

# QUALITY COLORS.



## Case Study

Forum :terra nova, Elsdorf, Germany



**COLORED CONCRETE WORKS®**  
An initiative of LANXESS

**QUALITY WORKS.**

**LANXESS**  
Energizing Chemistry

## A MASSIVE STONE BLOCK, PUSHED UP OUT OF THE GROUND.



### **The colorful pattern of the moved layers of earth at the edge of the open pit mine.**

The landscape is broad and level. The eye searches for a place to rest – and finds it in the silhouette of trees, hinting at the course of a country road in the distance, or the church steeple in one of the villages scattered among the fields of barley and sugar beets. Then, near the little towns of Heppendorf and Berrendorf, suddenly, unexpectedly, a gigantic, massive block of stone has broken through the topsoil and pushed its multicolored, craggy layers of earth skyward. A few steps further the ground swallows the horizon, and the view descends 400 metres into the depths of the earth.

The Forum :terra nova at the north edge of the Hambach Mine, the largest open pit lignite mine in Europe, occupies a unique and powerful place in this bizarre landscape. Like a gigantic stone pressed up from the depths of the earth, the colored exposed-concrete façade reflects the structure and hues of the geological layers of the nearby open pit mine. The two-storey building is a lookout point, excursion destination, and exhibition venue in one. In an international implementation competition, the design of architect Dirk Lüderwaldt won the first prize.



- Rising from the earth in an exposed position at the edge of an open pit mine: the Forum :terra nova. The geological layers uncovered by the gigantic bucket wheel excavators are echoed in its colored exposed-concrete exterior.

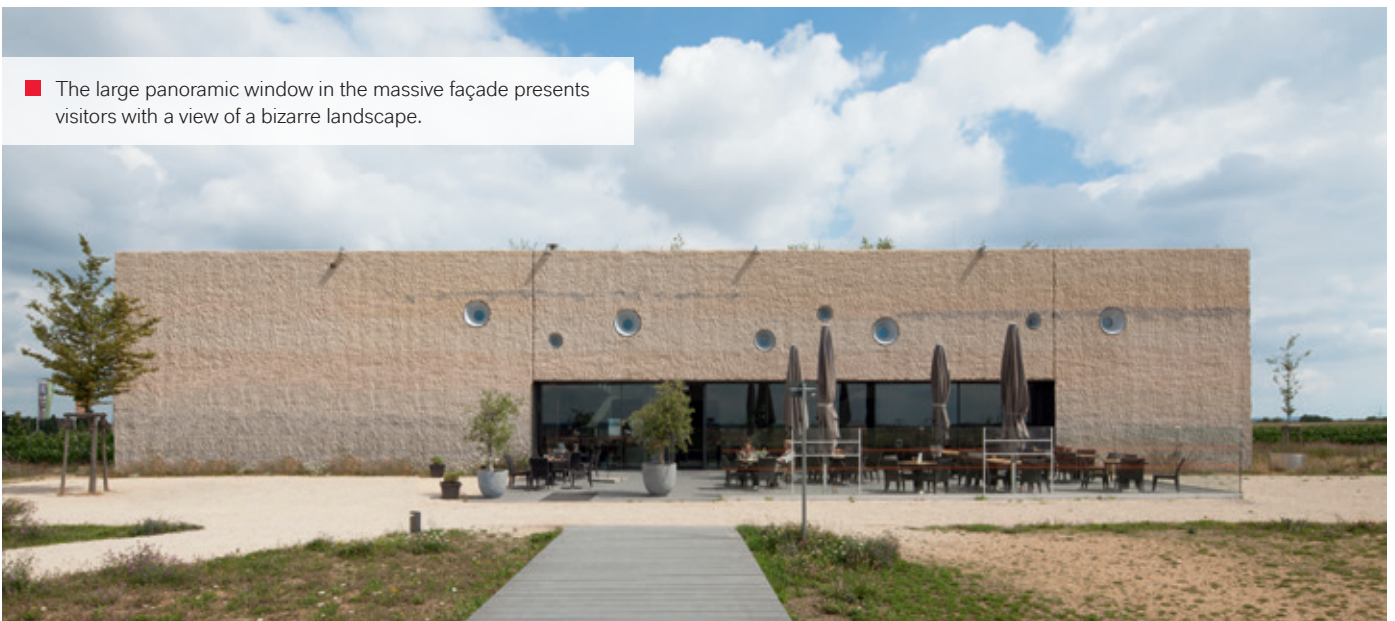
- The hues of the exposed layers of earth are the model for the colors of the building.



## FARBNUANCEN ZWISCHEN OCKERGELB, ROSTROT UND GRAU.



■ A close-up look reveals the different colored layers of the craggy concrete surface.



■ The large panoramic window in the massive façade presents visitors with a view of a bizarre landscape.

