







500+ million br

million bricks per year







500+ r

million bricks per year



230+

million euro turnover

VANDERSANDER





500+ millio

million bricks per year



230+ million euro turnover









500+ million

million bricks per year



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820+



10 brickworks





Vandersanden locations

in 2024



A sustainable and innovative partner for facade and street products and solutions.









The most customer-focused company for facade & paving solutions



The benchmark in innovation and sustainability



A leader in Collective Well-being for environment, society, and our own employees



Vandersanden does not think in terms of years, but rather in terms of generations.

Our enterprise is not just for ourselves we want to contribute to the solutions to societal challenges we face.



CORPORATE WELL-BEING

Sustainable priorities



Work

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Community

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Vandersanden ambition



Collective wellbeing is of paramount importance at Vandersanden and sustainability is the guiding principle

OBJECTIVE	
Completely CO ₂ -neutral by 2050!	

by a program that inextricably connects us to further sustainability of our:





Het mooiste maak je **samen Together** we build greatness

Together tozero.

Our promise for the future



Key focus areas











Dematerialisation



Benefits of S-line[®]

No.	Lower carbon footprint	
	More space	
	Economically	
	Versatile	
	Leaner and lighter	
Ż	No gypsum efflorescence	
	Guaranteed long-lasting beautiful facades	Section of the sectio



Slim bricks











Water management

Climate-adaptive solutions for public spaces - Drainflow[®] & Greenflow



Limited consumption & active reuse -> no discharge







Renewable energy





renewable energy







Circular use of materials

Sustainable packaging 30-50% PCR; <10% print; 20% thinner









Low energy & emission factories

Most energy-efficient tunnel kiln in Europe (-25% energy consumption)

Residual heat recovery linking kilns with drying plants





Low energy & emission factories



240 meters long



High-quality and double-insulated



25% less energy consumption and CO₂ emission



Most energy-efficient tunnel kiln in Europe







Smart automation













Carbon Free/Negative Products





Carbon Free/Negative Products PIRROUET® FACING BRICKS







Low CO₂ / CO₂-negative products CARBONATED BRICKS



What is carbonation?

Carbonation is the natural process by which Ca-containing materials react with carbon dioxide (CO_2) and transform into calcium carbonate ($CaCO_3$). Calcium carbonate occurs worldwide in the subsurface and form an important source of natural CO_2 storage.



Industrial application

The fine residual product from metal slag (from steel production) is converted by adding CO_2 to high-quality building materials. The carbonates that form result in the entire brick having a hard, limestone-like bond.



 $\begin{array}{rcl} \mathsf{CaO} + \mathsf{H}_2\mathsf{O} \end{tabular} & \mathsf{Ca(OH)}_2\\ \mathsf{Ca(OH)}_2 + \mathsf{CO}_2 \end{tabular} & \mathsf{CaCO}_3 + \mathsf{H}_2\mathsf{O} \end{array}$

Hydration phase Carbonation phase



Production process



STEP 1 Mixing Raw materials are mixed with 8% water

The process uses 80% recycled materials, residues from the steel industry:

- carbinox
- stinox



STEP 2

Pressing

Compaction using a hydraulic press

The hydraulic press is powered by green energy



STEP 3 CO₂ curing

Process = 24 – 48 hours depending on size 6 % CO2 capture won

Low temperature (up to 50°C)

Unlike the production of ceramic bricks, a carbo-brick is unfired



THE DRYING PROCESS





Drying cycle Carbinox:

(Reduce moisture from 20% to 4% for processing.)

- 1. Wet Carbinox: Raw material. Active component Deposits Carbinox onto belt
- 2. Hopper:
- 3. Belt Dryer:
- 4. Drying Zones: Heat Source:
- Carbinox ground to a cement-like powder 5. Grinding: 50 m3 stored in inside silo, 2x 75 m3 in outside silos Storage:

60m long and 3,5 m wide mesh belt

Warm air blown through material and belt

Heated by recovered heat from Chimney L1



MIXING INGREDIENTS







PRESSING AND FORMING





Pressing Cycle:

1.	Mold Preparation:	Mold with stamp. +/- 44 bricks per cycle
		(depends on format)
2.	Filling:	Large feed box fills 3 rows
		Small feed box fills 4th row (colour mix)
3.	Initial Pressing:	Lightly pressed with the stamp
4.	Final Filling:	Remaining space filled with colour mix
5.	Final Pressing:	Stamp presses max 0,8 kN/cm2
6.	Transport:	Board moves to stack

