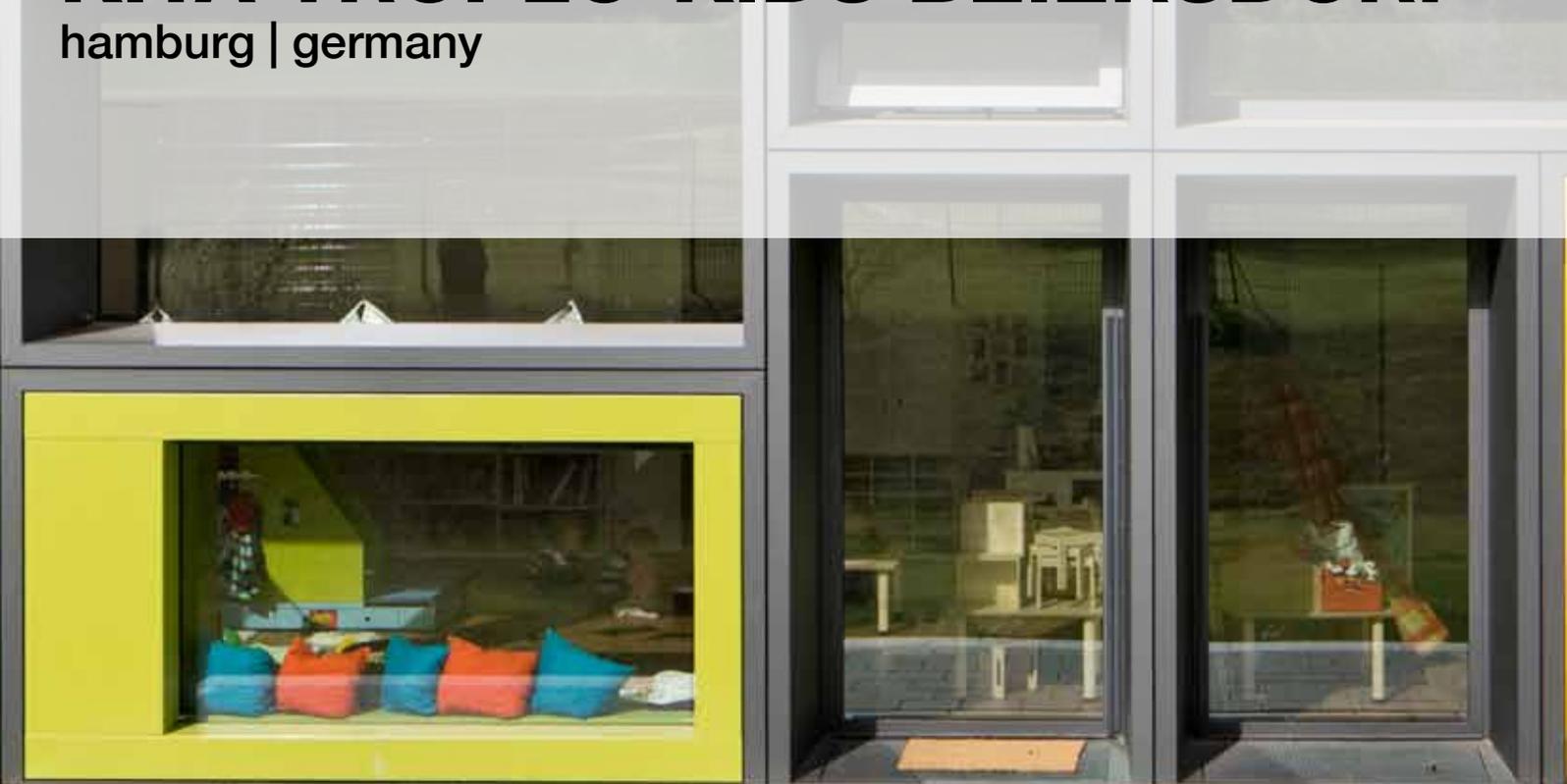
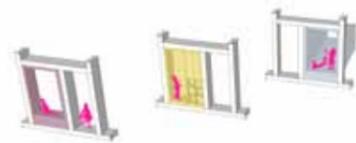




# KITA TROPLO-KIDS BEIERSDORF

hamburg | germany





**BRIEF** Children's day care centre for 7 groups | **ADDED VALUE** The colourful facade frames are a characteristic feature of the new kindergarten on the outside and a means to provide varied space for creative play inside.

