



# TECHNO

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## gramm

Durable  
Large-format  
Secure locking  
up to RC 3





Jürgen Pratschke

Herbert Roland Steiner

Dear business partners and friends of our company,

Like many other industries, the window industry, the supply industry and the hardware industry are affected by complex economic developments which manifest in various forms. Crises in specific countries have a direct or indirect effect on growth in other markets. According to forecasts by economic experts, we cannot assume that we can rely on the rate of growth seen in previous years over the medium term. The economic climate has become and is still becoming unpredictable and market volatility continues to increase.

To continue to offer customers with an optimal performance package in the future and to assume responsibility with regard to the company, we have started an extensive restructuring programme. The aim is to structure all processes so that our customers and MACO can derive maximum benefit.

The programme also involves streamlining the organisation and utilising synergies between the various national and international companies in the MACO Group. Our employees' skills will therefore be developed in line with the requirements of our strategic direction. We strive to employ the best employees as a benchmark in all roles.

However, MACO does not merely aim to optimise structures and costs, although these are the prerequisites for successful business.

Instead, MACO wants to shape the future. We are fortunate that MACO is able to and is actually investing in the future with its own funds.

Therefore, a not insignificant proportion of our budget goes towards the development of innovative products and solutions, networking with customers and other stakeholders and in modern and efficient production plants at all sites.

This year work will also begin on the expansion of our site in Salzburg. MACO is investing approximately €5 million in the first construction phase. It goes without saying that all aspects of sustainable construction are being taken into account in regard to material selection and the construction itself.

A modern research and development centre, a customer meeting centre with exhibition and presentation spaces and state-of-the-art training and conference rooms will take shape on a floor area of around 1,750 m<sup>2</sup> on a recently ac-

quired approximately 9,000 m<sup>2</sup> plot.

Our mission, as your partner and to your advantage, is to be the performance leader in hardware solutions and services. The new premises will provide a suitable space for providing creative, top-quality offerings, alongside our daily operative activities.

In addition, a modern test centre with additional test equipment will be constructed here. On the one hand, this represents the next step in ensuring the quality of our innovative products and, on the other, it allows us to offer our customers an extended range of tests.

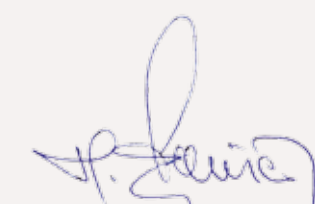
We would like to thank you for allowing us to play a part in shaping your successful future and we wish you courage, strategy and good luck as you make your decisions.

Finally, we hope that you enjoy this issue, which is packed full of interesting information, and send our best regards from Salzburg.

CONTENTS

» Editorial	2
MULTI POWER	
» Completely concealed up to a size of 3 m <sup>2</sup>	3
MULTI MAMMUT	
» Rebate-leg screw-fixing for giant PVC windows	4-5
MULTI MAMMUT	
» Tilting giant timber windows up to 250 kg	6-7
Mechanical burglary resistance for windows	
» RC 3 timber system test for all hinge systems	8-9
Burglary resistance EN 1627 to 1630	
» Standardised burglary tests for comparable security	10-11
RAIL-SYSTEMS	
» New locking monitoring for lift&slide doors with certification according to DIN EN and VdS	12-13
» Ventilation obligation even during extended periods of absence	14-15
Focus on fabricators	
» Fritz Vornbäumen Fenster-Glasbau GmbH & Co. KG	16-19
» Zech-Group	20-23

  
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Extended application diagram for MULTI POWER

