GROW BETTER WITH DAYLIGHT

Kindergarten in Cologne, Germany

GOOD MORNING SUNSHINE

In 2013 Germany introduced legal entitlement for a nursery school place for all children older than one year. This caused a great stir in the industry: a lot of kindergartens had to be extended, refurbished to match the needs of the smallest children, and even more new ones build. The state could not fulfill this task by itself fast enough, so many private investors entered the market, seeing a business opportunity in building and renting out suitable properties.

This was the year where Mr. Georg Grossheimann, an architect and developer, started a collaboration between his office, G-Quadrat Architektur GmbH, with kita-bau gmbh, an investor dedicated to kindergarten construction. Over the course of six years his team designed and build 22 kindergartens, another 15 are in the pipeline, as there is still a deficit of nursery places. Mr. Grossheimann owns his success in this business to his down-to-earth attitude, cost-efficient design and professional execution.

"Kids don't care about fancy detailing. They need space to play outside, a lot of daylight and long corridors to drive their bobby cars" believes Mr. Grossheimann, and everyday life in this kindergarten proves him right.

DAYLIGHT CONCEPT

Located on a deep, narrow plot, the building follows the southeast site's border, front part continuing the roof ridge of the neighbour. The houses facing the street, Hauptstrasse, must have pitched roofs, while the form of extensions in the depth of plots is not regulated.

The fireproof wall at the site boundary had to be made out of brick, stabilized by perpendicular walls and a concrete core. The rest of house is cost-efficient wood frame construction, erected on a concrete plate.

Due to the shape of the site it was difficult to provide enough sunlight. Luckily at that time Mr. Grossheimann was invited by Velux to attend the first "Healthy Buildings Day" in Brussels. "Healthy Buildings Day" is an initiative of Velux, a congress where various guests including policy-makers, housebuilders, housing association representatives, building owners, thought leaders, and media meet to share their thoughts on how to build healthy, innovative, sustainable and affordable houses.

At the congress, Mr. Grossheimann started a dialogue on sunlight in kindergartens with Velux's experts, who invited him to collaborate on designing a perfectly light-flooded environment for children. And so the Kita on Hauptstrasse became a show object for daylight solutions.

Both roof types – flat and pitched,
were used to provide light and
fresh air to the building.

FORM AND LIGHT FOLLOW FUNCTION

"It was good to have met Velux and work on this house together. We tested everything, which resulted in a kindergarten with best possible daylight conditions.
I know that it's possible to not have light tunnels in corridors, but after installing them here I would recommend one to everyone. It makes such a difference" - Mr. Grossheiman praises the collaboration and is content with the result.

The long windowless wall marks the plot boundary. The house was build in a very compact way, to save money and due to strict state regulations, defining the size of each room in a kindergarten.

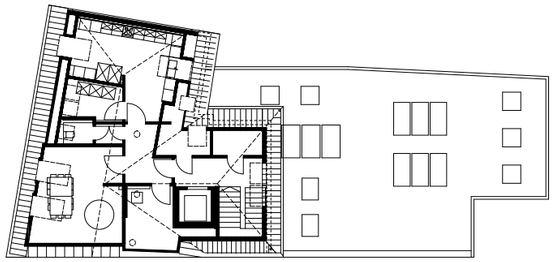
The main staircase, lightened up by two roof windows - at the same time smoke ventilation - is next to the big lift used for transporting strollers and meals.

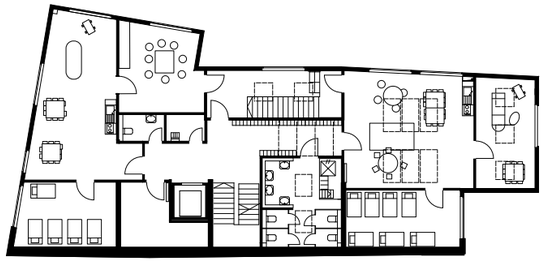
The division of the kindergarten into the street and garden part, connected by a large, daylight-flooded corridor and two staircases corresponds the functional scheme featuring three independent units, each with two group rooms and one sleeping area.

