

Roto Inside

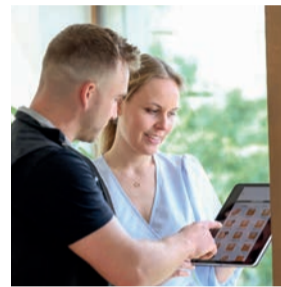
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Roto Solid B butt hinges
for aluminium main doors
**Customised design – high level
of burglary protection**

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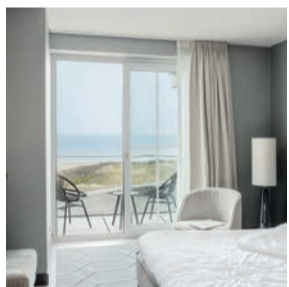
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Saves space –
opens up rooms – protects
**Modern hardware for
architecture with added value**

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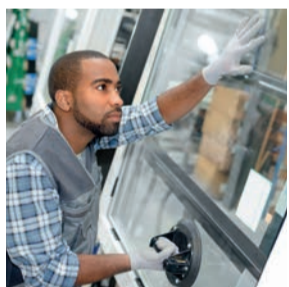
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Welcome to Roto City!
Roto at BAU 2025

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Know-how
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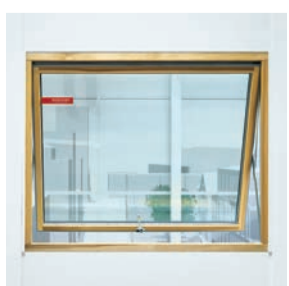
Roto Solid B door hinges
**From functional specifications
to a product range**

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Available worldwide: accurately
configure hardware sets 24/7
**Roto Con Orders 2.0 with
new features**

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Space-saving outward opening
of windows
**Safe handling with FRH Uni
fully reversible hinges**

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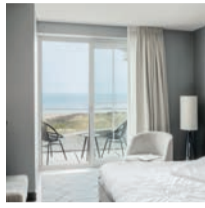


For all profile systems
with a 16 mm groove
**Everyday helper:
the Roto NX comfort window**

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Roto Solid B butt hinges for aluminium main doors

Customised design – high level of burglary protection



For aluminium systems with a 16 mm hardware groove: Roto Solid B butt hinges from the P series. These include the 218 P and 222 P two-part hinges, as well as the 318 P and 322 P three-part hinges. The Solid B product segment is rounded off by the 224 A and 324 A butt hinges, both of which were designed specifically for aluminium doors. Both hinges can be clamped and mounted directly.

■ **Door** Architects and builders often choose an elegant aluminium door when they want to create a durable yet customised main entrance. With the P series butt hinges from the Roto Solid B range, you can help your customers in their search for a harmonious design, down to the very last detail.

An aluminium main door offers design freedom and the opportunity to create an unusual highlight. It can be used to enhance buildings with unique colours and carefully selected details in the entrance area.

Would you like to offer your customers something special? Then invite them to make the main door attractive on the inside too. The 218 P, 318 P, 222 P and 322 P slimline butt hinges for aluminium profiles with a 16 mm hardware groove are the perfect addition to any design concept and their colour can be tailored to the coating of the door panels and frame profiles.

Freedom to choose

Like Roto already offers for timber and PVC doors, butt hinges for rebate-screwed installation on profiles with a 16 mm groove and for overlap-screwed installation are now also available for aluminium doors. The range includes

two- and three-part door hinges each with a different diameter (18 and 22 mm, respectively): 218 P and 222 P (two-part), and 318 P and 322 P (three-part).

Solid B butt hinges come in numerous colours and surfaces. Eight different surfaces are available in the standard version alone. If required, you can also obtain door hinges for your customers in one of many other RAL colours or uncoated as needed.

No offset outlines

Whether the butt hinge is made up of two or three parts, and whether it has a diameter of 18 or 22 mm – all P series hinges share technical and aesthetic features with added value. For instance, no gaps are formed between the leaf hinge and frame hinge when adjusting the door because the adjustment mechanisms are integrated in the hinge roller. Offset outlines are prevented. The slimline appearance of the butt hinges is retained in the long term, as is the high functional safety of the main door. The product range has also been expanded by the addition of an optional cover cap with long legs for doors with a fixed side section on the hinge side. This completely conceals the mechanics and is the perfect option for putting the finishing touches to the door design.

Adjustments without the need for unhinging

The linear, continuous 3D adjustment and the large adjustment ranges make it easier to compensate for tolerances during installation while the results can be visually inspected straight away. Continuous lateral adjustment is possible in a range of ± 3 mm, height adjustment from -2 mm to $+4$ mm. The gasket compression can be modified in a range of ± 1.5 mm. All adjustments are easy to make with a 4 mm hex key. Correctly adjusted aluminium doors work for many years without any issues and require only minimal maintenance.

More security

You can produce main doors in the RC 2 and SKG** resistance classes with the 222 P and

322 P butt hinges paired with the compatible hinge retaining mechanism. In conjunction with a modern Roto multipoint lock, the hinges create an entrance area which offers a high degree of security and impressive operating convenience, all in line with your customers' unique requirements.

The 200,000 opening cycles achieved in accordance with DIN EN 1935 and DIN EN 1191 confirm the reliable durability of all butt hinges. Corrosion protection meets the requirements of class 5 in accordance with DIN EN 1670, representing the highest level.

Would you like to find out more about the Roto Solid B product range for main doors made from any frame material? Then visit Roto at BAU 2025, hall C4, stand 303.



➤ For information on all Solid B door hinges

ftt.roto-frank.com/en/solid-b

In conversation



An interview with Marcus Sander, CEO of Roto Frank Fenster- und Türtechnologie GmbH

Roto Inside: Mr Sander, in the last issue you judged the first six months of the year to be positive on the whole for the business areas of Roto Window and Door Technology. Does this still hold true as the year draws to a close?

Marcus Sander: Our industry worldwide has faced major economic challenges this year. That's why I'm all the more pleased that we have successfully continued our strategy of range and business development and can be happy with how the whole year went.

Our products, such as the Roto NX | C fully concealed Tilt&Turn hinge side, and our consistently high delivery performance contributed to the further expansion of our customer base this year once again. Customers and partners are always telling us that our global presence is a key factor in them choosing to collaborate with us. They appreciate that we are wherever they are, that we offer outstanding product performance and that we can help them overcome complex challenges specific to their region. This feedback and the trust our customers place in us are proof that we offer them the best benefits.

Roto Inside: The 19th Roto Trade Press Day for industry journalists took place in November. Could you please give our readers a summary of the topics that were covered there?

Marcus Sander: We are experiencing dynamic development and change in the fields of architecture and the living environment. Product innovations have allowed the design and quality

of building elements and buildings to be constantly improved, meaning that people now live in far more comfortable and secure surroundings than 30 years ago.

The Trade Press Day organised by Roto Frank Holding AG gave the three divisions of the Roto Group the opportunity to showcase products and services which can be used to make window and door production economical. The focus was on the divisions' joint contribution towards a sustainable future for building and living.

Roto Window and Door Technology presented three central topics: We make buildings more attractive and secure. We are reliable and efficient. We take responsibility.

Roto Inside: Could you give us some specific examples of the aforementioned subject areas presented by Roto Window and Door Technology?