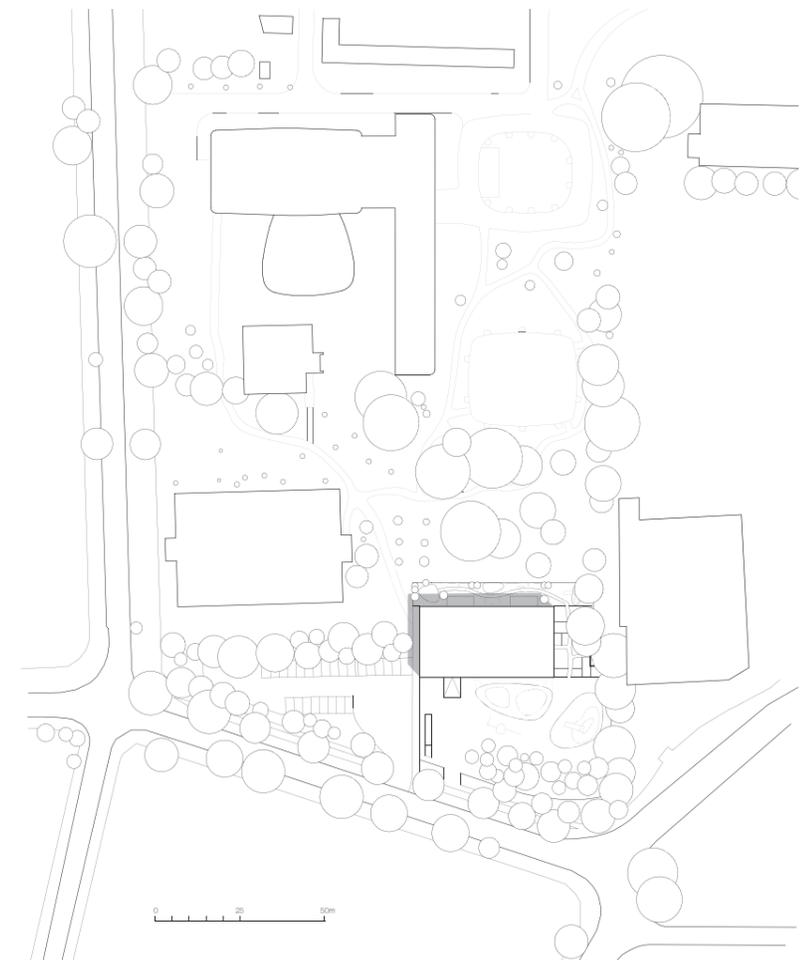
**BEIERSDORF CHILDREN'S DAY CARE CENTRE "TROPLO KIDS", HAMBURG | GERMANY**

The two-storey new build is located next to a green area on the inner-city grounds of the Beiersdorf AG in Hamburg-Eimsbüttel. The extremely compact rectangular structure is arranged around a central, two-storey multi-purpose room, which functions as a play area and gathering space. The inspiration for the design came from the history of the Beiersdorf AG in that the kindergarten resembles an abstract version of an apothecary cabinet. Featuring a shelf-like structure, the facade caters for a variety of functions and requirements and, at the same time, creates a light and transparent atmosphere indoors. The large window formats provide perfect conditions for play and educational work.

The inserted coloured frames shape and structure the facade on the outside and offer the children a sense of direction and a way of identifying with their group. On the inside, the frames are accessible and supplement the play area with exciting elements: platforms, boxes, spaces to sit, climb and play, designed to stimulate the children's creativity and imagination.

