of biological origin, such as those derived from plants or trees. These renewable resources can be replanted and harvested repeatedly, significantly reducing their environmental impact compared to that of petroleum-based plastics.”

CARBON FROM PETROLEUM OR PLANTS?

It takes a complex forensic technique to determine how much biobased material is in a product, or its raw materials. “This involves determining the level of slightly radioactive carbon,” explains Stefan Benders. “Plants, like animals and humans, absorb carbon (CO₂) from the air and this carbon is very slightly radioactive due to cosmic radiation. By contrast, the carbon in petroleum has been in the ground for millions of years and is no longer radioactive. Analyzing the

ratio of radioactive to non-radioactive carbon therefore allows us to deduce the percentage of organic material in a sample. We can then calculate the percentage of biobased material in the final product from the raw materials in the recipe.”

This percentage is indicated on the certificate. Certification is particularly attractive to products with higher biobased material content, as it is a way for such products to showcase their sustainability credentials.”



High value reuse of prefabricated concrete girders possible for at least 100 years

For more information, contact: Michel Boutz michel.boutz@sgs.com



Prefabricated concrete girders salvaged from a demolished structure can often be reused in the construction of a new viaduct. This process is straightforward, safe, and economically viable. A good example of this approach is provided by the Dutch 'Combinatie Liggers 2.0' consortium, comprising Royal HaskoningDHV, Dura Vermeer, Vlasman, and Haitsma Beton, which was selected by the Dutch Ministry of Infrastructure and Water Management for Phase 2 of the Strategic Business Innovation Research (SBIR) on circular overpasses. As part of a Dutch pilot project on the A1 highway in Apeldoorn, the consortium successfully repurposed old girders to construct a new overpass. SGS INTRON played a crucial role by developing a comprehensive quality protocol, conducting process controls, and carrying out material analyses.

AS GOOD AS NEW GIRDERS

"We were commissioned by Royal HaskoningDHV to develop a protocol ensuring that the old girders are good for another hundred years of service in a new overpass once processing has been completed," says senior consultant Michel Boutz. "We developed processing criteria and established

requirements for the final product – the processed girders – to ensure long-lasting quality when incorporated into a new structure. This information has been meticulously documented in the quality protocol." "We want to make sure the reclaimed girders are as good as new ones," explains project leader Gert-Jan van Eck from Royal HaskoningDHV.

REMAINING SERVICE LIFE OF WELL OVER A CENTURY

Reusing existing materials and products not only reduces the need for primary resources but also results in lower CO₂ emissions and energy consumption, and, when scaled up, may also cut costs. Prefabricated girders made of high-quality pre-stressed concrete are excellently suited for reuse. "This is high-quality, well-executed concrete

with a dense and consistent concrete cover,” explains Michel Boutz, summarizing the findings of the material analysis conducted by SGS INTRON on the girders intended for reuse in the pilot project. “It has a remaining service life of well over a hundred years.”

MOST SUSTAINABLE APPROACH TO REUSE

Each year in the Netherlands, around ten girder viaducts, with an average age of less than forty years, are demolished. Reusing these girders in some or all of the approximately forty new girder viaducts constructed annually is clearly the most sustainable approach, as it allows them to be utilized in their original function. In terms of the Environmental Cost Indicator (ECI), which summarizes all environmental impacts of a project into a single score expressed in euros, this results in a saving of up to 90%.

CLEARING AWAY OBSTACLES

All obstacles were successfully addressed in the preliminary stages. “We didn’t know whether it was feasible for girders that are already 40 or 50 years old to last for another hundred years or more,” admits Michel Boutz. “To find out, we examined the potential degradation mechanisms that could occur in these girders and

assessed whether they could shorten the remaining service life to below a hundred years.”

MATERIAL ANALYSIS

The old girders were ‘harvested’ from their existing location in Groningen, dismantled, and then transported to a site near Apeldoorn, where they were processed to make them suitable for use in the new viaduct. SGS INTRON reviewed the work plans for these procedures and conducted various process controls throughout the work. One notable operation involved drilling holes in the girders to facilitate lifting and the addition of reinforcement. Michel Boutz explains, “This process yielded an ample number of core samples for our material analysis. We determined the concrete strength and assessed chloride ingress, carbonation, and alkali-silica reaction (ASR). Based on information from Haitsma, the manufacturer, and previous research by the Dutch Ministry of Infrastructure and Water Management, we were aware of the high concrete strength of these specific girders, and our own findings confirmed this. We also observed almost no chloride ingress and carbonation due to the dense nature of the concrete. We are thus confident that these girders are capable of lasting well over a hundred years.”

SCALING UP

All operations have now been completed, and all damage expertly repaired. The old girders have been restored to as-new condition and adapted for use in the new viaduct. “This sustainable achievement is the result of an exploratory journey involving close collaboration,” reflects Michel Boutz. “Our cooperation with Royal HaskoningDHV went exceptionally well. We have learned from both our successes and our challenges, incorporating these valuable lessons into the protocol and all work documents. This gives us the tools we need to approach future endeavors even more efficiently. As our ultimate goal, and that of the Dutch Ministry of Infrastructure and Water Management, is to ensure that this circular viaduct is not an isolated achievement.”



PRESENTATION OF THE QUALITY DECLARATION

On Friday, January 13, the girders were successfully installed in the first of two end spans of the ‘Hoog Burel viaduct’ over the A1 near Apeldoorn. All parties involved were present to celebrate this special moment. Senior consultant Michel Boutz from SGS INTRON took the opportunity to present the Quality Declaration for the girders to project leader Gert-Jan van Eck from Royal HaskoningDHV, who graciously accepted the declaration on behalf of the Liggers 2.0 consortium. Additional reused girders were subsequently installed in the second end span and the newly constructed viaduct has been open to all traffic since March 1.

Heros Sluiskil gives urban waste a second life in construction products

For more information, contact: Remy Zwerus remy.zwerus@sgs.com



Heros Sluiskil, a subsidiary of Remondis based in Zeeuws-Vlaanderen, is one of the Netherlands leading proponents of ‘urban mining,’ a pioneering approach which involves extracting secondary raw materials from urban waste for reuse in new construction materials to replace sand, gravel or crushed stone. “Our primary focus is on processing municipal solid waste incineration (MSWI) bottom ash into construction materials,” explains Edwin Heijnsdijk, sourcing and product manager for minerals and water, “having first recovered all traces of metals for recycling.”

ONE MILLION TONS OF MSWI BOTTOM ASH PER YEAR

Heros Sluiskil is also actively involved in water treatment and harbor facilities, but its core business is the production and sale of secondary raw materials, metals, and construction materials derived from MSWI bottom ash. This ash, which is left behind after the incineration of household waste in waste-to-energy plants, contains valuable reusable materials. Heros Sluiskil specializes in transforming this material into secondary construction materials and recyclable metal fractions.