Marcus Sander: The first subject area can be described by the concepts "concealed", "diverse formats" and "customer-specific". Ultimately, a lot of people think that windows and doors look better if their hinges aren't visible, for instance. We offer concealed hardware solutions in all of our product groups. Our new Roto NX | C fully concealed Tilt&Turn hinge side takes things to the next level with the option of creating a flush window. Examples of diverse formats include our Roto NX and our Roto Patio Inowa | Max sliding hardware. We cover all opening types in all frame materials around the world and, with our sealing profile specialists Deventer and Ultrafab, can perfectly coordinate the hardware and seal to our customers' window and door systems. By doing so, we live up to our claim of "customer-specific solutions".

We are reliable, for example thanks to our consistently high delivery performance and the proven high quality and durability of our products. We are efficient thanks to the fact that we safeguard our supply of raw materials and renewable energies,

therefore ensuring that we can always deliver to our customers. And that's not all – we are continuously digitising and automating our internal processes and those involving our customers. To make our customers' installation processes more efficient, we build ease-of-installation into our hardware solutions from the very outset.

The principles of proximity to customers and continuity are a matter of course for us and are embodied worldwide by the company each and every day. This means that we take responsibility for the business success of our customers. Our staff are pivotal in allowing us to take on this responsibility and to ensure proximity to our customers. This is why we also take responsibility towards our employees by supporting their professional and personal development. Showing appreciation is a crucial aspect.

Roto Inside: You announced in the press that you will be attending BAU 2025. What can visitors to your stand at this trade show in Munich look forward to?

Marcus Sander: We will once again prove that we offer the ideal hardware solution for any required window or door function in any frame material and format. In doing so, we ensure that window and door production is as economical as possible. With regard to our attendance at BAU, make sure you don't miss the article on page 9 of this issue. We are really looking forward to discussions with our international customers and guests. We would like to take this opportunity to wish them a good journey there.

But before we see each other again in Munich, I hope that you – our customers and partners – and our staff enjoy some rest and relaxation surrounded by their friends and family at the end of the year. Together we have managed to make this year another successful one. I would like to thank you for the trust you place in our company and wish you a happy start to 2025, which I hope will be a healthy and prosperous year for you.

Review of GlassBuild 2024

North America: Sleek Black Systems

Company At GlassBuild America in Dallas, Texas, at the end of September, Roto and Ultrafab presented their components and weatherseals designed for black windows and doors for the North American market.



Embracing North America trends: Roto North America unveiled their sleek, black, "X-DRIVE Onyx Casement System".



The Ultrafab team showcased their extensive range of durable weatherseals for window & doors.

Following 2023, this was their second joint trade show together, underlining the successful collaboration between the two product and technology experts.

X-DRIVE Onyx Casement System

Black window and door profiles are becoming increasingly popular in North America. In line with this regional trend, Roto presented its new "X-DRIVE Onyx Casement System". In this system, all powder coated visible components have a black finish for a more cohesive appearance. These include new black components like the HG06 casement hinges and the LB08 lock bar, which seamlessly integrate with the black LH19 contemporary lock handle and the X-DRIVE OP08 operator. Both the OP08 crank handle and operator arms have a black finish.

Another regional market highlight was the North American style Sliding Patio Door components, showcased in a black PVC profile and complimented by the 9200 traditional handle. The exhibited sliding element moved automatically thanks to the Autoslide Multi-Drive System, available in the North American market. www.rotonorthamerica.com

Hinged Door solutions

Several door lock solutions were showcased in the Hinged Door segment: the Roto Safe H | H650 mechanical multipoint locking system, the Roto Safe A | Tandeo mechanical-automatic multipoint lock, the Roto Safe E | Eneo CC electromechanical multipoint locking system and the HPD1 | 304 SST multipoint lock, which is only available in North America.



Roto and Ultrafab reinforced their #perfectmatch for the second year at GlassBuild 2024 in Dallas, Texas.

High-performance weatherseals

The Ultrafab products on display included the ULTRA CELL® recyclable MicroCellular Foam Seals. They effectively reduce noise and eliminate dust, water and air movement. The TRI-FIN® pile weatherseal for sliding elements was another highlight. With its three integrated pliable barrier fins, it effectively minimizes water and air infiltration. The seal's solid polypropylene backing allows for easy insertion, saving fabricators time and reducing waste. The black finish on these seals makes them the perfect addition to building elements with a black frame profile. www.ultrafab.com

Perfect match

By attending the trade show together, the companies, once again, demonstrated the benefits of integrating components from their respective product portfolios and tailoring them to meet customer-specific needs. With their extensive product range, Roto and Ultrafab are setting new standards and continuously increasing customer benefits, solidifying their essential roles in the North American fenestration industry.

Roto Patio Inowa in the Dutch town of Cadzand-Bad

Stormproof and smart to operate

■ **Sliding** In hotels on the coast all around the world, guests want to enjoy the view of the sea but at the same time make full use of all the space in their room. Sliding doors and windows make this possible. Roto Patio Inowa ensures that these can be reliably operated in the long term and only let as much weather inside as is actually wanted.

The North Sea coast of the Netherlands is a popular destination all year round for holidaymakers who like to be outdoors in the fresh air and appreciate the beneficial effects of the sometimes harsh climate. After spending a lovely day outside, guests can retreat to the comfort of modern apartments, like those at Hotel de Schelde. Even when the wind is howling and the sea is raging, the guest rooms are a perfect place to hunker down and relax. The tightly sealed sliding doors provide the best sound insulation and protection against bad weather conditions.

Space-saving sliding

Parallel Sliding systems with Roto Patio Inowa hardware ensure tight sealing and smart operating convenience in this hotel designed by Vanderbruggen Architecten en Heykon. 40 elements based on the Gealan-Smoovio® system were installed here. The circumferential gasket and the consistent gasket compression, which the Patio Inowa hardware achieves with its innovative closing movement perpendicular to the frame and through actively controlled locking points, ensure a cosy and inviting space without draughts.

The sliding sash is simple and safe to operate. Even children are able to easily turn the handle and slide the element open. How is this? The sash does not need to be lifted first in order to open the sliding element. Patio Inowa is an impressive piece of hardware, which was developed with a strong focus on operating convenience.

Highest level of corrosion protection – class 5

Salty sea air presents certain challenges, especially for hardware components in windows and doors. There is a risk of corrosion, which may stop them from working properly. This is why the demands of the hotel industry and its architects are becoming ever more exacting, specifically when it comes to the building elements and hardware. Hardware with class 5 corrosion protection (representing the highest level), such as Patio Inowa, and tightly sealed window designs are very popular for buildings on the coast in particular.

When the wind is howling and the air smells of the sea on the North Sea coast, holidaymakers enjoy a walk. And then retreating to the peace and warmth of Hotel de Schelde afterwards.



Making a small room feel bigger: ceiling-height sliding doors with Patio Inowa for a spacious feel.

Images: Daniel Vieser, architectural photographer, Hildesheim/Karlsruhe



➤ **Roto Patio Inowa: For information about the intelligent hardware for tightly sealed sliding systems**

www.roto-frank.com/en/patio-inowa

Gentle giants

For very large sliding doors, for example those in the restaurant, bar or wellness areas of a hotel, there is the Roto Patio Inowa | Max Parallel Sliding hardware, which can be used to produce elements up to a sash width of 3000 mm and a height of 3600 mm.

Does the leaf weigh almost 400 kg? That's not a problem for Patio Inowa | Max. Convenient operation is ensured by a ball bearing and height adjustable roller unit with integrated brushes and a comfort cam, which also has ball bearings. This combination ensures reduced rolling friction when the leaf moves.

When the element is open, the visual harmony is maintained. The hardware components, including subtle strikers and locking components covered by caps in the mullion, are hardly noticed. No components protrude into the opening. That's how impressively elegant technology can be.