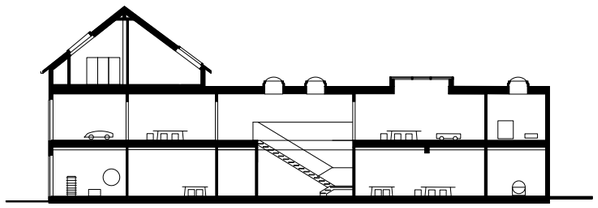
The entrance level accommodates a playgroup and a large multi-functional room for all kind of sports.

First floor houses two playgroups. In the one under the flat roof, VELUX Modular Skylights lighten up the changing area as well as the large group room. The rooms towards the street are smaller, as they have to rely on facade windows only, opening towards a beautiful church.

The attic contains storages, back-office rooms, recreation area for staff and a big kitchen - all bathed in daylight thanks to several roof windows in the pitched roof. This is a small, but important area of the house, as some employees spend a lot of time there, both working and relaxing during the breaks.







BEFORE AND AFTER

The concept plans were taken by Velux to build a 3D model and check the light conditions with Daylight Visualizer software. The results were as expected - an average, large playroom can never be bathed in sunlight. Velux experts recognized the potential of a variety of roofs and suggested many diverse products: from light tunnels through conventional roof windows up to large glazed elements, used in the flat roof area.

> "Why are so many people hesitant to pay for roof windows? They never question the need of windows in the wall, although they give less light"

wonders Mr. Grossheimann, recalling the process of daylight evaluation and discussions with the investors.

Finally, they decided to add Velux products to the project, and never regretted their decision: the roof glazing turned out to be an eye-catcher, praised by the parents, and a magnet for the little ones.

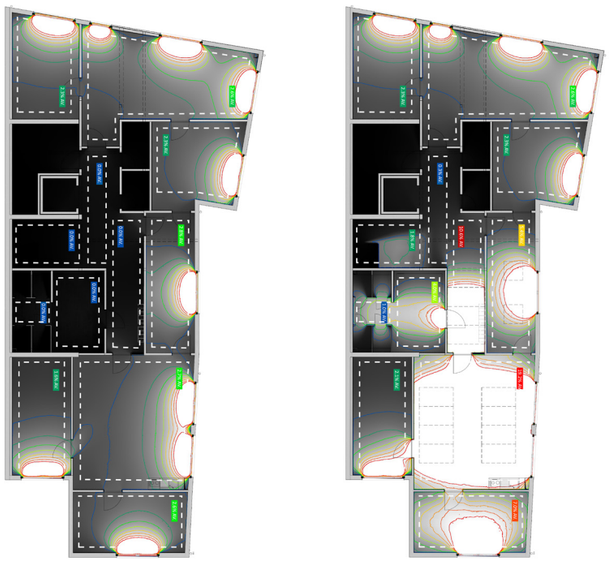
> "This was an additional cost, and an investment has to pay off - and here it certainly did in every way."

VELUX Daylight Visualizer is a professional lighting simulation tool for the analysis of daylight conditions in buildings. It is intended to promote the use of daylight and to aid professionals by predicting and documenting daylight levels and appearance of a space before realization of the building design.

On the left first floor with facade windows only, on the right after addition of Velux products.

Daylight Visualizer analysis showed how dark a big a standard playroom would have been compared to how it looks like with roof windows.

Also, the corridor with wardrobes became a well-lit zone where children can play, not just a mere utility area.



SEE THE DIFFERENCE

While precise daylight simulation is of interest primarily to the building industry, everyone involved in the process understands the difference thanks to visualisations provided by Velux.

The way the rooms look now and how they are used confirmed the expectations of the designers.