“Starting next year, we will process 1 million tons of bottom ash annually in Sluiskil,” says Edwin Heijnsdijk. “To put this figure into context, approximately 1.7 million tons of bottom ash are generated in the Netherlands each year. This makes us a major player in the market, motivating us to position ourselves at the cutting edge of developments. In collaboration with waste-to-energy plants, industry, governments, universities, and expert organizations such as SGS INTRON, we aim to progressively expand the applications of MSWI bottom ash.”

THREE APPLICATIONS

We strive for the highest possible efficiency,” adds Patrick Aerts, laboratory team leader at Heros Sluiskil and the person responsible for certifying the secondary construction materials produced. “The same is true for the extraction and purification of ferrous metals like iron and non-ferrous metals like aluminum, copper, and gold from the bottom ash. We recover these metals and refine them into concentrates with a purity level exceeding ninety percent.” “We then dedicate significant effort

to the processing and utilization of the remaining mineral fraction (approximately 90 percent)," adds Edwin Heijnsdijk. "The processed MSWI bottom ash can currently be used in three ways: as a general construction material, as MSWI granulate in concrete, and as immobilized material in foundation layers, in accordance with the Dutch Soil Quality Decree."

BEING THE BEST

"Quality is of the utmost importance within our company," stresses Patrick Aerts. "That's why we have sought NL BSB®, KOMO, and CPR certifications from SGS INTRON for our MSWI bottom ash (BRL 2307), MSWI granulate for use in concrete (BRL 2507), and, since last year, an immobilization product developed in-house (BRL 9322). These certifications are essential for ensuring market acceptance. We aim to become the leading player in this industry, which is why we conduct rigorous inspections of our process and products that go above and beyond standard practices." Remy Zwerus of SGS INTRON Certification agrees: "Heros Sluiskil really does go the extra mile – for example by carrying out analyses weekly instead of once a quarter as required." "We are moving more and more of our inspection and testing in house so that we can manage the production process better," explains Patrick Aerts. "This has resulted in the establishment of our own production laboratory."

MARKET-ORIENTED DEVELOPMENT

Heros Sluiskil uses state-of-the-art facilities to break, sift, separate, and purify MSWI bottom ash resulting in sustainable aggregates and metal concentrates. "We were the pioneers in developing MSWI bottom ash for use in concrete," explains Edwin Heijnsdijk. "We were also the first to obtain the

BRL 2507 certification. We have been supplying MSWI aggregates to concrete manufacturers for over a decade, during which time we have continuously evolved our product offerings based on the feedback and expectations of the concrete industry. This approach has proven successful. After several years of refinement, we successfully produced an MSWI aggregate that met the stringent quality requirements of our customers. SGS INTRON played a crucial role by conducting research and providing data to demonstrate the safe application of our product Granova® in concrete, helping it achieve broader acceptance and application. A key factor is that Granova® can replace up to 40 percent of primary raw materials such as sand and gravel during production. This is invaluable as the industry strives to introduce more sustainable building practices."

TRANSPARENCY BUILDS TRUST

At Heros Sluiskil, quality is synonymous with transparency and clarity. "When producing our certified immobilization product, which is a cementitious mixture of mineral substances, only our MSWI bottom ash is permitted," explains Patrick Aerts. "The inclusion of other waste streams is outside the scope of our certification, even though it is acceptable under BRL 9322. We place great importance on the full disclosure of the product's composition, including all additives. The inclusion of a specific additive helps control leaching without the need for additional cement. This immobilization product is used in various applications, including for the construction of industrial floors that are to form part of the foundations for large-scale distribution warehouses. We have, of course, conducted comprehensive in-house testing of the product's properties, composition, and leaching, and commissioned additional testing by SGS INTRON. This ensures that we have a comprehensive understanding of its performance in real-world applications."

CONSTANT IMPROVEMENT FOR BETTER APPLICATIONS

Heros Sluiskil is continuously improving its internal processes and refining its products. "We keep pushing ourselves: can we open up new sales routes? Can we create a binder or cement substitute from a specific fraction? Lowering the carbon footprint of concrete by the use of residual streams is a win-win," explains Patrick Aerts. "SGS INTRON is an invaluable partner, assisting us daily in overcoming challenges," he adds. "Their team, including Ulbert Hofstra, Gert van der Wegen, Arno Meijs, Huub Creuwels, and Wil Klarenaar, has over a century of combined experience. They possess in-depth knowledge of our processes and products, enabling them to identify potential pitfalls. We frequently rely on their expertise, for example for validating LCA analyses. What's great about SGS INTRON is that we're not just a number to them. They are a responsive partner, who addresses our queries and provide actionable solutions to our problems."



Helping Dutch national railway operator ProRail make effective material choices

For more information, contact: Maarten Swinkels maarten.swinkels@sgs.com
or Huub Creuwels huub.creuwels@sgs.com



SGS INTRON is working with ProRail, who are responsible for the maintenance, renewal, expansion and safety of the Dutch railway network. We work on various projects and have been a dedicated sustainability partner of their Innovation department for several years. Our role involves helping ProRail identify the most promising innovative materials and determining the criteria for their successful application along the railway infrastructure. We also help to generate solutions for material-related challenges that ProRail encounters in its day-to-day operations. For instance, Arthur Kappers, a system specialist in architecture & technical asset management, has sought our expertise to investigate damage to concrete sleepers, and assess natural stone from quarries for its suitability as a ballast material.



ARTHUR KAPPERS

SPECIFICATIONS FOR RAILWAY SLEEPERS

Arthur is the systems specialist for switches, but he also works for the Railway division. "Both switch sleepers and crossties (which transfer forces to the ground and maintain the track gage) fall under my technical responsibility," he says. "I develop specifications for switch sleepers and crossties made of both pre-stressed concrete and plastic to define the specific criteria that these products must meet. My role also involves a lot of troubleshooting and problem-solving."

CRACKING

"In the 1990s, a massive program of sleeper upgrades was undertaken to replace wooden sleepers with concrete ones. Nearly ten years later, switch sleepers were the next to be replaced. Fifteen years on, we started to observe cracks developing in both the pre-stressed concrete crossties and switch sleepers. In 2018, I commissioned a survey video using a train-mounted camera to document the extent of the damage. Out of the five hundred switches examined, 16% exhibited cracks in one or more switch sleepers. A number of these cracked

sleepers were assessed and found to comply with our specifications, including strength requirements. However, the root cause of these cracks remained unknown.”