Limitless possibilities

Roto Patio Inowa can be easily installed in all common profile materials – whether they are aluminium, timber-aluminium, timber or in PVC profiles like at Hotel de Schelde. Formats from 1:1 and 2:1 to 3:1, as well as different kinds of installation versions, are possible. Roto Patio Inowa can be used running inward and outward – no matter whether the sliding sashes are to be positioned on the left, right, on both sides or in the centre.

Take your thinking to a whole new dimension! Thanks to the extensive application range, Patio Inowa | Max opens up even more opportunities for you.

This innovative hardware makes sliding windows and doors of any format tightly sealed. It is the attractive yet space-saving alternative for windows and balcony doors in the entire facade and is the best choice for every climate zone.

Know-how

Correct spacer blocking

■ **Accessories** For a window element to work properly in the long term, the glass also has to be installed correctly – and durable products of tested quality must be used between the glass and frame. The Roto Glas-Tec product range offers long-lasting glazing blocks for any application.

Correct spacer blocking ensures that glazing is mounted safely, correctly and stably in the frame. What's more, it has the important task of enabling ventilation of the rebate area and vapour pressure compensation. High-quality blocks protect the glass edges and edge composite.

No small matter

Incorrect spacer blocking can have serious consequences: cracks in the glass, glass breakage, condensation in window panes and discolouration, delamination, leaking elements or elements with limited functionality annoy customers and jeopardise the good reputation of a window manufacturer. But how can you reliably avoid customer complaints and damage?



Premium glazing is effectively protected by proper spacer blocking and glazing blocks of the best quality.

Choice of a suitable glazing block variant

Premium suppliers like Roto offer a wide range of glazing blocks for different requirements. Our tested solutions were presented in issue 56 of Roto Inside:

- GL-NM – the basic block
- GL-SV – the block with ventilation channel
- GL-B – the block with brake membrane for vertical block positioning
- GL-IB – the block for triple glazing
- GL-UK – the block for high-quality insulating glass such as bulletproof glass, laminated safety glass, sound insulation and solar control glass
- GL-UKS – the block for facades and protruding substructures

Choosing the ideal block for the element and the glazing is a good starting point for quality assurance in the fenestration industry. But other factors also need to be considered.

Important: correct dimensioning

The glazing block chosen should always exceed the width of the glass by 2 mm. This ensures that the glass unit rests fully on the glazing block. This achieves consistent load transfer. The block should be at least 5 mm tall or take up 1/3 of the glass rebate if possible so as not to impede the vapour pressure compensation or drainage. Blocks are usually 100 mm long.

Important: correct positioning

The distance between a glazing block and the inside corner of the profile must be at least 100 mm, i.e. the length of a single block. The exact positions of blocks depend on an element's opening type and are explained in the Roto Glazing Guide. This is available to download on the website. For maximum load-bearing capacity, each block should be inserted all the way into the glass rebate. Positioning the block as far as it will go into the glass rebate ensures that it will not slide and move to a different rebate depth.

Spotlight on the glass rebate

If the glass rebate is not completely level – which is often the case with PVC profiles – we recommend using compensating blocks. This is because the pane should always be level and straight in the rebate. Unevenness and the resultant compressive load can cause the glass to crack or break. There are two possible scenarios: either the glass rebate is level and the glazing blocks can be inserted directly, or the glass rebate is not level. In this case, a compensating block should be used beneath each block in order to make the glass rebate level.

Vapour pressure compensation, ventilation and drainage

Functional openings for ventilation and drainage are required throughout the whole window system. This is because potentially damaging moisture formation can only be prevented if moisture can escape to the outside. Moisture can attack the glass rebate and cause timber windows to swell, for example. However, it can also damage the edge composite of the insulating glass pane and get into the space between the panes. The result? The panes fog up from the inside and become clouded.

Correctly positioned glazing blocks make ventilation and drainage more effective because they do not impede water drainage or vapour pressure compensation. If a profile with a smooth glass rebate is used, block variants with a ventilation channel must be used, such as GL-SV, GL-IB or GL-UK. Roto compensating blocks also help with vapour pressure compensation and drainage.

Contact barrier

Glazing blocks prevent the glass edges and edge composite from coming into contact with the profile in order to prevent damage to the glass edge. So far, so clear. But a lack of material compatibility between the edge composite of the insulating glass pane and the

glazing block can be just as damaging to the glazing. Do you want to find out more? Then we recommend reading our article in the next issue of Roto Inside. This will be published in April 2025. Or get in touch with us – Roto Sales would be happy to help, especially if you need to urgently clarify important questions about optimum glazing methods.

So small, yet so important

Glazing blocks quite literally play a supporting role in the fenestration industry:

- They ensure a constant distance between the glass unit and the glass rebate.
- They therefore support optimum stress distribution and constant ventilation of the glass rebate.
- They distribute the weight of the glass unit evenly over the sash and frame so that these reliably support the weight of the glass unit in the long term.
- They transfer forces to the profile, hardware and building structure.
- They therefore ensure that glazing works correctly and that windows and doors are convenient to operate.
- They keep the sash and frame stably in position due to the pressure diagonal created during spacer blocking.
- They therefore ensure fault-free functioning in the long term.

Do you have any questions? We'd be happy to help!

Only an expert should select a block variant and carry out spacer blocking. Technical Guideline no. 3 "Packing of Glazing Units" issued by the Glazier Trades must be complied with. Roto would be happy to help you with any questions which may crop up regarding your window system.

Two things that belong together: glass and frame. Correct spacer blocking prevents damage and complaints.



➤ **Comprehensive technical documentation on spacer blocking**

ftt.roto-frank.com/en/glazing-guide

Roto Solid B door hinges

From functional specifications to a product range

■ **Door** Door hinges are essential for the functionality, stability, safety and design of doors. In an interview, our Roto experts explain what characterises the Solid B butt hinges from the P series, why the hinges have been developed, and what role they play in the appearance of doors.

An interview with Product Manager Door Theresa Oßwald, Martin Pauritsch, Head of Product Development Door, and Tom Vermeulen, Head of Sales Door.



Martin Pauritsch and Theresa Oßwald at an automatic production line at the Roto Window and Door Technology production plant in Kalsdorf, Austria

Roto Inside: What gave you the idea to develop this kind of extensive product range?

Theresa: In most Roto products, the smart Roto technology is concealed in the door or window and, wherever possible, is integrated into the architecture so that it goes unnoticed. This isn't the case with door hinges. As pivotal elements, they are essential for a door to work properly and are visible. At the same time, there is increasing focus on doors as a design object. This is why it was important for us to develop attractive hinges that offer the best technology and quality at the same time.

Martin: Roto is always driven by a holistic approach. Our development objective was to give manufacturers of main doors a complete range for all profile versions with the new hinge series.

Tom: To ensure that we actually meet all customer requirements, the hinge range should and indeed must be very extensive. We managed to achieve this. Thanks to their slim shaping, Solid B hinges from the P series fit seamlessly into any door design, with no offset outlines, regardless of the hinge setting.

Roto Inside: What particular strengths and advantages characterise the hinges?

Martin: The adjustment mechanism integrated into the hinge roller ensures comfortable and continuous height, lateral and gasket compression adjustment. Alongside the appearance, the technology is critical. A door has to be easy to use and function reliably over many years – even when subjected to intensive use in apartment buildings.



The Roto Solid B butt hinges from the P series for PVC, timber and aluminium entrance doors: 218 P, 222 P (two-part), 318 P and 322 P (three-part). The Solid B product segment is rounded off by the 224 A and 324 A butt hinges, both of which were designed specifically for aluminium doors. Both hinges can be clamped and mounted directly.