The children's day care centre was awarded a DGNB Gold certificate by the German Sustainable Building Council at the end of November 2014.

**Typology** education **Construction volume** GFA 1,750 m<sup>2</sup>, GV 7,000 m<sup>3</sup> **Client** Beiersdorf AG **Construction** 2012-2013 **Architect** kadawittfeldarchitektur **Project manager** Arno Schleicher, Ben Beckers **Awards** DGNB Gold certificate **Photographer** Werner Huthmacher







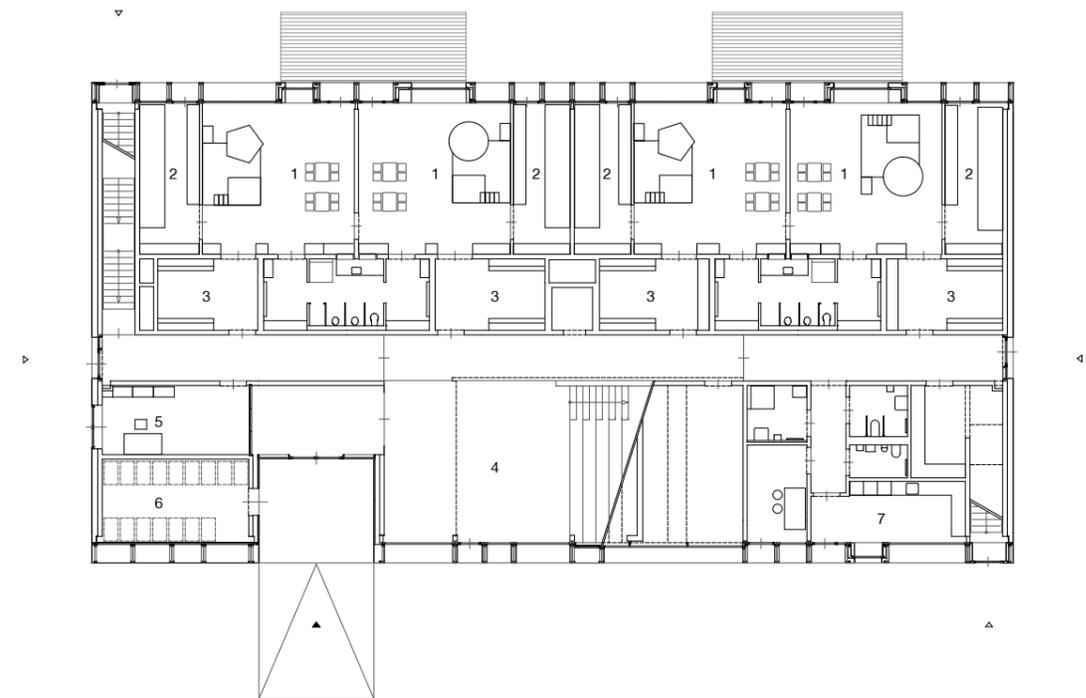
### Spatial dimension of facade

The coloured frames inserted into the east and west-facing facades continue into the interior, where they can be used as cosy corners to sit and rest. Perceived both inside and outside, the colourful elements are a characteristic feature of the building and a reference point for the children. The large-scale window formats are also designed to create a light and transparent atmosphere inside and allow plenty of daylight to enter the rooms.

### Room programme

The functions of a children's day care centre are perfectly arranged in the two-storey rectangular volume. The ground floor accommodates the crèche, utility rooms and a large multi-purpose hall, which forms a generous connection to the upper storey thanks to the full-width benches of the auditorium and the adjoining stairway. The first floor incorporates a further room for the crèche and two kindergarten group rooms, the kitchen and a dining area, a workshop, a room for preschool activities and a meeting or recreation room for the staff. A lift connects both storeys, with the result that the entire day care centre fulfils the requirements of a barrier-free environment. The multi-purpose room, a two-storey multi-functional hall, is the heart of the building – the communicative centre for children and carers. It functions as a distributor to the various functional zones, a space for communal activities and an alternative play area for rainy days.