DAMAGE INVESTIGATION

One thing that was clear, however, was that increased load on the sleepers was not giving rise to more cracking. ProRail engaged senior consultant Maarten Swinkels from SGS INTRON to conduct a thorough investigation into the damage. In recent years, Maarten has examined several sets of cracked crossties and switch sleepers from different manufacturers. “The first set was from a German manufacturer,” he recalls. “They used crushed natural stone as aggregate in the concrete. Laboratory studies have revealed that these particular sleepers contained aggregate with graywacke, which poses a risk of alkali-silica reaction (ASR) or concrete degradation. In our opinion, this was the cause of the cracks.” Arthur adds, “I really appreciated the fact that Maarten came with us to the manufacturer to explain his report. The experts at SGS INTRON possess extensive knowledge of materials. We have a good working relationship, and I can count on them to honor our agreements and carry out the work effectively.”



IMPROVING THE SUSTAINABILITY OF CEMENT

ProRail is currently testing two different methods of repairing the cracks. Arthur doesn’t expect to find any more ASR in sleepers manufactured after 2018: “Around that time, all manufacturers switched to using ground granulated blast furnace (GGBS) cement instead of Portland cement for sleeper production, reducing CO₂ emissions by around 30% per sleeper. Using GGBS cement also significantly reduces the risk of ASR so we are hopeful that this cracking will not be found on the new sleepers.”

SULFUR CONCRETE SLEEPERS

Meanwhile, ProRail is actively exploring even more sustainable alternatives. “Concrete sleepers rank among our top five most impactful materials,” says Arthur Kappers, “as there are millions of them installed across the rail network. We will be making the transition to even more sustainable sleepers within ten years, one example being sulfur concrete sleepers. We have been monitoring and testing this type of sleeper in a pilot project for the past three years, with the invaluable support of SGS INTRON in developing the specifications. We have identified a supplier in Belgium capable of manufacturing sulfur concrete sleepers for us. However, before we

proceed, we need to establish clear and precise requirements for these sleepers. That’s why I enlisted the expertise of Peter Crucq from SGS INTRON. He has meticulously drafted a comprehensive set of specifications for sulfur concrete sleepers, covering various aspects such as safety, purity, acidity, strength, and leaching. Finalizing the specifications has proven more challenging than expected, and we have encountered a range of problems and uncertainties. Nevertheless, I am confident that we will overcome these obstacles and have a definitive set of specifications ready in a few months’ time. Once these are finalized, we can start installing sulfur concrete sleepers in the railway network.”

QUARTZ-FREE BALLAST

And then there's the issue of quartz dust in ballast. This can be released during crushing of the natural stone used for the pebbles and poses a health risk when inhaled. "That's why we're actively seeking quartz-free rocks," explains Arthur. "Our ballast is sourced from certified natural stone quarries in countries including Norway, Belgium, and Germany. The material from all except one of these quarries contains quartz. Initially, we enlisted the expertise of SGS INTRON to determine the quartz content in the rock we use as ballast. Since the percentages they found often differed

from the quartz percentages stated by our suppliers, Huub Creuwels from SGS INTRON advised us to take much larger samples in the quarries, following the sampling approach used by SGS INTRON when working under the Dutch Soil Quality Decree."

OVER 600 KG OF SAMPLES

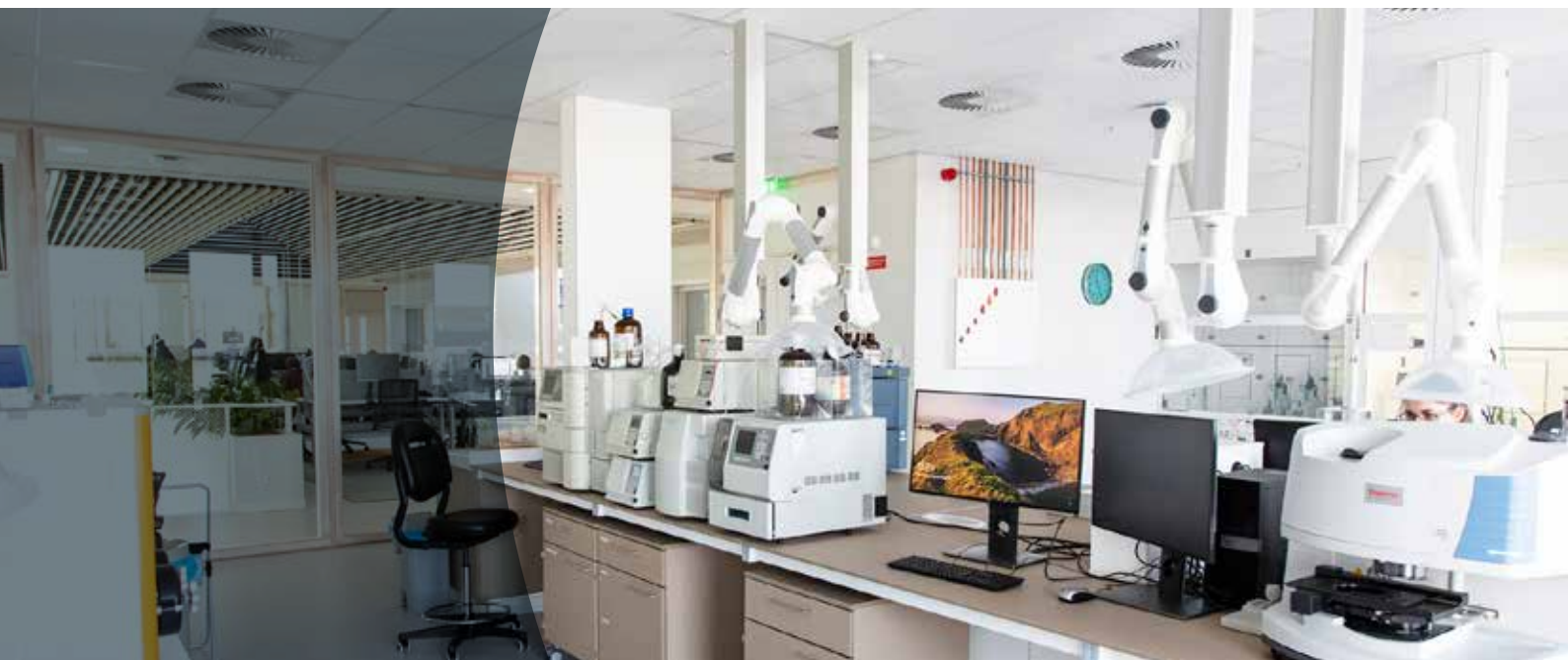
Whenever ProRail finds a quarry that may be quartz-free, SGS INTRON will send a qualified sampler there to conduct an extensive certification process in line with both the Dutch Soil Quality Decree and the 'quartz-free' and 'asbestos-free' specifications." An SGS INTRON team

thus visited a quarry in Spain at around the turn of the year, where they collected a total of 630 kg of samples from five material deposits, each from a different part of the quarry. All of the material was brought back to the SGS INTRON laboratory for analysis. The rock was indeed quartz-free, but it was deemed unsuitable for ProRail due to the presence of asbestos. "We had to write off the entire quarry, with a potential 350,000 tons of ballast material," Arthur explains disappointedly. So, the search goes on. "We already have a new set of samples at SGS INTRON for analysis, this time from a quarry in Germany."