Stacking: +/- 1500 bricks (LF50-S format) per stack Quality Control: Laser Measurement: Checks height Weight Measurement: Determines density



THE CURING PROCESS





Curing Cycle:

1.	Leak Test:	Ensure chamber is airtight
2.	CO, Fill:	High pressure, pushes out ai
з.	Heating:	Raise to 50 °C (carbonation)
4.	Duration:	24 hours
5.	Air Exchange:	Remove CO ₂ , refill with air
6.	Completion:	Chamber can be opened

Chambers:

Capacity:	24 stacks per chamber		
	(Ca 35.000 bricks LF50-S)		
Filling Time:	Ca 1 shift per chamber		



THE COATING PROCESS





Coating Cycle:

- 1. Infrared Preheating
- 2. Spray Booth 1
- 3. Spray Booth 2
- 4. Sand Spreader
- 5. Infrared Drying



Vandersanden Lanklaar (BE) 14ha

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L4

L2

Vandersanden Lanklaar

VANDERSANDEN

L1

Pirrouet[®] factory - Site Lanklaar (BE)



L3



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CURRENTS

STERIO

Start capacity 20-40 million bricks/year

Planning Operational Q1 2024



Pirrouet[®] factory - Site Lanklaar







Start capacity 20-40 million bricks/year

Approx. 30,000 tonnes of mineral steel slag/year (Carbonix & Stinox)

Approx. 3,000 tonnes CO_2 /year used for production in plant

Planning

- Operational
- Pirrouet[®] bricks available as of June 2024







Sustainability benefits of Pirrouet[®] bricks



Savings on primary raw materials

- Up to 80% of the raw materials are sourced from byproducts of the steel industry
- Only 20% use of primary raw materials



Waste reduction

• Waste streams are not disposed of in landfills





- No burning of fossil fuels
- Use of green electricity



 Absorption of CO₂ in the product for curing (1 tonne carbonated bricks absorbs 60 kg CO₂)



Valuable product properties



Pirrouet[®] bricks **meet the strict European masonry standards**:

- Freeze-thaw resistance in accordance with EN 772-22
- Compression strength in accordance with EN 772–1



Very high dimensional stability



Kiwa innovation certificate obtained (Blueprint for future EAD)



EP (environmental profile) is available



Kiwa Innovation certificate

Why an innovation certificate for Pirrouet®?

The Kiwa Innovation Certificate provides Pirrouet® with independent confirmation of its innovative and sustainable character. The certificate allows us to trace and demonstrate Pirrouet®'s quality claim. The certificate is particularly valuable for demonstrating quality and innovation, especially for products for which there is not yet an existing standard, such as Pirrouet®



Design and aesthetics





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Smooth or sand-coated

Surface treatments

Colours and hues

Development of a unique Pirrouet[®] colour range

Initial range of 11 colours



Pirrouet[®] facing bricks

Initial colour range

White	Pirrouet®	Blossom White
Light grey	Pirrouet®	Natural Grey
Beige	Pirrouet®	Cosy Beige
Yellow	Pirrouet®	Summer Yellow
Orange	Pirrouet®	Sunrise Orange
Leather tone	Pirrouet®	Sandy Brown
Red	Pirrouet®	Striking Red
Green	Pirrouet®	Honest Green
Dark grey	Pirrouet®	Mystic Grey
Brown	Pirrouet®	Stylish Brown
Antracite-black	Pirrouet®	Serious Black





Pirrouet[®] facing bricks

Available colour techniques

- 1 cm coloured top layer
- 25% of the bricks are fully coloured with 1 textured header
- Sanding
- Protective, transparent coating
- Coloured coatings for colour shade



Pirrouet[®] colour range









Pirrouet[®] Blossom White

Pirrouet[®] Natural Grey

Pirrouet[®] Cosy Beige

Pirrouet[®] Honest Green



Pirrouet[®] colour range









Pirrouet[®] Summer Yellow

Pirrouet[®] Sunrise Orange

Pirrouet[®] Sandy Brown

Pirrouet[®] Striking Red



Pirrouet[®] colour range







Pirrouet[®] Mystic Grey

Pirrouet[®] Stylish Brown

Pirrouet[®] Serious Black



Pirrouet[®] project, Nobelhorst 60 residences in Almere (NL)







Architect: Heren5 – Amsterdam (NL)

Project developer & contractor: Heutink – Genemuiden (NL)

Start project Q2 2024

Pirrouet[®] facing bricks: LF50-S (240 x 50 x 72)