**ground floor** 1 crèche  
2 sleep and rest 3 shoes and coats 4 multi-purpose room 5 office 6 prams and pushchairs 7 utility room



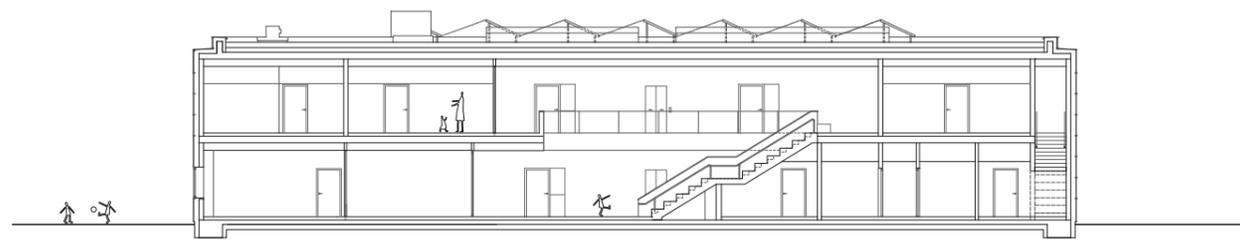
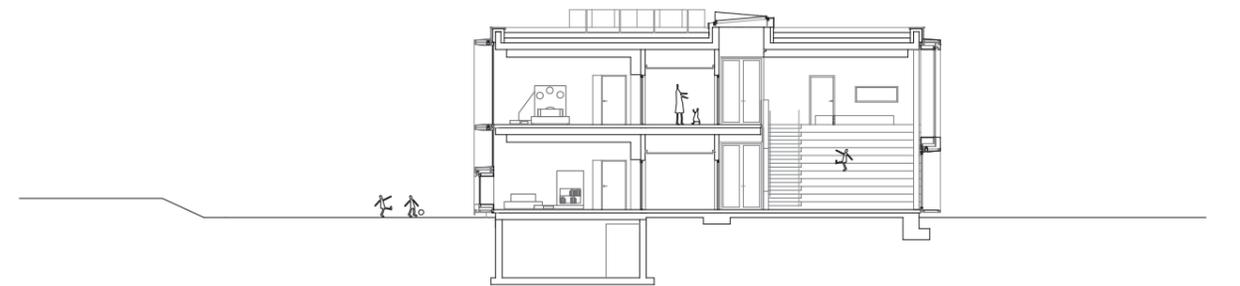


### Colour coordination

Children, furniture, materials and first paintings will constantly fill and refill the rooms of the day care centre with colour. Alongside the natural, subdued tones of the selected materials (floor covering: wood, walls: white plaster/gypsum board, ceiling: white acoustic/lamella ceiling panels), the interior features the bright colour hues of the facade frames in some selected pieces of furniture and fit-out elements. The doors to the group rooms, for example, including the coat cubbies just outside, are kept in the same colour as the group room's facade box for better orientation within the building. Each room is provided with a piece of custom-made play furniture resembling an oversized building brick. It adopts the colour tones of the facade frames and integrates various features, such as raised platforms, a doll corner and play kitchen, slides, a cosy cave, climbing frames and bridges. By playing, climbing and conquering the different levels, children learn to experience their environment from different perspectives.

### Exteriors with sculptural art

The enclosed outside play area, on the western side of the building, is divided into an area each for crèche and kindergarten children. It provides the facilities for a variety of creative outdoor activities, such as sealed surfaces for BIG Bobby Car races and hopscotch games, grassed areas incorporating playground equipment, a sandpit with wooden steps to sit on, a water play table and willow tunnel, a mulch area with climbing frames, a net swing, rocking animals, a herb garden and play house, a grassed mound with a built-in slide and the "tin can telephone", a sculptural installation designed by the artist Fabian Wendling. The art in architecture project changes the scale of a traditional toy to create an abstract object, which alongside being used for its original functions, speaking and listening, can also be used as a frame to swing from, balance and climb on, as a drum or even as a place to build a cave.