Theresa Oßwald and Tom Vermeulen in the showroom at Roto Window and Door Technology headquarters in Leinfelden-Echterdingen, Germany

Theresa: No matter whether the doors are wide or narrow, light or heavy, Solid B offers various options for many different designs. With the uniform design of all hinges, the appearance of doors with different weights can be tailored to a property. And it goes without saying that the hinges also help with burglary inhibition. With the 222 P and 322 P butt hinges, doors can be produced in burglary protection classes RC 2 and SKG**.

Roto Inside: Let's talk about ease of installation and simple adjustment – what do the door hinges have to offer here?

Theresa: The difficulty with butt hinges is that there isn't much space available to adjust them. The P range overcomes this problem and offers simple installation and adjustment.

Martin: And the most important thing: no gaps are formed between the leaf and frame hinge when adjusting the door because the adjustment mechanisms are integrated in the hinge roller.

Tom: The integration of the adjustment mechanism offers another advantage: all adjustments are easy to make without unhinging the door, while the results can be visually inspected straight away. Large adjustment distances make it easy to compensate for production and profile tolerances. They also ensure that the door works without any problems for many years.

Roto Inside: How did the project to develop this kind of hinge range come about?

Theresa: It came about through actual requests we received from customers. They were looking for design solutions with delicate butt hinges and a large adjustment range.

Tom: Previously, Roto only offered rebate-screwed butt hinges for doors up to 120 kg. We wanted to respond to the trend for ever larger doors. The 322 P three-part butt hinge, for instance, is suitable for PVC, timber and aluminium entrance doors up to a sash weight of 160 kg.

Roto Inside: How would you describe the development process to us?

Martin: At Roto, projects are worked on in interdisciplinary, international teams formed by members of Product Management, Sales, Development and Production. Together with the Door experts from Kalsdorf, we defined relevant requirements in workshops.

With the experience from the markets and previous developments, the team came up with a complete range which covers almost all applications in the various markets.

Alongside the breadth of the range, the other main requirements were that the range should not be dependent on the specific profile, as far as possible, and that the hinges should be adjustable in three dimensions. And all this in a market where there are already many patents for hinges. We successfully overcame this challenge through close collaboration with the Patent department and upped the ante. We accomplished this by integrating the adjustment possibilities in the hinge roller. This way, the hinges can be adjusted when the door is closed, meaning that you can see the results of what you're doing. This saves a lot of time when making adjustments!

Tom: And that's not all – we are continuously working on meeting customers' needs. For example, we received a request to conceal as much of the technology as possible. We managed to come up with an impressive solution: the cover sleeves with their long leg not only conceal all the mechanics, fabricators now have complete flexibility when it comes to the colour scheme. The reason? With three-part butt hinges, only three cover sleeves have to be coated for a uniform colour concept and no longer nine components.

Roto Inside: The Solid B door hinges from the P series are produced in Kalsdorf. Why is this?

Martin: Our Kalsdorf plant boasts the most expertise in zinc die-casting.

Theresa: Thanks to in-house toolmaking, we can ensure maximum quality when producing the hinges. And Kalsdorf can also guarantee ultimate corrosion protection. It was difficult to comply with all of the requirements and European standards stipulated in the specifications. But because the Design department and test laboratories are located near each other, it was possible to develop this incredibly extensive product range of tested quality at the Kalsdorf site in a relatively short space of time.

Tom: We are certain that the P butt hinge range offers everything that could possibly be needed to make installation simpler and safer. A greater focus on design and guaranteed long-lasting technology. We're proud of our new range!



Roto Solid B | 322 P three-part butt hinge



↗ This is how rapid door adjustment works without unhinging the door

ftt.roto-frank.com/de/solid-b-montage (YouTube)

Space-saving outward opening of windows

Safe handling with FRH Uni fully reversible hinges

■ **Outward Opening** Homes are often becoming more compact and taking up less space, especially in urban areas, due to high costs and huge demand. In such cases, outward opening swing windows are popular with planners and investors as they save space. Fully reversible hinges from the Roto FRH Uni product range make these windows reliable and convenient to use.

If the window sash opens outward, every square metre of a room can be used, even during forced ventilation. The fully reversible hinges from Roto reliably keep it in various opening positions and simplify window cleaning. When opening the window, the sash automatically locks into the first position. The user presses the locking knob on the restrictor to move the sash from this position to the second ventilation position.

Cleaning made easy

If the outer side of a swing window needs to be cleaned, the locking knob is pressed again in the second ventilation position, the sash is held at the top and fully turned around. Since the sash swings outwards when turned, damage to furniture in front of or next to the window is reliably prevented. Cleaning the window is easy and safe.

Handle secured as standard

The window handle from Roto for outward opening windows comes with a push-to-open function as standard for locking the handle or optionally in a lockable version. The ability to lock the handle is especially important for families with children living in multi-storey buildings. If it is large enough, a window with FRH Uni can also be used as an emergency exit leading to an external escape route.

Tight sealing

Regardless of the size, on every outward opening window the sash is pressed against the frame in strong winds, creating a more tightly sealed window. This is a feature which pays off in markets where energy costs are high and helps ensure draught-free living comfort.

The integrated gasket compression adjustment of the TSL security espagnolette simplifies window adjustment during installation and helps make the window more tightly sealed. For large window formats, we recommend installing a centre closer which further increases the gasket compression.



Turn the handle and open the element – push the sash outwards and turn it fully to clean the outer side.

Two versions

If the standard version of an FRH Uni Fully reversible hinge is installed, the locking knob of the restrictor is pressed for any sash movement when opening and closing. Without operating the restrictor, the sash firstly locks into the two fixed lock-in positions and is held there. The open sash is prevented from slamming shut unexpectedly, for example due to draughts.

With a fully reversible hinge developed specifically for public spaces, the sash is closed by simply pulling it shut, without operating the locking knob on the restrictor. The window opening can be limited by an optional blocking device in the operator track. This prevents the window from being opened further and reaching the cleaning position, and can be placed in any position. A turn lock is integrated into this version too, in order to reliably prevent the sash from slamming shut by itself.

Extensive portfolio

The Roto FRH Uni range includes fully reversible hinges and accessories for outward opening swing windows made from

any frame material. They have been tested with elements up to a sash weight of 80 kg, sash width of up to 1600 mm and sash height of up to 1700 mm.

An optional stop block limits the backwards movement of the sash when cleaning in the cleaning position. Optional guide blocks, which are screwed onto the frame and sash, make it easier to handle larger sashes and keep them at a right angle to the frame.

RC 2 even in the standard version

The FRH Uni fully reversible hinges and the reverse-action TSL security espagnolette from the product range are incredibly easy to install.

With these components, an outward opening swing window is compatible with RC 2 and PSA 24, as the espagnolette has a double locking cam. A security lock with up to eight reverse-action twin mushroom cams and four strikers ensures even better burglary protection.

Class 5

The fully reversible hinges from the FRH Uni product range meet the requirements of durability class 5 in accordance with DIN EN 13126-11:2008 over 25,000 cycles. Their high-quality Roto Sil coating guarantees corrosion protection in accordance with DIN EN 1670, also class 5 which represents the highest level.

