

Objektbericht *Project Report*

Residential house Toronto, Canada

Enveloped by an artfully curved roof made of titanium zinc

The single-family home in Toronto strives to harmonise with the neighbouring environment in the Lawrence Park district.

It was the zinc roofs of Europe that inspired Farhad Kazmian's design for his home. More specifically, the artisanal technique as well as the durability, freedom from maintenance and resistance of the material; particularly positive characteristics that make zinc so popular as a roof and façade element, in the past as well as the present.

Farhad Kazmian is not only the owner of the residential building, but also the owner of the developer Abond from Toronto. So it was only natural that Kazmian wanted to make an exclusive statement with his private home with the aim of encouraging future clients to be imaginative in the design of their home. And that is something he certainly has succeeded in doing. Together with the architectural firm Bortolotto, they devised a contemporary, original architecture using the classic materials of zinc, wood and brick: three levels with an area of around 500 m² comprise the exceptional structure, which was initially given the name "A-House" because of its A-shaped top. "For the roof, we opted for a curved roofscape in a "scale skin" pattern, which reminded us of the kind of roof cladding you might see in the fantasy series "Game of Thrones"," says Kazmian. "This is why we then named the house "Dragon Scale"."

Traditional and modernity

The composition of modern and traditional style elements also owes much to the special attention paid to the property's natural surroundings. The Lawrence Park neighbourhood is one of Toronto's first garden suburbs, developed in the early 20th century. The spacious lots, surrounded by often natural parks, make Lawrence Park one of Toronto's most exclusive residential neighbourhoods. The houses themselves, many of which were built over 100 years ago, are reflective of architectural styles from different eras, from the Tudor style with late Gothic detailing to the colonial style of the 16th/17th centuries and the English country house style of the 17th century. With its palette of earth tones as well as its natural materials, Kazmian's home seeks to harmonise with its neighbours and ideally combines the old typologies and today's modernity.

Exceptional roofscape

The dynamic building is designed as a complete wooden structure. The architects have designed the façade with different materials, heights and structures. Whereas the vertical wooden lathing, which contrasts with a massive brick plinth in the entrance area, winds around the house, the titanium zinc roof perfectly harmonises with the curved shape. The success of the extraordinary roofscape hinged on a special relationship of trust between the client, the architect, the executing company Alpro Sheet Metal and the manufacturer RHEINZINK. Alex Prothmann, Managing Director and Chief Estimator of Alpro, and his team worked with Farhad Kazmian for a total of three years to achieve the desired appearance and adequate execution of the roof. "When Farhad came to me with the drawings in 2016, I couldn't wait to get to work on it. There are not many roofs like this, let alone contractors with the skills and expertise required to take on a project of this magnitude. I really enjoy my job and have a thing for jobs that other contractors wouldn't even consider. This is clearly a trait Farhad and I have in common," says Alex Prothmann. His 15 years of experience in metal roofing, including a

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journeyman's certificate as a roofer, had an additional positive effect on the classic craftsmanship.

Sophisticated details

The refined details and the high technical quality of the roof can be mainly attributed to the choice of roofing in RHEINZINK titanium zinc. As far as the colour was concerned, the decision was made in favour of RHEINZINK-prePATINA graphite-grey, which ensures the desired appearance right from the start using a pre-weathering process. "Due to the copper content in the zinc alloy, the graphite-grey surface exhibits a slightly greenish hue, which harmonises perfectly with the timber cladding," explains Richard Strickland, RHEINZINK Regional Sales Manager. "Moreover, the graphite-grey alloy is a superb choice for a darker, natural zinc colour, especially on roofs. The titanium zinc panels will continue to evolve in terms of depth and complexity and will continue to perfect the particular texture and character of the roof throughout the life of the house," adds Richard Strickland.