**A “musical score” of geological layers in concrete.**

Above ground, the building is designed as a “rigid box”, resting upon 14 hydraulically adjustable individual foundations to balance out the movements from the nearby mine. The expansion joints in the reinforced concrete façade allow it to move. After numerous experiments, architect Dirk Lüderwaldt mixed the colors found in the open pit mine using Bayferrox® color pigments to achieve nuances of yellow ochre, rust red and grey.

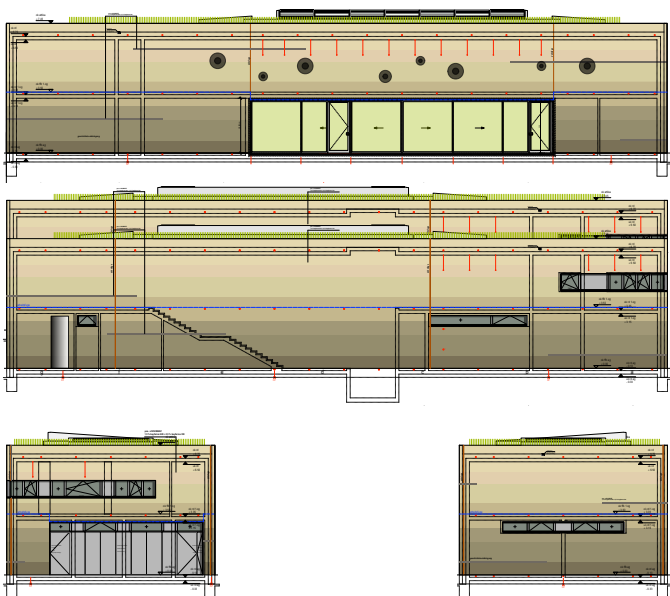
These color-coordinated batches of concrete were poured individually in nine horizontal layers at different positions and heights. The specially conceived “musical score” of concrete deliveries made it possible to pour the layers “fresh on fresh” – as soon as each underlying layer had become firm enough. The detailed planning paid off: the various coloured concrete layers mixed only to the degree desired. Afterwards, the walls were ground down roughly to make the structure even more similar to the landscape of the open pit mine.



**“IT WAS ONLY BY MIXING THE PIGMENTS INTO THE CONCRETE THAT WE WERE ABLE TO CREATE THE IMAGE OF A BLOCK OF STONE PUSHING UP OUT OF THE EARTH.”**

Dirk Lüderwaldt

Dirk Lüderwaldt, born in 1960 in West Palm Beach, Florida, studied architecture at the Technical University of Aachen, Germany, and the University of Washington in Seattle, USA, before he began working for the architectural firm of Professor Joachim Schürmann in Cologne in 1988, and, starting in 1991 took over as head of its Salzburg office. In 1995, Dirk Lüderwaldt opened his own architectural firm in Cologne. In 2011, Lüderwaldt Architekten carried out their 150th project. In addition to his work as an architect, Dirk Lüderwaldt has also been teaching since 1996, among other places at RWTH Aachen, TU Darmstadt, and the Bochum University of Applied Sciences.



■ The layer concept was planned in detail with instructions for mixing, location and thickness.



■ Sample walls to test the color development before and after the grinding of the surface.