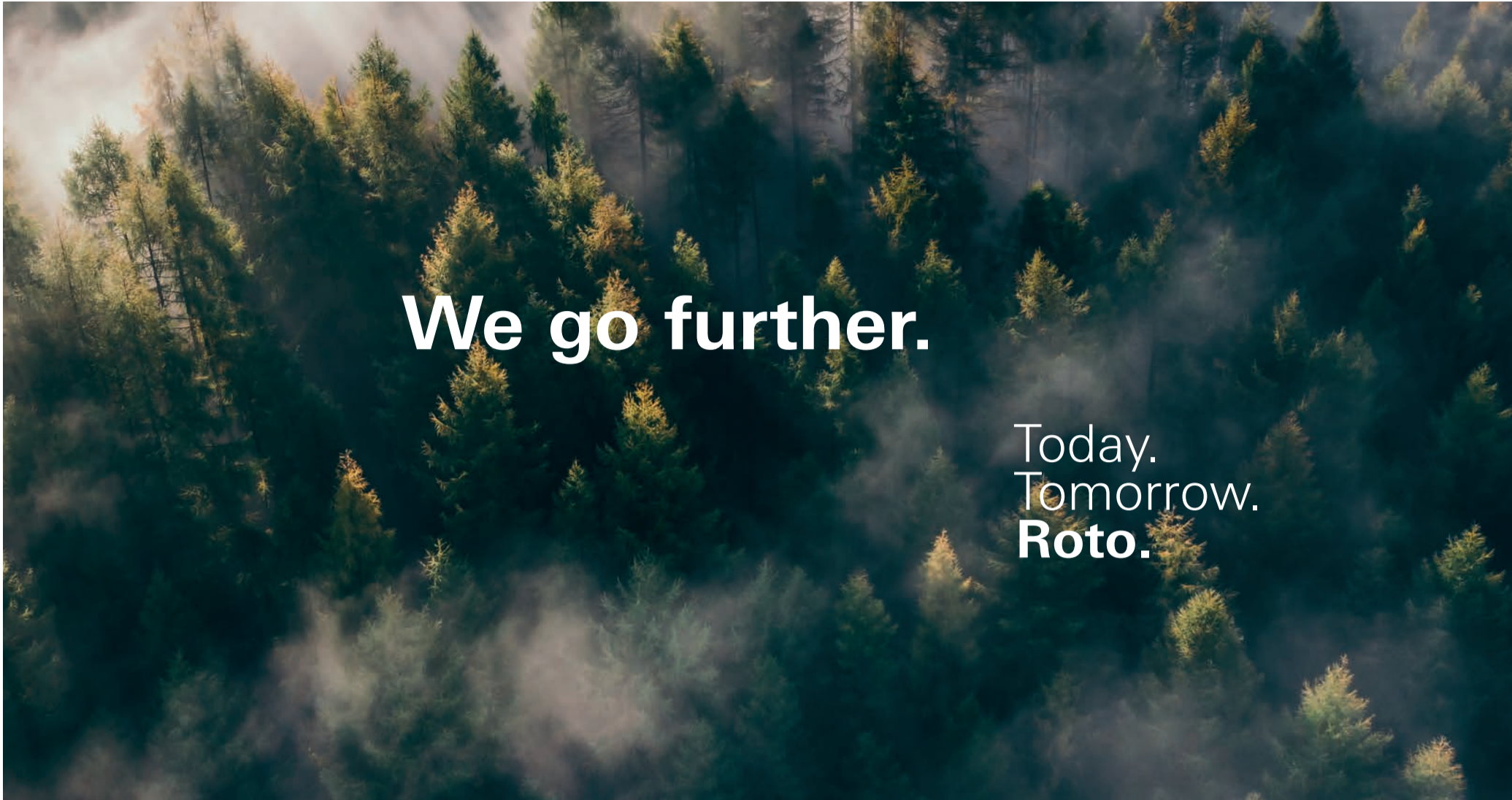


➤ Fully reversible hinges for outward opening windows

ftt.roto-frank.com/en/FRH-Uni



Roto FRH Uni fully reversible hinges and accessories for outward opening swing windows are available for all frame materials.



We go further.

Today.
Tomorrow.
Roto.

Towards a sustainable future

We integrated the group-wide sustainability strategy of the Roto Group into the business strategy of Roto Window and Door Technology and have been concentrating on making our company future-proof for many years now. We consistently prioritise benefits for our customers and partners and adhere to lean principles.

Our sustainability mission

We embody social and ecological sustainability along our entire value creation chain. We always operate in close cooperation with our customers and partners and, by doing so, develop future-proof products and service solutions.

We are only able to do all this with the support of our staff. We have created a pleasant working environment where every member of staff feels appreciated in order to lay the groundwork for a long-lasting transformation of our company.

Value-based

Our common values represent an identity that has enabled Roto, as a German company, to become a service leader. Our company management is based on the principles of effectiveness and adherence to values.

Our conduct and our work are based on principles which guide us. We don't just do the minimum required by law, but we also live up to our claim of cultivating the very best reputation and acting responsibly – transparently enshrined in our Code of Conduct.

ftt.roto-frank.com/en/code-of-conduct

Action-oriented

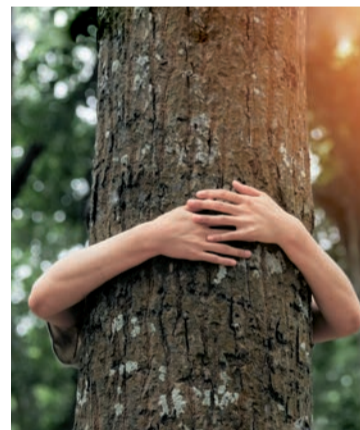
The four action areas we defined help us to apply the topic of sustainability in our daily operations and to actively act with sustainability in mind.



Customer-focused solutions

We generate sustainable and demonstrable benefits – safe products for fabricators, customers and the environment. We create verifiably durable products in their application range. Product quality is ensured throughout the entire value creation process and product life cycle.

ftt.roto-frank.com/en/customer-solutions



Comprehensive climate and environment protection

We purposely design our production, operating and logistics processes to be energy efficient and we make sure to purchase starting materials which are made in a climate-friendly and eco-conscious way. We promote the sparing use and reuse of resources along our value chain, paving the way towards a circular economy.

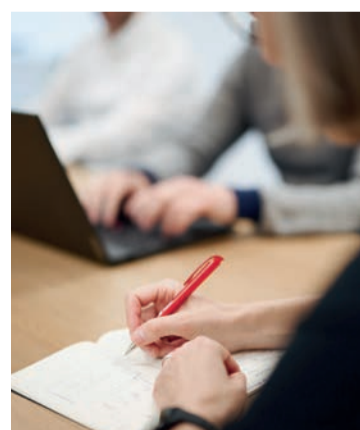
ftt.roto-frank.com/en/climate-protection



Dedicated and effective employees

The basis of our success is formed by a safe and pleasant working environment where every member of staff feels appreciated, we promote their individual strengths, and our diverse workforce is given opportunities for continuous development. We are committed to equal opportunities.

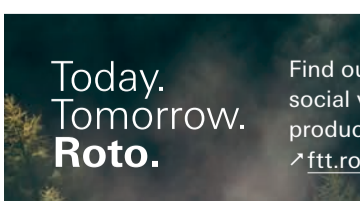
ftt.roto-frank.com/en/employees



Responsible corporate management

Our values form the basis for responsible business practices. Through transparency and collaboration, we cultivate an atmosphere of mutual trust. We are committed to maintaining our integrity and to abiding by all applicable legislation and ethical standards. With this in mind, we strive for continuous dialogue with our staff and suppliers. This way, we can promote sustainability in our industry and meet our customers' needs.

ftt.roto-frank.com/en/corporate-governance



Find out more how Roto Window and Door Technology embodies ecological and social values on a daily basis and sustainably develops and produces long-lasting product solutions.

ftt.roto-frank.com/en/sustainability

Saves space – opens up rooms – protects

Modern hardware for architecture with added value

■ **Company** If building elements and hardware are selected for a building with the architecture and function of the room in mind, it is easy to integrate important aspects like security, energy efficiency and operating convenience with Roto.