Trespa one hundred percent committed to delivering on its product promises

For more information, contact: Stefan Benders stefan.benders@sgs.com



Trespa is a well-known name in the industry. This innovative company develops and manufactures quality high-pressure laminate (HPL) materials for façade cladding and furniture/wall coverings in laboratories and hospitals. Based in Weert in The Netherlands, the company has been in existence for over sixty years and is part of the Broadview Holding. “As market leaders, we distribute our products globally,” says compliance officer Christine Klomp. “My primary responsibility is to ensure that our products consistently deliver on our promises.”

QUALITY BACKED UP BY HARD FACTS

And those promises add up to one thing: top quality. “We set the bar very high for ourselves, both in terms of quality and sustainability,” explains Christine. “We are not satisfied with supplying good products that comply with all standards and regulations – we have our own requirements that are even more stringent. Take our ten-year warranty, for example. No-one provides such a long warranty unless they are confident in the quality they are delivering. We want to be able to back up every promise we make to our customers with hard facts. That’s why we don’t just rely

on continuous testing and assessment by our own R&D department, but also call upon an independent external party: SGS INTRON. In addition to Dutch KOMO and CE certification, this company carries out a lot of third-party verification testing for us, most of which is not mandatory. We have these extra tests carried out because we think it’s important to verify our own test results. The SGS INTRON Laboratory is an expert institution and, importantly for our customers, accredited and notified, making it reliable. It means a lot to us that they can confirm our test results because it allows us to demonstrate to our customers that we really do deliver on our promised quality.”



CHRISTINE KLOMP



YURII KALASHNYKOV

FOCUS ON SUSTAINABILITY

Christine keeps herself abreast of trends and developments in the industry, avidly following details such as what colors and finishes architects are using for façade applications, but also keeping track of bigger issues that are important to potential customers. “Sustainability is key,” she emphasizes. “We have

made a commitment to begin with ourselves. How can we manufacture products in an energy- and resource-efficient manner so that they have a long lifespan?” Trespa’s compliance specialist Yurii Kalashnykov expands on this point: “Our aim is to achieve carbon neutrality by 2030, and we are actively working on innovations to reach that goal. For example, by increasing the use of natural materials in our products. We are exploring whether it is possible to replace various chemical substances in our resins with lignin, a natural substance, without compromising on quality.” At the same time, it is crucial to dispel a common misconception: “Many people mistakenly associate Trespa with plastic,” Christine explains. “In reality, our products consist largely of natural materials, such as layers of paper – wood fibers – combined with resins that are compressed and cured under high pressure. This gives rise to an incredibly strong and durable material. Our Toplab® Plus Align product, which incorporates natural resins, is composed of 85% bio-based, natural materials.”

CERTIFICATION OF ‘BIO-BASED CONTENT’

“Our customers value sustainability and we want to let them know about this. That’s why we asked SGS INTRON to help us develop a product label that provides transparency about the amount of biobased material – and specifically the biobased carbon content – in our products.” Yurii takes up the story: “When I discussed this with Stefan Benders from SGS INTRON, we immediately decided to collaborate on this project,” he reveals. “A few months later, we are right in the thick of things. SGS INTRON Certification is now officially accredited to certify us in this area, and their laboratory is actively conducting tests on our products. They have demonstrated exceptional customer focus throughout this endeavor,” he adds. Christine reiterates this point, “It was certainly not an easy task. This certification process is pioneering, requiring careful consideration of how to approach the testing methodology to cover our entire product range and obtain reliable and accurate data. It required a robust partnership and utmost confidentiality as we had to provide detailed explanations of our product composition and manufacturing processes.”



DEDICATED SEFA REGISTRATION AND TEST FACILITIES JUST FOR TRESPA

Yurii is delighted with the collaboration too: “Communication has been excellent and SGS INTRON is an ideal sparring partner for us. They go beyond on-demand testing, providing detailed insights into their testing methods and making valuable observations and recommendations. This helps us gain a better understanding of our product performance and enables our R&D department to make further enhancements.” Christine agrees: “SGS INTRON has expertise that we don’t. It is of utmost importance for us that the SGS INTRON Laboratory has obtained SEFA accreditation this year. We aim to have our products for laboratories and hospitals – such as tabletops, cabinets, and wall

claddings – SEFA certified. This entails subjecting them to rigorous testing for chemical resistance according to the methodology of the Scientific Equipment and Furniture Association (SEFA). As we were not fully familiar with this testing method, we called upon the expertise of SGS INTRON. They willingly pursued SEFA registration and are now the first SEFA-accredited laboratory in Europe in a long time.” Yurii adds: “This involves handling aggressive substances and implementing additional safety measures. SGS INTRON has expanded their testing facilities specifically for us and our sister companies, establishing a climate testing room where they assess the impact of liquid nitrogen on our products at extremely low temperatures. They even created an impressive video for us to show our customers.”

SPECIAL TECHNICAL SOLUTIONS

“Trespa is one of our best clients and closest partners,” responds Stefan Benders. “Our collaboration has deepened over the past three years, and we now work together seamlessly, placing immense trust in each other’s commitment to quality. Whenever Trespa comes to us with a request, we do our utmost to meet their needs. We have even built special testing setups and co-developed cutting-edge measurement devices. We aim to ensure that Trespa can carry out whatever tests they want to, all while continuously improving efficiency and speed. For example, we were able to reduce the delivery time of certain test results by a factor of five by wearing cooling vests that allowed us to stay in our hot climate chamber for longer. We love coming up with clever technical solutions like this for our clients.”

Are aggregate mixes of gravel and crushed concrete prone to segregation?

For more information, contact: Gert van der Wegen gert.vanderwegen@sgs.com



The Technical Working Group BRL2508 has been tasked with developing a Dutch Assessment Guideline (BRL) for mixtures of primary and secondary aggregates for use in concrete. During the development process, concerns were raised regarding the potential segregation of these composite aggregates. A focused field trial was thus conducted on mixtures of river gravel + coarse crushed concrete and river sand + fine concrete granulate.

SEGREGATION FIELD TRIAL

The segregation test was conducted under conditions closely approximating those encountered in the real world. The two aggregate materials to be mixed were discharged from bunkers and conveyed onto a collection belt via feeder belts. The system was designed to deposit the predetermined quantity

of each of the two materials onto the collection belt in layers. The materials were then mixed using overflow points and a mixing roll in the chute, and the mixed material transferred onto a cone-shaped stockpile via a conveyor belt. This mixing procedure is already in use for mixing primary – round – materials and is performing satisfactorily.