Ms. Bettina Uesbeck, the manager of the kindergarten, underlines the importance of daylight for the children, pointing out their instinct to spend time in well-lit spaces:

> "The children play, where the sun is. We observed, that when put a drawing desk is in a darker corner, it is used much less."

"All our tables, where kids eat and play, are located close to the windows. But actually, they play all around the house, running from one playgroup to another, like at home.
In the room with skylights the carpet, where we start the day with the kids, all sitting on the floor, is bathed in sunlight.

We all love it here - especially in the darker months our friendly, bright rooms swing up everyone's mood!"

BRINGING IN LIGHT INTO THE DARK

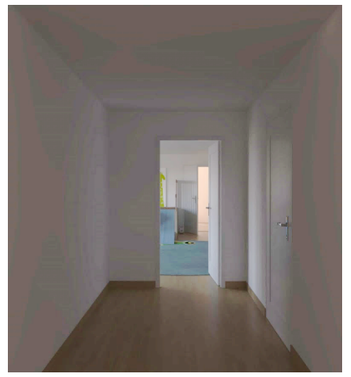
The investment paid off not only because of the happier kids and parents. A friendly, healthy building also turned out to be an asset in search for the employees. As plenty of kindergartens were built in a short time, it became hard to find qualified staff.
A healthy, friendly work environment is a good reason to choose one kindergarten over another.

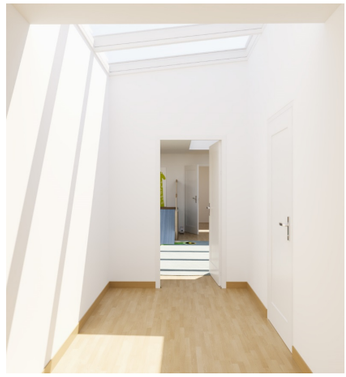
Mundane tasks, like putting children on the potty or changing diapers of the babies, are better here: big openings in the sanitary facilities allow for natural ventilation, and daylight turns what normally is an utility area into dwelling area.

> "Our working conditions here are so different from what I know from other kindergartens" - confessed Ms. Uesbeck - "despite intense work we feel like at if we were staying at home with the kids, and this is thanks to daylight. We hardly switch on the lamps."

All meals here are cooked in the house, in a large kitchen in the attic. Also here one has more the feeling of a home than of an industrial kitchen, thanks to the cosiness of the attic and a lot of daylight. The roof windows here are also replace a complicated ventilation system, much needed because of a large array of fridges and washing machines. High quality of back-office spaces is crucial for those employees, who in an average kindergarten would have spent almost their entire working day in artificial light.

> "All teams from other nurseries visiting our house are impressed and a little bit jealous perhaps" - said Ms. Uesbeck, and Mr. Grossheimann added - "we often have various guests who come to see our house."





Daylight simulations produced in Daylight Visualizer software.
Left: corridor without roof windows, right: with skylights.

HAPPY TOGETHER

Also, Mr. Grossheimann and Velux bring their clients to the house. The strategy to be build very cost-efficient and invest in daylight paid off.

Part of the success was due to the intense collaboration between the architect and Velux, and the fact, that the building was a laboratory for tasting daylight solutions.

Last but not least a big role played the spirit of the team, which Mr. Grossheimann summed up in a few simple words:

> "Many architects build for their own glory only.
> I think one has to like the end-users and take them seriously, understand their needs and meet them on the eye level. With kids it means to sit with them on the floor and answer all kind of questions"- he added, laughing.

PROJECT DATA

Project:	Kindergarten for 60 children
Location:	Hauptstrasse, Zündorf - Köln, Germany
Concept and realization:	Kita-Bau AG & G-Quadrat Architektur GmbH
Design:	G-Quadrat Architektur GmbH
Investor:	ZwergenReich Betriebsgesellschaft mbH
Cost:	together with landscape and playground 1.000.000 EU
Building area:	556qm
Time:	constructed within 6 months in 2015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