This is guaranteed by the extensive range of components for PVC, timber, timber-aluminium and aluminium building elements. Even standard versions in the hardware product ranges for elements of all opening types cover an impressive range of applications.

Light and air indoors

If window sashes should be prevented from protruding into the room, we recommend either outward opening windows or sliding systems. What's more, large windows, balcony doors and sliding elements bring a special atmosphere to naturally bright rooms.

For instance, the Roto NX | Power Hinge hinge side for sashes weighing up to 300 kg helps ensure that large and heavy timber Turn-Only doors and windows enjoy a long service life while requiring minimal maintenance.

The same is true of Roto Patio Inowa | Max, the Parallel Sliding system completely mounted on ball bearings. It guarantees effortless operation, even for installations in XXL format up to a maximum sash weight of 400 kg. At the same time, it creates a tight seal on sliding elements, while keeping cold, rain, storms and noise outside.

Reliably secure

Roto sliding and Tilt&Turn hardware can be combined with many different security components. If burglary inhibition in accordance with RC 3 is required, this can be achieved for example by Turn-Only and Tilt&Turn windows with the Roto NX hardware product range, while specific configurations also make higher resistance classes possible.

With the TiltSafe function, even a window that is open in the tilt position meets the requirements of resistance class RC 2. Sliding elements, too, can be produced in RC 2. In spaces with many constantly changing users, TiltFirst technology (tilt before turn) provides greater safety for users.

Come on in!

Entrance doors are pivotal elements of every building. The Roto Door portfolio offers a complete selection of external doors made from PVC, timber and aluminium. All system components are perfectly coordinated. Multi-point locks and door hinges ensure that every entrance door works reliably and has a long service life.

Perfect harmony

For a modern, minimalist design, the Roto hardware technology can be fully concealed in the window or door rebate, even if the frame profiles are very slender and increased burglary inhibition is required.

Handles and door hinges are available in many colours and surfaces for all frame materials. This gives each building element its unique look and creates a real ambience in rooms and buildings.



Whether a ceiling-height sliding system, Tilt&Turn balcony door or main door, Roto offers hardware solutions for building elements made from any frame material, which blend seamlessly into the architecture to provide added value. The image shows elements with concealed hinges and hardware which allow a clear view outdoors.

Pure inspiration

The quality of the hardware impacts the energy efficiency and functional safety, the burglary protection and operating convenience, and the durability of windows and doors in general – and does so directly.

Roto offers a tested hardware solution for elements of any shape and size.

The "Connecting rooms with Roto" brochure gives examples of modern architecture where the building elements are moved by Roto hardware technology.

Be inspired and download the brochure in our media portal.



➤ **Connecting rooms with Roto**

ftt.roto-frank.com/en/connecting-rooms



Harmoniously connect inside and outside: the Roto Patio Life sliding system and the Roto NX | Designo concealed Tilt&Turn hinge side in a zero-energy house in the Swabian Alb.



Roto NX Tilt&Turn hardware in the Plochingen music school



Welcome to Roto City!

Roto at BAU 2025

■ **Company** You can discover building- and room-specific hardware solutions for yourself from 13th to 17th January at BAU 2025 in Munich. We look forward to seeing you at stand 303 in hall C4!

At our section of the trade show, which is larger than ever before, you can look forward to a lively small city with realistic room situations for private living and public buildings – this is our Roto City.

All opening types and frame materials

We will be showcasing hardware technology from all Roto product groups for windows, sliding elements and entrance doors. One thing you can be certain of is that the product solutions on show will meet all specific functional, comfort and design requirements in all opening types and frame materials.

These will be staged in different room situations, giving you the chance to experience for yourself the benefits of the hardware functions together with your Roto specialist advisor at the exhibit and to discuss all matters relating to the products – obviously in the language of your choice.

#perfectmatch

Out of our variety of solutions for building elements of any opening type, two additional components come together to make a perfect match for your windows and doors: our seals and our product range for safe and correct glazing. You can also find out more details about these specialist areas at our trade show stand.

An urban backdrop at BAU 2025 in Munich: welcome to Roto City, hall C4, stand 303!

Visit Roto City online

After BAU is over, the product topics that were presented there will be showcased at the replication of our trade show stand in our digital Roto City. These can be viewed at any time as part of a consultation given by your Roto advisor. This allows you to take a more detailed look at aspects that are important to you using the virtual tour of the trade show or to familiarise yourself with the product topics if you were unable to attend BAU.

Close-ups on social media

Visit us virtually on our social media channels LinkedIn and Instagram. Join us as we get ready for the trade show and experience the Roto stand for yourself from 13th to 17th January 2025.

Discover the products and tailored hardware solutions that we will be presenting at our stand. We will be sharing live impressions directly from our stand over the five days of the trade show. Using the hashtag #RotoCity, you can share your enthusiasm about Roto City and view attendees' impressions of the trade show in real time.



ftt.roto-frank.com/en/linkedin



ftt.roto-frank.com/en/instagram



Berg System Kft., Hungary

Reinforced for the future

Diverse formats and colours: elements from Berg System for a nursery (image below)

■ **PVC István Stefán, owner and managing director of the Hungarian company Berg System Kft., is sure of one thing: "Roto provides us with innovative and reliable products which put us in a good position for whatever tomorrow might bring." And it has done so since the company was founded in 2013.**

25 years of experience in the building element market. 10 years of in-house production. In 2023, István Stefán, owner and managing director, celebrated the successful development of Berg System together with his team.



Rapid change on the market

The Hungarian market has undergone extreme and rapid change since Berg System Kft. was established. However, this transformation was predicted and something Stefán was counting on. Architects and builders realised that by choosing the right windows and doors, they could increase the value of their property and significantly improve the way in which the individual rooms are used. "We receive orders for room-specific windows which offer a high level of comfort. Word has spread of how many advantageous functions we as a Roto fabricator can offer."

Roto NX as a pioneer in Hungary

In 2018, Berg System became the first window manufacturer in Hungary to transition to Roto NX, and has never looked back since. "The product range is continuously being extended and covers everything we expect there to be a demand for," explains Stefán. And that's not all – staff in production like NX because of its ease of installation. Dealers are pleased with the fault-free functioning and the high level of operating convenience. As for Stefán, he is pleased that he can now meet almost any customer requirement every day.

"We can produce even the most unique element with Roto NX."

Demand for "normal" energy-saving windows for renovations has plummeted in Hungary recently. The new government funding for old existing buildings, which has been available since July, might change this, but that remains to be seen. However, there are customers who won't be deterred by high interest rates or increased inflation because they are so determined to attain their dream lifestyle. But it is precisely these customers who are looking for something special and for windows with innovative functions. "The fact that we at Berg System have a lot to offer in this regard thanks to Roto NX is paying off for us."

Flexible and economical

Berg System Kft. currently has 46 members of staff, many of whom have long-standing professional experience. Their satisfaction and productivity are important to István Stefán. Together, they are always looking for opportunities to improve processes, from order intake to final assembly. If you want to offer custom solutions for private residential construction, flexibility in production is the most important thing. But this must not be to the detriment of economic efficiency. "With the Roto NX range, Roto actually provides us with the best possible support on both of these fronts. At any rate, our staff in production say that production is quicker and more reliable than with any other hardware. And there's no reason for me to doubt them."