Gravel 4-32 mm



Crushed Concrete 4-22 mm

Three mixes are being produced in this manner at Teunesen Zand en Grint B.V., The Netherlands:

1. 4–32 mm round gravel with 4–22 mm crushed concrete in a volumetric ratio of 80:20. This is expected to be the most common ratio in practice;
2. 4–32 mm round gravel with 4–22 mm crushed concrete in a volumetric ratio of 50:50. This is the worst-case scenario and also allows for better visual assessment of segregation;

3. 0–4 mm round gravel with 0–4 mm crushed concrete — in a volumetric ratio of 50:50.

The degree of segregation in the conical storage pile was determined by conducting a sorting test on multiple sub-samples taken from the cone-shaped pile to determine the particle size distribution and the crushed concrete content. In addition, the members of the BRL working group present also performed a visual assessment.

RESULTS

The practical test conducted has provided clear evidence that the mixtures of round gravel + coarse crushed concrete and round sand + fine crushed concrete (crushed sand) are not prone to segregation. Both the visual observations by the members of the BRL working group and the results of the measured

particle size distributions and crushed concrete content in the coarse aggregate mixtures indicate the absence of significant segregation.

The manual sorting test to determine the crushed concrete content in the aggregate mixture can be performed easily and reasonably quickly by a skilled and knowledgeable laboratory technician. It can be used for the quality control of such premixes.

Based on these findings, the working group can conclude the development of BRL 2508.

DIAGRAM SHOWING MIXING PROCEDURE

1. Hopper for recycling material



2. Mixing Vessel



3. Hopper for gravel + sand



silo



4.



depot

1.



2.



3.



Port of Rotterdam takes the lead in implementing geopolymer concrete

For more information, contact: Gert van der Wegen gert.vanderwegen@sgs.com



Port of Rotterdam leases industrial sites in its harbour area, often for periods of 40–50 years, but it also builds infrastructure tailored to its clients' needs. This includes structures such as quay walls, jetties, mooring piles, crane tracks, access roads, and railways, and it all adds up to a considerable amount of concrete. "This is where we can achieve the greatest CO₂ savings," says Port Engineer Patrice Nederhorst. "That's why we have initiated a large-scale pilot project in the field of geopolymer concrete, also known as cement-free concrete. With this project, we aim to fulfill our sustainability goals of achieving a 25% CO₂ reduction by 2030 and moving towards climate-neutral operations by 2050. Our objective is to have half of our concrete infrastructure made of geopolymer concrete by 2030."

PERFECT PLACE FOR A PILOT

The project came about somewhat serendipitously: "We are working with SHELL to build a 200-meter-long quay wall, and its location is perfect for a pilot," explains Patrice. "This will allow us to closely monitor the performance of the geopolymer concrete used in

the quay wall over the coming years. And, even if its performance falls short of our expectations, it won't pose an immediate problem in this location as there are no businesses directly behind the quay wall. We plan to use geopolymer concrete for approximately 100 meters, around half of the wall."



PATRICE NEDERHORST

SUCCESSFUL LABORATORY TESTING

Laboratory research conducted on geopolymers by the knowledge-based company SQAPE, has yielded consistently excellent results. "On our behalf, SGS INTRON carried out extensive testing and analysis on samples of this innovative concrete in its laboratory to determine its properties," explains Patrice Nederhorst. "We are extremely satisfied with both the research findings and the services provided by SGS INTRON. Interestingly, our collaboration with them came about somewhat by chance. I reached out to Gert van der Wegen at SGS INTRON seeking their support, as I was aware of their extensive expertise and experience in the field of geopolymer concrete. It was a pleasant surprise to find that they also have comprehensive research facilities."

UNDERSTANDING THE RESULTS

Fortunately, Port of Rotterdam discovered this just in time. "SGS INTRON conducted the tests extremely competently, but it is their additional capabilities that really excite me. For example, they excel in interpreting and reporting on the results. What do they mean? How does the performance compare with that of traditional cement-based concrete? Their expertise adds significant value to our project. They offer sound advice, innovative ideas, and practical solutions that will help us take the project forward into the next phase." And this has already begun: on April 1 a small-scale field trial was conducted at a construction site, using the concrete mix that was previously tested in the laboratory.

MINI QUAY WALL

During this test pour, a number of beams and panels made of geopolymer concrete were produced, along with two larger test specimens. "One of these is a small section of quay wall," says Patrice. SGS INTRON provided comprehensive support throughout the whole of this initial field trial. "My colleague Steffen Grünewald visited the concrete

plant to ensure that the mix could be prepared in the same way as in the laboratory," explains senior consultant Gert van der Wegen. "He assessed various aspects, including composition, workability, and homogeneity." SGS INTRON also supervised the pour itself to ensure that the desired workability was maintained for long enough, adequate workability was achieved, and the different test specimens each underwent appropriate and distinct post-treatments. Gert van der Wegen adds, "Once the concrete has fully cured, we will extract core samples from the various test specimens for analysis in our laboratory. This will help us assess strength development and other key properties."

SHOWCASE PROJECT

For now, everything looks promising. "The test pour went smoothly," says Patrice. "After one hour in the truck mixer, the concrete exhibited good workability and performed just as well as it did in the laboratory. For now, it looks like we have done everything right." This is a showcase project that is being closely monitored throughout the Netherlands, with major clients such as The Dutch Ministry of Infrastructure and Water Management and The Dutch Railway Manager taking a keen interest in the results.

"We have invited everyone involved in the project and all interested parties to witness the test pour," explains Patrice. "We aim to share the knowledge we gain from this project. Our goal is to inspire other parties to pursue similar sustainable initiatives and to foster an exchange of knowledge. In addition to SGS INTRON, the project also involved a number of other knowledge partners, each of them contributing expertise in a specific area. Only through close collaboration can we bring all the pieces together and solve the puzzle. When everyone works together, we can achieve amazing things that benefit us all."

SCALING UP AND MONITORING

If the quality of the test specimens is deemed satisfactory, Port of Rotterdam will start looking for a contractor to construct the actual quay wall. "We anticipate that construction will take place in the winter of 2023, after which we intend to have SGS INTRON monitor the section made of geopolymer concrete. It's reassuring to know that they will be there to support us, addressing our theoretical questions and providing practical solutions. They are a perfect fit for us."



I was aware of their extensive expertise and experience in the field of geopolymer concrete. It was a pleasant surprise to find that they also have comprehensive research facilities.