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## Sustainability

In November 2014, the children's day care centre Troplo-Kids was awarded the second ever DGNB Gold certificate for a kindergarten project in Germany. The groundwork for the sustainable project concept and development was already laid at a very early project stage, at the end of 2011, by agreeing on a binding DGNB PreCheck performance target for all participants within the design and project team. A functional specification document was specifically drawn up to define a variety of targets and measures, which were simulated during the design phase for proof of concept. During the course of the DGNB certification process, all materials selected were tested and documented.

DGNB certified the following qualities:  
Environmental quality 94.4%  
Economic quality 75.8%  
Socio-cultural and functional quality 82.0%  
Technical quality 86.8%  
Process quality 92.3%

## Project highlights

**Consideration of demanding sustainability requirements at very early planning stage:** Thermal building simulation: perfect coordination of volume and building services with regard to future use and requirements for thermal comfort > assurance of high technical performance in summer and winter | Daylight and artificial light simulation: with the aim of achieving a high degree of visual comfort at the same time as reducing power consumption for artificial light | **Extremely energy-efficient building services and energy systems:** Electricity generated by renewable energy sources (photovoltaic modules) | High heat recovery rate | Efficient ventilation systems with high heat recovery rates | Optimised building envelope in terms of airtightness and insulation properties (triple glazing, etc.) (average U-value including supplement for penetrations of transparent components 1.14 (W/m<sup>2</sup>K); average U-value including supplement for penetrations of opaque components 0.16 (W/m<sup>2</sup>K)) | Blower-door test to verify the demanding requirements of airtightness for the building envelope (air exchange rate: n50 = 64 1/h; air permeability: q50 = 1.1 m<sup>3</sup>/(hm<sup>2</sup>)) | Connection to the efficient district heat network on the company premises | **Efficient lighting systems and use of daylight:** Use of LED downlights and LED wall washers with low connected load | Presence sensors for efficient lighting control | Implementation of demanding specifications regarding use of daylight and quality of light (colour reproduction index > 90) | Good coordination of shading systems, position of skylights, use of colour on interior surfaces | High visual comfort due to large glazed surfaces | **Room acoustics:** High acoustic comfort with very demanding requirements for sound insulation and speech intelligibility in group rooms, dining area and access zones: because this could not be achieved through acoustic ceiling panels alone, the gypsum board was extended approx. 80 cm down the walls and integrated into the design of the fitted cupboards | **Indoor air quality:** Good indoor air quality is achieved by installing a mechanical ventilation system, ensuring a sufficient exchange of air and using low-emission and low-pollutant products (highest rating within the assessment for DGNB Gold = quality level 4). This was confirmed through detailed measurements of the indoor air taken by an accredited laboratory (all indoor air reference values II IRK/AOLG were met; all indoor air reference values I were met; TVOC is well below the target value of 500 g/m<sup>3</sup> in all rooms; FORMALDEHYDE is below the current reference value of 120g/m<sup>3</sup> as well as below the target value 60 g/m<sup>3</sup> in all rooms. | **Use of sustainable wood and engineered wood products:** All timber products have been sourced from sustainable forestry (FSC or PEFC certificates, including Chain of Custody certificates) | **Resource efficiency:** Reduction of water consumption and volume of waste water thanks to water-efficient fittings, toilets and showers | Planted roof reduces the quantity of rainwater run-off and thus contributes towards flood control. Furthermore: use of native plant species | Presence sensors for lighting control | Electricity from renewable energy sources: roof-mounted photovoltaic array with an annual performance of 19,600KWh/a | Resource-saving development by using site with former commercial usage | **Flexibility:** Design with high degree of flexibility concerning future changes of use. Spatial alterations to the construction can be made easily and at low cost. Possible alternative uses were considered in the building services and layouts, and pre-equipped for a variety of typologies. | **Barrier-free design:** High demands were placed on barrier-free access to the building and mobility within the circulation space | **Art in architecture:** A competition was initiated by the client for art in architecture. The "tin can telephone", a sculptural installation for play in the exterior grounds, is the result of the design competition | **Construction operations:** High demands were placed on meeting sustainability standards concerning, noise, soil protection and recycling of waste material (new build) and demolition material after deconstruction. | **Energy efficiency concept:** in the case of final energy, the EnEV 2009 requirements were undercut by approx. 30%; in the case of primary energy, by approx. 60%.