If new construction activities gain momentum again in Hungary, the demand for elements with triple glazing is likely to grow significantly too. Berg System is well prepared for this. All components required to produce elements with functional glazing and higher sash weights can be obtained from the profile supplier and from Roto within the standard delivery time. "This means that we can easily adapt if new construction activities pick up again. At the moment, around 80% of our windows and doors are used for renovations."

Winning burglary protection

Stefán observes that the demand for windows and doors with increased burglary protection is continuously growing. This is another development that he was well equipped for as a Roto customer.

"Roto makes it easy for us to produce elements in RC 2 economically."

The issue of burglary protection for main doors has become hugely important. These doors should always be equipped with multipoint locks. His production staff finds it easy to process the Tandeo locks from Roto. The businessman is excited about the Upgrade-Kit presented at Fensterbau Frontale. "This means that we can offer premium main doors with electronic opening without needing to keep a different lock in stock at the same time. This couldn't be better for us and our customers. Tailored functions with low stock levels."

For buyers of main doors, their design is just as important as the burglary protection. "Dark colours and minimalist designs are popular in Hungary too," reports Stefán. Against this backdrop, Berg System uses the slimline door hinges from the Solid B range in production. The hinges are easy to adjust using the adjustment mechanism, integrated in the roller and are ideal for keeping pace with the latest design trend.

István Stefán has been involved in the founding of a window manufacturing company since the mid-1990s. He was still working for the company when the founder decided to establish a partnership with Roto, which continues to this day. "For me, it went without saying that I would also work with Roto when I had my own business due to the good experience I'd had with the company." His time came in 1998: Stefán firstly opened a building element business with two sales offices in Budapest, followed by another in Eger. In 2013, he made the decision to produce windows and doors in-house.

The benefits of experience

"I'm lucky to be surrounded by a very talented and dedicated team. Everyone was just as keen as me to take this potentially risky step and start production ourselves." From his many years of experience in trade, he learned which components and machines make it possible to produce windows and doors of exceptional quality. He recognised the strengths and weaknesses of existing products and had a clear objective:

"We produce windows and doors that keep the promises made by us and our dealers."

Brand-conscious

The decision to process Roto hardware represents, on the one hand, a decision in favour of a brand with an excellent reputation and, on the other hand, a decision in favour of quality and flexibility. "We were new to the market but every dealer we wanted to sell our windows and doors through was familiar with Roto." Although the business started production "on a small scale", the assistance it received from Roto from the very outset was the same as he experienced previously. "The experts from the company were generous with their support and advice."



Since establishing in-house building element production in 2013, the team at Berg System has placed its full trust in Roto.



Plans to make the switch: Roto Patio Inowa

And what is the businessman's medium-term objective? "We want to start producing sliding systems with Patio Inowa as soon as possible because we have been so impressed by this hardware. The groundwork has been laid and we are looking forward to production launch. I know that there is huge demand for tightly sealed sliding windows and doors. The systems equipped with Roto Patio Inowa look good and save space in the room. This is what many customers are looking for." And like he already knows, the sliding hardware is installed and works in a similar way to Tilt&Turn hardware. "So it will definitely be easy for our team to start producing Parallel Sliding elements."

Roto City

To conclude, Stefán reports that he is planning to invite trade partners, along with their Roto contact, to the virtual Roto City to train them in all the new developments that Berg System is currently implementing. He appreciates using this digital tool in collaboration with his Roto contact because it makes it easier to train his own employees, as well as his trade partners. "The displays and animations provided there are precise and easy to understand."

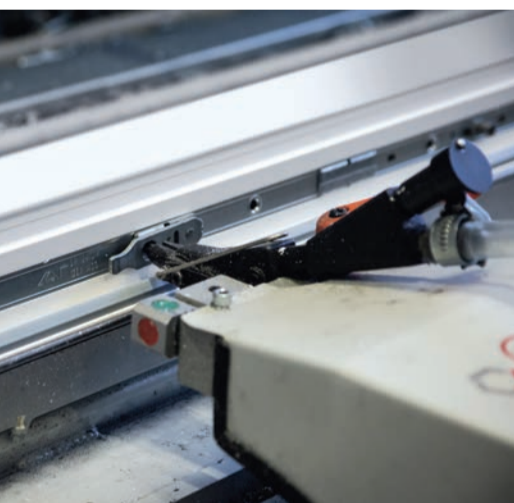
The businessman has experienced a whole host of major challenges over the past 24 months – but this hasn't dampened his optimism in any way. Stefán summarises the work that has been done this year as it draws to a close: "We use the period when demand is low to extend our product portfolio. It helps us that our relationship with Roto has become ever closer in the 11 years since the company was established. We need innovative but technically sophisticated, easy-to-install hardware so that we can continue to grow. We get this from Roto." www.bergsystem.hu

Available worldwide: accurately configure hardware sets 24/7

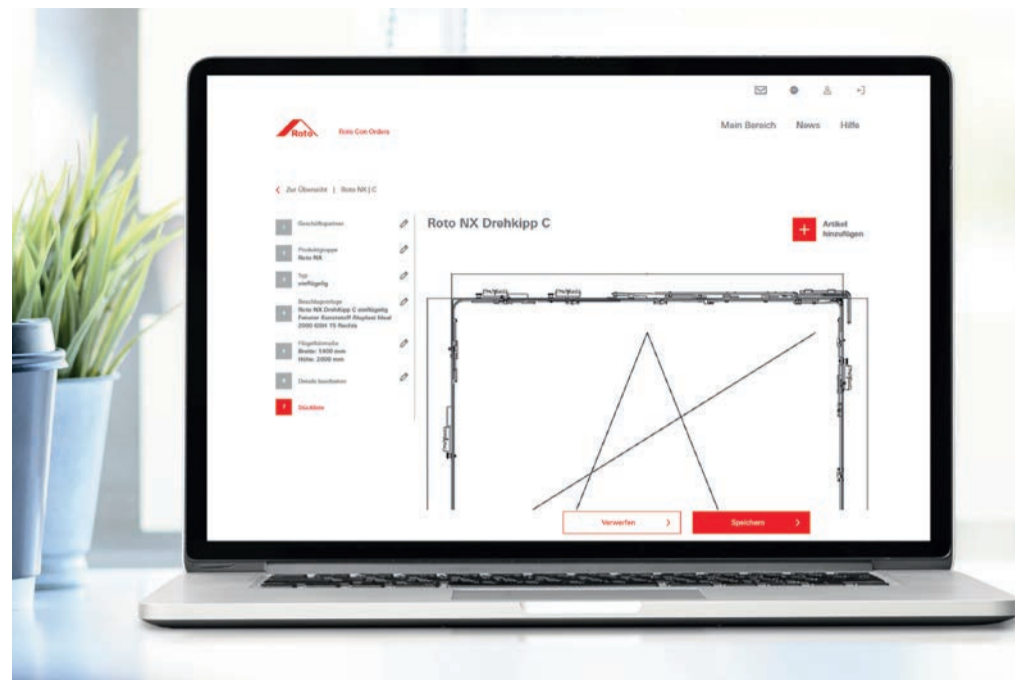
Roto Con Orders 2.0 with new features



In addition to windows and the main door with a timber finish, Berg System also produced the conservatory.



With a state-of-the-art profile machining centre (top image) and manual hardware installation by experienced staff, Berg System counts on efficiency, flexibility and quality.



The Roto Con Orders online configurator makes designing hardware simple, for example with the Roto NX | C concealed hinge side.

■ **Service** Are you new to the Roto Con Orders hardware configurator? Now it couldn't be simpler to get started. "How-to" videos and an e-Learning show first-time users how to work with this online tool and explain its whole range of features.