Excellent construction supervision of bio-energy facility by SGS INTRON

For more information, contact: Bianca Baetens bianca.baetens@sgs.com



Pictured, from left to right: Jeroen Missiaen, Bianca Baetens, Peter Bijker

VTTI Bio-Energy Tilburg (VBT) is bringing a major bio-energy facility to an industrial area in Tilburg, The Netherlands. By the end of 2023, VTTI will be producing green gas and organic fertilizer pellets at this site – using natural raw materials including pig manure and vegetable residues from the food and animal feed industries. Thanks to its expertise in the bio-digestion process, Biogas Plus Systems has been entrusted with both the process and functional design of the biogas production system, and its construction. Given the scale of this facility, it falls under the highest risk class (consequence class CC3), requiring third-party oversight of the construction to ensure compliance with regulations, guidelines, and drawings. Bianca Baetens from SGS INTRON was in charge of the concrete work, leaving Jeroen Missiaen of VTTI extremely satisfied: “We had complete peace of mind,” he says.

ALL CONCRETE COMPONENTS

“Bianca had already served as a third-party witness during the construction of a VTTI facility in the Port of Rotterdam,” he continues, explaining his choice for SGS INTRON. “The collaboration between Bianca and our contractor DEME was so successful that we were keen to replicate the same concept here.”

Initially, VTTI asked Bianca to oversee the construction of the concrete foundations for the tanks on the site and, once again, the collaboration and communication with DEME’s team was seamless. “They knew Bianca and understood what she expected of them”, explains Jeroen. “When we began constructing the foundation for the concrete tanks,

it made perfect sense to engage Bianca for that aspect as well,” adds construction manager Peter Bijker of Biogas Plus Systems. “Even our contractor Monostore recognized the added value that Bianca brings to the project.” Ultimately, a third project emerged: VTTI asked Bianca to oversee the construction of the entire factory building.



HIGHLY SKILLED AND FLEXIBLE

"I usually do this kind of work for the construction of bridges or small tunnels. This project allowed me to showcase my abilities for a large-scale factory," Bianca enthuses. "It was an incredibly rewarding experience, particularly because I had the opportunity to work with two clients and became an integral part of the construction team." Being based in Tilburg, it was convenient for Bianca to visit the site for inspections. "I even managed to combine my tasks for both clients seamlessly."

CHECKING THE REINFORCEMENT

"Before each concrete pour, I would verify the correct placement of reinforcement according to the drawings. If any discrepancies were found, I documented them with photographs and sent these to Jeroen and Peter in a memo. I also notified the site supervisor and work planner, enabling them to take appropriate action. I then checked that any necessary adjustments had been made before the pour."

SUPERVISION DURING THE POUR

On the days when concrete was being poured, Bianca was present to oversee the process. Her first job was to check the delivery note to ensure that the truck mixer actually contained the agreed concrete mixture. "I then monitored the pouring itself," explains Bianca. "I made sure the concrete wasn't dropped from too high and that it was adequately compacted and properly finished according to the required standards. If any issues arose, I addressed them promptly. Fortunately, there were very few. The DEME crew already knew me, and what I expected from them, and I trusted in their expertise. All of my queries were always swiftly cleared up through open communication."

PROBLEM-FREE

"Everything proceeded seamlessly, including our communication," attests Jeroen. "Concrete work is a specialized field, and we didn't have the necessary expertise ourselves." Peter agrees: "Bianca is highly knowledgeable in this area, and the fact that she lives nearby is an added

advantage," he adds. "She was always on hand, even when there were last-minute changes, and could sometimes even give our builders a few valuable tips and tricks. This resulted in a high-quality product and relieved us of any concerns regarding the concrete work. This means a lot to us, particularly as our schedule is so busy."

GREEN GAS AND REUSE OF WASTE

The new bio-energy plant will produce around 23 million m³ of biogas every year, a proportion of which will be upgraded to green gas, a sustainable alternative to natural gas. This will provide a gas supply to around 2,700 households. Another portion of the biogas will be used within the facility itself, enabling the production of approximately 40,000 tons of organic fertilizer (in the form of granules) for agricultural use each year. These initiatives allow VBT to support circular agriculture in one of the Netherlands' most important agricultural regions, as well as promoting sustainability by reducing regional transportation and achieving substantial reductions in CO₂ and nitrogen emissions.

Innovation Manager Martin Verweij of Cementbouw B.V.:

“A particular need for innovation in the field of sustainability”

For more information, contact: Gert van der Wegen gert.vanderwegen@sgs.com



CRH is the largest construction materials company in the world and a market leader in both America and Europe, particularly as a supplier and producer of bulk construction materials such as sand, gravel, crushed stone, cement, concrete and asphalt. Martin Verweij holds the position of Innovation Manager for three CRH companies in the Netherlands and Belgium: Cementbouw B.V., cement producer VVM N.V. and knowledge-based company SOAPE, a joint venture of Cementbouw and Mineralz. “My role entails conceptualizing and developing new products,” he explains. “I explore the possibilities presented by new raw materials emerging onto the market, aligning our efforts with industry developments and responding to market demands. Right now there is a particular need for innovation in the field of sustainability.”

GEOPOLYMER BINDERS

A prime example of such innovation is a novel geopolymer binder based on SOAPE technology that can replace all cement in concrete. “It can reduce the CO₂ emissions of your concrete mix by 40 to 80 percent,” says Martin Verweij. This makes it an appealing proposition for the market, given the

current drive towards low-carbon construction. But there is no guarantee that it will be adopted widely straight away. “Building trust is paramount. We have to demonstrate that concrete made with this new material will meet the required standards for a minimum of fifty years.” This is why extensive time and resources have been dedicated to research and development. “My

colleagues got SGS INTRON involved at the very start,” recalls Martin Verweij, who worked at SGS INTRON himself until 5 and a half years ago. “During that time, I learned the importance of staying closely connected to practical applications. This approach ensures that the quality obtained in the lab can be carried across into the real world.”

DEMONSTRATING AND VERIFYING QUALITY

“The consensus is that SGS INTRON is a reputable institution with extensive expertise in materials,” says Verweij, explaining the decision to work with SGS. “They are uniquely qualified to test and evaluate novel concepts. In our case, they conducted an environmental hygiene study and assessed the viability of recycling geopolymer concrete produced with our binder. SGS INTRON also certifies our production processes and reviews our LCA calculations. We already know we deliver a great product, but we feel it is important to have this confirmed by an impartial external entity.” This is backed up by SQAPE’s own practical tests: “We began by manufacturing paving stones using geopolymer concrete made with our binder – a good first test as they are exposed to all kinds of weather and traffic. We then progressed to bike paths, which is a more advanced application. Finally, we successfully incorporated the material into floors and reinforced pavements, both indoors and outdoors.”