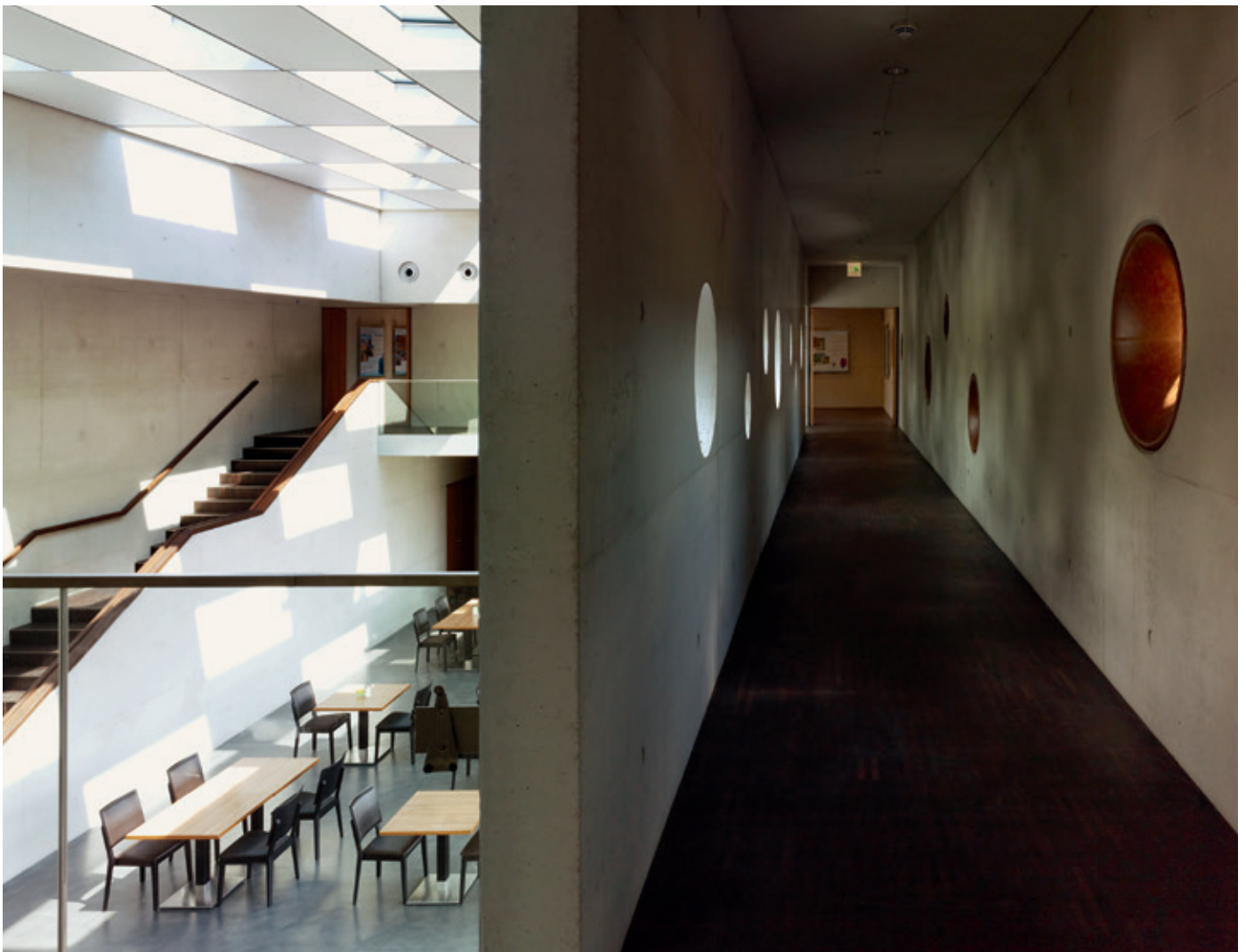
# THE LONG **TIMELINE** TO THE LANDSCAPE OF THE FUTURE.

## **A structure as a document and object of change.**

The interior of the Forum :terra nova is marked by a large two-storey atrium under an innovative skylight and energy roof. On the upper floor the atrium is surrounded by a circular exhibition corridor and a viewing aisle with leather-upholstered portholes facing the mine. They provide views of the surroundings, which are continuously changing over time: the gradual transformation of the open pit mine, with its enormous machines, which are coming ever closer and which will pass by the structure by 2040. By the year 2100 the mined-out pit will become one of the largest inland lakes in Europe, and the turbulent surface of the earth will have disappeared beneath an ever denser carpet of grass. The same goes for

the massive block of stone, the Forum :terra nova, its ground surface covered in moss. Vegetation finds a way. Even then, the **Bayferrox®** color pigments used, in this case **Bayferrox® 130**, **Bayferrox® 330**, and **Bayferrox® 920**, will continue to echo the nuances of the mine far into the future. They will remain extraordinarily fade-, heat-, and weather-resistant for decades. The moss covering of the ground surface that is desired by the architect will also be unaffected: **Bayferrox®** color pigments are ecologically safe.

- The two-storey atrium with its innovative skylight and energy roof is surrounded by a circular corridor, with funnel-shaped openings facing the mine.





■ Now, the mine is still visible through the openings – in a few decades, it will be a lake.



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Appropriate documentation was compiled with information on the health and safety measures that have to be observed in handling the LANXESS products mentioned in this brochure. For materials mentioned here that are not LANXESS products, the operational hygiene and other safety measures recommended by the respective manufacturers must be observed. Before working with these products, you must read and familiarise yourself with the available information on their dangers, proper use and handling. This point is of decisive importance. Information is available in various forms: such as safety data sheets, product information and product labels. Please contact your LANXESS representative in Germany or the Department of Regulatory Affairs and Product Safety of LANXESS Deutschland. For business in the USA, please contact the LANXESS Product Safety and Regulatory Affairs Department in Pittsburgh, Pennsylvania.

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# PROJECT DATA

- The Forum :terra nova between gigantic lignite excavator and power plant.



**Location**

Elsdorf, Germany

**Architect**

lüderwaldt architekten

**Construction company**

RWE Power AG

**Construction period**

2011–2012

**Amount of concrete**

162 m<sup>3</sup>

**Amount of pigment**

1,239 kg

**Form supplied**

Powder in paper sacks

**Supplier**

Dyckerhoff GmbH

**Pigments**

**Bayferrox® 130  
in white concrete**



**Bayferrox® 330  
in white concrete**



**Bayferrox® 920  
in white concrete**