Pirrouet[®] project, Nobelhorst 60 residences in Almere (NL)

Date: 18-07-2024





Pirrouet[®] project, Nobelhorst 60 residences in Almere (NL)

Date: 02-09-2024





Pirrouet[®] Prisma



Pirrouet[®] Prisma patterns





Pattern 1

P Pattern 5



3 stacking patterns with the same relief to the face





Different reliefs to the face





Value proposition Pirrouet[®] Prisma

Pirrouet[®] Prisma meets today's façade needs



Superior in sustainability

(raw materials, production, processing, end of life)



Unlimited new creative freedom

for the architect

A high quality beautiful façade

for the end-customer





Living Tomorrow, Brussels PIRROUET[®] PRISMA Facing Bricks

Living Tomorrow, Brussels





Living Tomorrow, Brussels





Pirrouet[®] Prisma: primary school in the Netherlands



Pirrouet[®] Prisma: fire station in Belgium







Pirrouet[®] Facing Brick

How sustainable are they?





From LCA to Environmental Profile (EP)



How broadly should we approach sustainable building?

Design phase – construction phase – use phase – demolition – reuse

In other words, the entire life cycle of a building material.

LCA – Life Cycle Assessment: determines the environmental impact of a product over its entire life cycle, from raw material extraction, production, use, waste processing, and reuse.

- Provides objective information for environmentally focused product choices.
- Identifies areas for improvement for minimal environmental impact.
- Calculated according to EN15804, third-party verified and globally accepted.

EPD – Environmental Product Declaration

- Standardized presentation of LCA results
- Facilitates material comparison



No EPD but an EP



Why is an EPD not yet available for Pirrouet®?

- EPD requires LCA based on at least 1 year of production data
- Pirrouet[®] production starts in 2024
- EPD available by 2025

However, there is an EP - Environmental Profile - available for Pirrouet[®].

- Based on the LCA of the product
- Structured like an EPD
- Created by the same independent expert agency (Enperas)

Differences from an EPD:

- Production phase impact based on calculated values; actual data after 1 year (2025)
- Not "third-party verified" due to the lack of actual production data

The EP provides a good insight into the sustainability and low environmental impact of Pirrouet[®].



The 5 life cycle stages of an EP(D)





Cradle-to-gate

Cradle-to-grave

Cradle-to-cradle / Circularity





CO2-NEGATIVE FACING BRICKS

THE SUSTAINABILITY OF THE PRODUCTION PHASE OF PIRROUET®

ENVIRONMENTAL PROFILE PIRROUET® FACING BRICKS: CRADLE TO GATE



*Production of Pirrouet[®] is entirely on green electricity (no CO₂ emissions). The environmental impact at A3 is the CO₂ emitted in the production of the wind turbine and solar panels

The Environmental Profile (EP) for Pirrouet® facing bricks is based on calculated values and prepared by an independent expert agency (Enperas). An EPD (environmental product declaration) is calculated based on 1 year of production data. It will therefore not be drawn up until 2025.



Results Environmental Profile Pirrouet®



CO₂ emissions during the 5 life cycle stages



Environmetal Profile Pirrouet[®] Potential for further sustainability



Still various possibilities to make Pirrouet[®] an even more sustainable product.

Examples:

- A1: 100% instead of 80% waste streams for the production of Pirrouet®
- A3: Direct capture of CO2 (e.g., from the own ceramic plant)
- A4: Transport to construction site using electrically powered trucks (instead of diesel)
- A5 C D:Pirrouet® suitable for dry stacking system due to high dimensional stability
Facing bricks 100% recoverable (circular building system)



Project Groen Nobelhorst Almere (NL)

The CO₂ figures in detail

- 320,000 Pirrouet[®] facing bricks for 60 houses
- Facade area: 5,000 m² or 64 Pirrouet[®] bricks/m² (in LF50-S format with joint)
- Per m² façade, 8.5 kg CO_2 is <u>permanently</u> captured.
 - 7 kg CO₂ during the production process and an additional
 - 1.5 kg CO₂ during the further lifespan of the Pirrouet[®] bricks.

60 homes store a total of 42,500 kg of CO_2 permanently. That is approx. the same amount of CO_2 that 60 trees would store over 28 years.







We can't do this alone!

As an industry, as a company, and as a society we will have to join forces to allow good ideas and daring investments to flourish.

Invitation to everyone in our industry to join this movement for a completely neutral footprint.

Together we build greatness Together to Zero