GROWING CONFIDENCE

“After a decade of research and development, we now have a compelling proposition to put to potential customers,” says Martin Verweij. “The unique feature of our geopolymer binder is its ability to control the hardening of geopolymer concrete, ensuring that its constituents react at exactly the right speed. SQAPE has secured almost worldwide patent protection for this technology.” Verweij continues, “Based on the patent, we grant licenses to concrete producers, allowing them to incorporate our binder into their products and mortar.” This is now happening on a larger scale. “Various customers are using our binder to produce paving stones, curbstones, and roadside tiles. A Dutch provincial water authority has expressed interest in using our material for the construction of new pumping stations. Furthermore, the Port of Rotterdam plans to replace several kilometers of concrete quay walls with geopolymer concrete. They are currently evaluating materials from two producers, and the selected provider will be awarded the contract.”



Martin Verweij at the bicycle bridge near Valkenswaard in The Netherlands, made of geopolymer concrete with the binding agent SQAPE

QUAY WALLS

Whether this ends up being SQAPE will depend on a large-scale investigation into the suitability of its material for the application in question. Here, too, the Port of Rotterdam turned to SGS INTRON for assistance. “In collaboration with the Port of Rotterdam, we defined a set of specifications covering the material requirements and tests necessary to demonstrate compliance,” explains Martin Verweij. We then produced test specimens in our own laboratory. These blocks and beams will undergo rigorous testing at the SGS INTRON laboratory. We will also prepare and execute an on-site mockup for strength testing. I am confident that our material will perform well as this has already been demonstrated in previous studies. Even if certain properties fall short in comparison to cement concrete, we have the experience to find effective solutions.”

ALTERNATIVE RAW MATERIALS

Martin Verweij is always on the lookout for new raw materials for the cement and concrete industry and is currently involved in developing a novel filler for cement. “We are looking into using lava filler, a volcanic material also known as trass. It’s an ancient building material that was common in Roman times but has

fallen out of use. It was first used as a construction material in the early 1900s, particularly in hydraulic engineering projects, but it was overshadowed by other cement replacements such as fly ash. Now that these types of raw materials are becoming scarce, the search is on for suitable alternatives. That’s why we are currently building knowledge and expertise around lava powder as a filler. To ensure consistent quality, the suitability of the extracted material must be demonstrated, and thorough checks conducted with each delivery. We do this ourselves for the material from our own quarry. Another challenge is to prove that cement incorporating this filler can endure for a century.” A CROW-CUR Recommendation has now been drawn up for this filler, based partly on research by SGS INTRON. Looking to the future, Verweij also sees opportunities for burnt clay as a cement substitute or raw material for geopolymer concrete. “Clay is the only raw material available in sufficient quantities to replace cement. The challenge lies in obtaining the right quality and producing it in a sustainable manner using waste heat or solar energy. This calls for expertise, but also the courage to act. It’s about ensuring the industry’s continuity and rising to the climate challenge to create a better world for our children.”

InSus B.V. resolves past issues with large-scale recycling plant for PIR insulation

For more information, contact: Marco de Kok marco.dekok@sgs.com



Until recently, the only option for disposing of end-of-life PIR (polyisocyanurate) was to send it to landfill. This is a major problem as significant quantities of this insulation material are generated annually from demolition projects, such as the renovation of barns. In 2016, the founder of InSus B.V. began developing a recycling concept to address this issue. The idea initially focused on environmentally friendly processing of the various constituents of the insulation and the capture of CFCs to reduce greenhouse gas emissions, but evolved into the establishment of a 30,000 m² factory in Duiven, The Netherlands. Here, InSus recycles old PIR insulation, for example to transform it into raw material for the production of new PIR insulation panels for roofs, cavity walls, and floors.

RECYCLING AND PRODUCTION UNDER ONE ROOF

The factory has been fully operational since 2022, and Director Harry van Dam speaks proudly about the unique recycling and production process: "It operates within a closed system. We collect PIR waste at production, construction, and demolition sites in

60 of our own containers. We then meticulously separate the steel/aluminum coating from the panels and send it for recycling in the blast furnaces. We capture the gases used as blowing agents in the insulation, while taking steps to neutralize any harmful chlorofluorocarbon compounds (CFCs) present in the older panels. We also reclaim the

pentane gas, now used for enhanced insulation in sandwich panels, to serve as a blowing agent for our new PIR insulation panels that we produce in-house. Instead of disposing of the remaining polyurethane (PU) plastic found in PIR insulation panels, we transform it into one of the two essential raw materials for new PU production. While we continue to

buy in the second raw material, and therefore cannot claim to produce new insulation panels from 100% recycled materials, we can fully reuse all of the steel, pentane gas and PU from pure material streams. This is especially true for old sandwich panels from FALK Bouwsystemen, as we have detailed knowledge of their composition."

WORKING TOWARDS 100% CIRCULARITY

InSus B.V. is thus not only addressing past issues such as CFCs and waste, but also paving the way for a sustainable future. The company has ambitious goals: "Ultimately, we aim to produce insulation material that is 100% circular and carbon-neutral. Achieving this will require collaboration across the entire value chain. We rely on demolition companies and manufacturers sending their waste as pure streams. Designers and users can also help us by using mechanical fastening systems on insulation panels, enabling easy recycling without adhesive residues at end of life." To achieve this sustainable quality improvement, InSus B.V. has developed its own quality system called Green Heart Value. "Essentially, it's all about forging partnerships with stakeholders throughout the value chain," explains Harry van Dam. "We use a rating system in which partners who excel across the board are awarded four stars. We also promote circular practices within the chain by showcasing environmental benefits through life cycle analyses (LCAs) and providing financial incentives, such as preferential treatment for mechanical fastening. At each step, we focus on defined priorities. We also strive to keep the loop as small as possible by collecting the material ourselves and supplying it directly to construction companies that use our products."

SHOWCASING QUALITY WITH CERTIFICATION

InSus excels not only in sustainability but also in delivering tailor-made solutions and ensuring top-notch quality. It deliberately sets the bar

high. "It's essential to get things right, especially in the initial phase," explains Harry. "When we completed our recycling and production line in 2021, we immediately embarked on a certification process with SGS INTRON Certification. They first arranged the necessary Initial Type Testing (ITT) for our CE marking and a Declaration of Performance (DoP), before obtaining Dutch KOMO certification for flat roof and cavity wall insulation. Certification is important to us because the construction industry can be suspicious of change. We are often asked whether our recycled products are really up to the mark. SGS INTRON Certification has independently proven that they comply with all specifications. Our KOMO certification acquired in April this year allows us to showcase our quality and enter the market with confidence."