## Project data

### Construction:

- solid reinforced concrete structure (load-bearing walls, columns, ground slab and floor slabs)

### Fit-out:

- masonry and gypsum board walls (non-load-bearing walls)
- suspended ceiling using acoustic gypsum board
- slip-proof floor coverings
- all interior components without any sharp corners and edges

### Building envelope:

- insulated facade system with powder-coated, rear-ventilated aluminium panels and sub-construction made of galvanised rectangular steel tubes
- windows and external doors made of insulated aluminium sections
- triple heat and sound protection glazing
- exterior shading devices in the same colour tone as the main facade
- planted flat roof with extensive roof greening

### Building services:

- heat supply from district heat network on the Beiersdorf AG premises
- roof-mounted photovoltaic array with flat collectors
- underfloor heating system
- combined heat and power plant on company premises
- all group rooms have access to natural daylight and ventilation; in addition, they are provided with a mechanical ventilation unit featuring a heat recovery system; interior rooms are equipped with a mechanical ventilation unit with a heat recovery system.

### Completion + construction period

Construction period: 07/2012 - 01/2014  
DGNB certification: 06-08/2014  
Award of DGNB Gold certificate: 20 Nov. 2014

### Volume

GV: 7,000 m<sup>3</sup>; GFA: 1,750 m<sup>2</sup>; NFA: 1,440 m<sup>2</sup>; UFA (1-7): 1,040 m<sup>2</sup>

### Primary energy demand – total energy efficiency

- actual value of building: 84.7 kWh/m<sup>2</sup>a (according to EnEV 2009)
- required value according to EnEV: 202.6 kWh/m<sup>2</sup>a
- > i.e. EnEV is undercut by 58.2%

## Collaborators

### Architect

kadawittfeldarchitektur GmbH | Aureliusstr. 2 | 52064 Aachen | Germany | www.kwa.ac  
Gerhard Wittfeld, Kilian Kada, Klaus Kada, Stefan Haas

Project management: Ben Beckers, Arno Schleicher  
Project team: Ilknur Dumlu Aljerf, Emma Mc Gloin, Jörg Notbohm  
Consultants: Christoph Helmus (DGNB-Auditor); Christiane Luiz (Interior design)  
Project team competition phase: Benjamin Beckers, Jan Kemper, Michael Miemczyk, Lena Schalenbach, Dirk Zweering

### Client

Beiersdorf AG | Unnastraße 48 | 20245 Hamburg

### Construction Site Management / Tendering

as subcontractor of kadawittfeldarchitektur  
mo Architekten Ingenieure | Volmerswerther Straße | 40221 Düsseldorf

### Structural Engineering / Building Physics

OSJ Ingenieure | Königstraße 4a | 22767 Hamburg

### Mechanical Engineering / Electrical Engineering

energie & technik | Am Sportplatz 4 | 27419 Sittensen

### Fire Engineering

Ingenieurbüro T. Wackermann | Theodorstraße 42-90, Haus 1a | 22761 Hamburg

### DGNB Auditors

kadawittfeldconsult in cooperation with  
HOINKA GmbH | Lembergweg 7/1 | 71067 Sindelfingen

### Auditing of Structural Engineering

Weber Poll Ingenieurbüro für Bauwesen | Mühlenkamp 59 | 22303 Hamburg

### Traffic Planning / Building Drainage Planning

wfw nord consult | Hufnerstraße 28 | 22083 Hamburg

### Coordinator for safety and health matters

h.t.i. Hauke Timm Interservice Ingenieurbüro | Sophienblatt 22 | 24103 Kiel

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