Complex geometry

The execution of the complex pattern in the large tile system necessitated a complex geometry. "The double convex roof becomes 90 degrees concave in parts and at the same time changes the pitch from 28:12/approx. 67° to 5:12/22.5°. This is how the roof gets its curved twisted appearance," explains Alex Prothmann. The excellent formability of the ecological material proved to be the ideal solution for the execution of the curved roof shapes. Nevertheless, the workmanship was one of the most challenging aspects for Alpro Sheet Metal. "Every single element was individually manufactured and cut to size. The contractor was adamant about cutting the panels in the workshop rather than manually on site. This made it possible to produce a much cleaner, exact edge," adds Alex Prothmann. To ensure the exceptionally high quality, Alpro Sheet Metal further developed a template system and a swivel bending machine to individually process the 0.8 millimetre thick RHEINZINK titanium zinc sheet. "Each panel has six cuts. The 3,500 m² roof contains around 20,000 panels. This amounts to 200 days that the skilled workers needed to complete the work in the factory," explains Alex Prothmann. But that's not all.

Roof drainage

The roof drainage system as well as the snow load absorption required further intuition and good ideas. "While we were able to use a typical RHEINZINK system for the drainage, we had to develop a special snow guard grid to protect falling snow on the roof. We employed appropriately shorter mesh elements to accommodate the exact curve of the roof. We made use of the material of the roof panels for the gutters and the snow grid in order to produce a uniform appearance in terms of colour," says Alex Prothmann. The planning phase continued for almost two years until the roof could finally be executed on site. But the arduous journey was truly worth its while: "Our intensive preparatory work over nearly two years succeeded in allowing us to install the titanium zinc panels on site in a fairly classic fashion. All in all, the creative roofscape required a great deal of craftsmanship, which the client and developer, architect, construction company and RHEINZINK mastered perfectly. The overall result is an artistic and customized interplay of material, form and colour. The timeless aesthetics of the RHEINZINK titanium zinc large tiles with their natural patina will be enjoyed by many generations to come.

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Construction panel:

Project: Residential building, Toronto, Canada

Completion date: 2020

Client: ABOND Inc, Toronto, Canada

Architect: Bortolotto, Toronto, Canada

Execution of RHEINZINK work:

Alpro Sheet Metal Ltd., Angus, Canada

Technical data

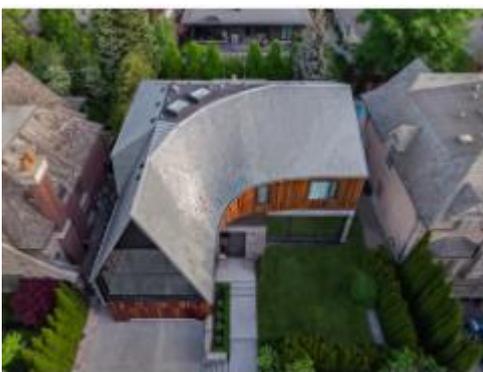
Roof: 350 m², 3 t, RHEINZINK-prePATINA graphite-grey, flat-lock tile system

Captions



2448-residential-building-kanada-2.jpg

Classic materials, original curved shape.



2448-residential-building-kanada-1.jpg

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An eye-catcher even from the air.



2448-residential-building-kanada-6.jpg

Here craftsmanship is combined with highest technical quality.

Fotos Alpro Sheet Metal Ltd



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The robust foil on the outside prevents water and moisture from penetrating.

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IMG_20190715_170857.jpg

Complex geometry: The double convex roof becomes concave in parts and changes its pitch at the same time.



IMG_20190702_111451.jpg

The Air-Z® structural mat compensates for tolerances in the delicate shape of the substructure.

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The individual tiles were precisely tailored to the extraordinary shape.



IMG_4288.jpg

On site, the curved roof is carefully executed layer by layer down to the most minute detail.

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IMG_4287.jpg

Spectacular appearance: the individual arrangement makes it possible.



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The shape of the roof was intended to make an exclusive statement right from the start.