RECYCLED CONTENT

InSus also places great importance on obtaining certification for recycled content. "Since our products consist of recycled materials, this certification process is crucial," explains Harry. "We plan to call upon SGS INTRON Certification for this as well. Their collaboration throughout the entire process has been exceptional. As a new and dynamic company, we appreciate the support they provided us in swiftly obtaining the KOMO certification within a few months. While we are currently focused on introducing new products to the market, we anticipate undertaking additional certification in the near future."



Marco de Kok hands over certificate to Harry van Dam from InSus

NL-PCR for clear cement LCAs

For more information, contact: Bob Roijen bob.roijen@sgs.com



On behalf of Cement&BetonCentrum, SGS INTRON has produced a product category rules (PCR) document – a set of calculation guidelines for conducting life cycle analyses (LCAs). This particular document concerns cement and some other materials used in concrete, such as ground granulated blast furnace slag (GGBS) and pulverized coal fly ash. It has been tailored to the situation in the Netherlands and thus serves as a supplement to the ‘Bepalingsmethode Milieuprestaties Bouwwerken’, the EN 15804+A2 and the European PCR for cement EN 16908. Hence, it is commonly referred to as NL-PCR.

WHY AN NL-PCR FOR CEMENT?

Life cycle analyses (LCA) for cement play a crucial role in Environmental Cost Indicator (ECI) calculations for concrete, which are vital for sustainability assessments in the construction industry. Cement is the most important element in an LCA for concrete, thus making clear, reliable LCAs for cement essential. It was found that the various options

available to LCA experts when conducting cement calculations were giving rise to undesirable discrepancies.

This was less of an issue in the past because the cement industry collectively prepared industry-wide LCAs for the various types of cement. This is known as category 2 data; non-branded information from groups of manufacturers, suppliers, and industry sectors. However, when

cement producers began conducting individual LCAs, inconsistencies arose in the calculations that did not accurately reflect genuine disparities in environmental profiles. It became clear that the differences stemmed from choices made in the LCA that were within the rules of the LCA methodology. Additional guidelines were thus needed to ensure the clarity of LCAs.



DEFAULT DATA FOR MISSING EMISSIONS INFORMATION

Default data for use when primary data are not available form an important part of the NL-PCR, one example being the standard values for air emissions from the clinker kiln. In the past, there was no unified procedure for cases where no measured values were available for certain substances. The NL-PCR includes a large number of standard emission values to be used in such situations. In addition, a standard approach has been defined for incorporating common raw materials and fuels in LCA calculations. All this reduces methodological differences between LCA calculations from different cement producers. It also encourages the use of primary data, wherever possible.

ASSIGNING CO₂ FROM WASTE INCINERATION TO THE WASTE PRODUCTS

Using the NL-PCR changes environmental profiles for two main reasons. Firstly, the NL-PCR attributes the CO₂ generated by burning waste in cement kilns to the product system that produces the waste in question, rather than to cement production. This is based upon EN 15804+A2 and EN 16908: the European PCR for cement. The NL-PCR has been tightened up slightly compared to the European PCR to establish when to allocate CO₂ emissions to the cement: only the CO₂ from waste incineration is attributed to those wastes. This applies only to secondary fuels that are wastes, not to all secondary fuels.

GGBS AND PULVERIZED COAL FLY ASH NOW ASSIGNED AN ENVIRONMENTAL IMPACT

Another important change is that the production of GGBS and pulverized coal fly ash will now be assigned an environmental impact for the first time. The environmental impact of the steel production that generates the blast furnace slag will be divided between the steel and the blast furnace slag based on economic criteria in accordance with preliminary European agreements, with 1% of the environmental impact being allocated to the blast furnace slag.

When comparing the environmental profiles of cements, or products incorporating cement, it is important to consistently compare data either with or without an NL-PCR.

We anticipate that the new NL-PCR will foster clarity in LCA results for cements, and by extension, for concrete, ensuring that any discrepancies can be attributed solely to genuine disparities in cement production.

Feasibility studies for housing association Woonhaven

For more information, contact: Maarten Swinkels maarten.swinkels@sgs.com and Lydia Wittocx lydia.wittocx@sgs.com



SGS INTRON carries out a significant amount of work for Belgian clients and we have recently started to realize these projects in collaboration with our SGS colleagues in Antwerp. Most of our Belgian clients are social housing companies (housing associations), and we also carry out work for various parties in the port of Antwerp. One example is Woonhaven Antwerpen.

ANALYSIS OF STRUCTURAL AND FIRE SAFETY ISSUES

Woonhaven Antwerpen (WHA) is a social housing company that manages some 20,000 housing units in and around Antwerp. Their portfolio comprises a mix of large apartment complexes and smaller buildings. Unfortunately, some of their properties have become outdated, displaying a range of technical issues and failing to meet current safety and comfort requirements. As a result, WHA has made significant investments to renovate these buildings in recent years. Before deciding whether to undertake a renovation, WHA first seeks to gain an understanding of the current condition of the building and any possible areas of concern. This is to avoid getting halfway

through a renovation, only to discover that the building has to be demolished anyway due structural issues. A feasibility study of this type covers both the structural integrity and fire safety

of the building. Feasibility studies have already been carried out for several of WHA's buildings in a collaboration between SGS INTRON and SGS BELGIUM Infrastructure & Construction.



STUDY AND INSPECTION

The study always starts with a file review based on WHA's extensive archive of original design drawings and construction plans. A visual inspection is then carried out on site, covering both the individual residences and shared parts of the building. This is supplemented by in-situ measurements and sampling, including drilling of concrete cylinders and testing them for compressive strength and chloride content. The concrete coverage on the reinforcement may also be determined. The analysis of the inspection and laboratory research, along with the review by a structural engineer, shows whether the structure is suitable for a modern renovation project. If damage is present, a recommendation for repair is also prepared.

FIRE SAFETY

The fire safety study assesses the compliance of escape routes, floor plan, detailing and materials. This also starts with a file review. Following an on-site audit, the current situation is checked for compliance with applicable legislation and standards. A report is then prepared including a list of violations, observations and recommendations for implementing measures to achieve a fire-safe building.

EUROPARK AND BORGERHOUT PROJECT

One impressive project we had the privilege of carrying out involved seven high-rise residential blocks in Europark on the Left Bank in Antwerp. This entailed conducting a feasibility study encompassing both structural integrity

and fire safety assessments. A limited structural analysis was also carried out on two smaller apartment buildings in Borgerhout. Fortunately, no structural issues were identified that would impede the renovation process.

Looking ahead, we are keen to collaborate with our Belgian colleagues on more assignments of this kind for Woonhaven.



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DR. NOLENSLAAN 126
6136 GV Sittard
PO Box 5187, 6130 PD Sittard
The Netherlands
T +31 88 214 52 04

VENUSSTRAAT 2
4105 J JH Culemborg
PO Box 267, 4100 AG Culemborg
The Netherlands
T +31 88 214 51 00

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