Roto Con Orders is available in 17 languages and is used all around the world. The smart user interface facilitates intuitive use. Kornél Mayer, Head of Market Ranges and Range Marketing for Customers and Markets in Southeast Europe and the Middle East, recounts how enthusiastic Hungarian building element manufacturers are about using it: "Roto Con Orders 2.0 has been available in Hungarian since April 2023. A huge number of Hungarian manufacturers use the configurator and I'm constantly being told about truly impressed users."

Customer-specific settings save time
Most of them use individual settings which are easy to configure in Roto Con Orders, continues Mayer. "Each user enters their own hardware data in Roto Con Orders depending on the Roto hardware product ranges they use. All the details entered can be configured on a customer-specific basis and are unique to each customer. These customer-specific settings speed up the planning of a hardware itemisation, for example when it comes to the profile system used."

The fact that Roto Con Orders as an online tool is continuously updated and managed centrally makes it modern yet practical. Maintenance on the configurator runs in the background. There is no need for manual installation.

Planning hardware sets accurately
Roto Con Orders supports fast and accurate planning of hardware sets for windows, doors and sliding systems. The configurator guarantees technically correct results, as each hardware itemisation is tested for plausibility by comparing all parameters. The responsive programming of the configurator ensures that the hardware itemisation can be created on any digital device.

Do you not yet have any experience with configuring an RC 3 solution with our Roto NX Tilt&Turn hardware? No problem! Roto Con Orders makes it easy for you to find and order all of the hardware components you need. The graphical representation of the hardware shows exactly where which component must be positioned and installed. Just a few operation steps are all it takes to produce a precise

parts list for a hardware solution, including a technical illustration. You can export this in PDF, Excel and CAD data formats and integrate it into offers or orders.

Integrated digital processes

If your trade partner offers this option, you can transfer a configuration's data directly to your shopping basket with your dealer – a service that reduces the work involved in placing orders and even further reduces potential sources of error. Dealers wishing to offer their customers this service, can provide it jointly with Roto. Your consultants from the Roto Sales department will provide support with the preparations and ensure further coordination.

Always up to date

Roto has been creating ideal conditions for day-to-day work by constantly updating the data in Roto Con Orders. Users can be certain that the data of new products will already be saved by the start of delivery. The data of the latest products to be added to the Roto NX range, such as the Roto NX | C concealed hinge side, has already been input.

The "News" section of the hardware configurator provides information about newly added Roto hardware, as well as new content and functions integrated in Roto Con Orders.

Joint configuration – creating a user group

The hardware configurator makes it possible to save hardware templates and data in a separate archive. By doing so, multiple users can, on request, simultaneously access the shared data pool.

Specifically, the Roto Con user asks their contact at Roto who is responsible for the configurator, known as the "key user", to create a group. Any number of employees can be added to this group, for example also a dealer's team. Then all members of the group have access to each other's projects and can work on planning together. The creator of each project is displayed. This way, Roto Con Orders also acts as a document management system and platform for collaboration.

You ask – everyone benefits

The FAQ page is being continuously added to – not only does each and every question asked by customers receive a response, this information is collated so that all other users can benefit from it in Roto Con Orders. Using an integrated contact form, you can ask questions about hardware configurations and the configurator or can send your suggestions for the tool to the Roto Con Orders team.

e-Learning

If you're still unfamiliar with Roto Con Orders, you can get started with e-Learning. The e-Learning with audio narration and subtitles is available in German and English on the Roto website.

Register and sign in on the website – and you're ready to go! Starting with the first steps in Roto Con Orders through to working with projects and data export, you will not only learn how to sign up for Roto Con Orders but also, more importantly, what benefits this hardware configurator has to offer you. The e-Learning takes you step by step through the tool and is full of useful tips and tricks. The usual control elements allow you to adjust the playback speed of the e-Learning to suit your preferences.

Get started any time, free of charge

If you haven't used Roto Con Orders yet, don't miss out on the benefits of the hardware configurator any longer. The Roto Sales department can grant access to the hardware configurator for any customer at any time. It goes without saying that Roto Con Orders is still available to all customers free of charge.

Roto Con Orders web-based hardware configurator

- 17 languages
- Available worldwide 24/7
- Responsive design
- Automatic data backups
- Exact parts lists, including technical illustrations
- Export in PDF, Excel or CAD data formats
- Hardware configurations in user groups possible
- e-Learning and "how-to" videos

Would you like to use Roto Con Orders too? Get in touch with your assigned Roto Sales representative.

Kornél Mayer,
Head of Market
Ranges for
Southeast Europe
& the Middle East,
Roto Elzett Vasalat-
kereskedelmi Kft.



➔ **Roto Con Orders online hardware configurator including link "Start e-Learning"**

ftt.roto-frank.com/en/rco

For all profile systems with a 16 mm groove

Everyday helper: the Roto NX comfort window



Flexible production with Roto: three components have been designed for the Roto NX comfort window.

■ **Tilt&Turn** A Tilt&Turn window equipped with Roto NX is intended to ensure ease of operation at all times. Our components for what is known as a “comfort window” improve the operating convenience in certain installation situations and for people with disabilities.

Out of the three components developed specifically for the comfort hardware, only one is visible: an extended ergonomic window handle. It improves the lever effect when the handle is operated and is fitted to the bottom horizontal profile of the sash. This means that it is easier to access if the user has to reach behind a piece of furniture or, for example, if a wheelchair user finds it difficult to get to a higher handle.

Simpler opening and closing

A forcibly controlled scissor stay and a compatible espagnolette with integrated mishandling device have also been developed specifically for the Roto NX comfort window. The scissor stay ensures that the window is noticeably easier to open and close. This is because operating the handle automatically moves the window sash to the tilt position, as this controls the scissor stay via the hinge side.

For all profile systems with a 16 mm groove

The components required for a Roto NX comfort window are available for profile systems with a 16 mm groove made from any frame material. These components with their installation positions are shown

in the “comfort window” hardware template during the configuration process using Roto Con Orders. The ergonomic window handle comes in various colours as standard for PVC and timber windows.

Monitoring of window opening

MVS contact elements from the Roto E-Tec Control range for electronic monitoring of a window can also be integrated into a Roto NX comfort window. As soon as the magnetic field of the wired contact element is interrupted, a signal is sent to the alarm centre. Roto offers contact elements for concealed installation for timber and PVC windows as well as for surface-mounted installation for all frame materials.

Tested quality

Roto offers a ten-year performance warranty for all components of the Roto NX comfort hardware. The hinge sides are classified in accordance with DIN EN 13126-8. Tests have been successfully completed with sash weights of up to 50 kg so far.



If the window handle on a Roto NX comfort window is turned 180° anticlockwise, the forcibly controlled scissor stay ensures that the window sash effortlessly moves to the tilt position.



➤ **Economical, safe, convenient, design-oriented: overview of Roto NX**

ftt.roto-frank.com/en/nx

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ftt.communications@roto-frank.com

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Agreement: Daniel Gandner

Editorial board:
Sabine Barbie, Daniel Gandner,
Fabian Maier, Eberhard Mammel

Text:
Comm'n Sense GmbH
roto.inside@commn-sense.de

Design: Mainteam
Bild · Text · Kommunikation GmbH
info@mainteam.de

Printing: Offizin Scheufele
Druck und Medien GmbH + Co. KG
info@scheufele.de

Project management:
Sabine Barbie
roto-inside@roto-frank.com

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To improve the reading flow, only the masculine form is used in some parts of the text.
Within the meaning of equal treatment, the corresponding terms apply neutrally to all genders.