# Completely concealed up to 3 m<sup>2</sup> in size and a sash weight of 150 kg

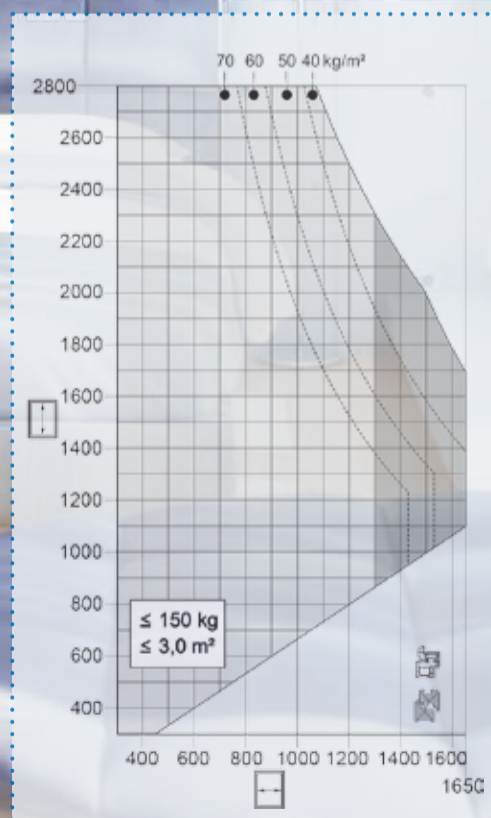


The fully concealed hinge-side MULTI POWER represents the hinge technology for a new generation of turn&tilt windows. MULTI POWER provides thermally effective burglar-resistant security with a sash weight of 130 kg for windows and 150 kg for casement doors. The optional flush design of timber or PVC windows and casement doors complements modern interior design.

Windows and casement doors up to a maximum sash rebate width of 1,650 mm and a sash rebate

height of 2,800 mm can now be manufactured with the fully concealed hinge-side MULTI POWER. This means that units which are 250 mm wider and 200 mm taller can be produced. There is a correlation between the format and the glass weight.

What works on a large scale, also works on the hinge-side on a small scale: the smallest sash rebate width is 370 mm, the lowest sash rebate height is just 360 mm – and, needless to say, it is also fully concealed.



## THE KEY BENEFITS OF MULTI POWER

- No breaks in the seals, no thermal bridges, no condensation formation
- Flush window systems with shadow joints from 4 mm: the optimised opening curve of the pivot post and scissor stay hinge ensures that the rebate leg cannot move in the frame rebate on the bearing side
- Depending on the profile, a very low clearance from 4 mm: narrow frame view possible
- No guide slots - no contamination
- Large opening width of 100°
- Optimal visibility, maximum daylight: the sash turns towards the frame in the end setting
- Integrated end stop in the hinge positions: Sash does not hit the wall
- Maintenance-free PVC sliding carriages in the scissor stay hinge
- Side-adjustment in scissor stay via step rivet: Windows or casement doors cannot adjust themselves
- Height adjustment in the pivot post with stop
- Optional PVC cover for pivot post
- Burglar-resistant security up to RC 3 possible
- Integrated anti-slam device for tilted position as standard
- Optional tilt restriction
- Optional opening restrictor and turn restrictor
- Can be combined with threshold
- Extremely corrosion-resistant TRICOAT-PLUS surface finish optionally available
- Window handle that fits flush into the casement available
- Safe operation with sash lifter integrated as standard



Turn and tilt up to 180 kg without thermal bridges or breaks in the seals

**Rebate-leg screw-fixing for  
PVC windows – warmly & securely  
"tucked away" with visible hardware**



**Large surface, a lot of glass, heavy weight. Architectural designs that consciously aim to integrate daylight usually feature large-scale glazing and accommodate heavy-duty units in the buildings. Large windows, however, should not mean increased losses in heating energy. This is why energy-saving building construction already incorporates triple-glazing as standard even for large-area units. This is no small feat, yet MACO turn-only and turn&tilt hardware master it with ease with convenient functions.**

The MACO turn&tilt hinge-side MULTI MAMMUT for timber and PVC windows provides you with one of the most powerful solutions for permanently reliable load distribution up to a sash weight of 180 kg. Permissible unit sizes and weights ultimately depend on the profile system used and must be matched to it.

The high sash loading capacity is complemented by burglar resistance according to RC 2 or RC 3 and the optional, extremely corrosion-resistant TRICOAT-PLUS surface finish.

#### **MODIFIED PIVOT POST FOR PVC WINDOWS**

In order to further optimise the energy savings, including on windows without fully concealed hardware, you can use the MAMMUT rebate-leg screw-fixing on PVC windows and casement doors up to 180 kg. With its four support pins, the corner support engages directly into the rebate leg and is secured by three screws. As there is no longer a connection bracket or corner bracket for the corner support, thermal bridge and breaks in the seal are now a thing of the past.

#### **ADDITIONAL BENEFITS**

Thanks to the rebate-leg screw-fixing, the PVC casement door can be individually adapted to thresholds since the corner support can be shifted upwards together with the pivot post. The potential to achieve burglar resistance of the rebate-leg screw-fixing up to RC 3 makes a compelling security argument for casement doors.

#### **MULTI-MATIC HARDWARE SYSTEM**

The hinge-side is part of the MULTI-MATIC hardware system. This means you can flexibly extend the performance range of unit sizes without changing the central locking system or incurring additional

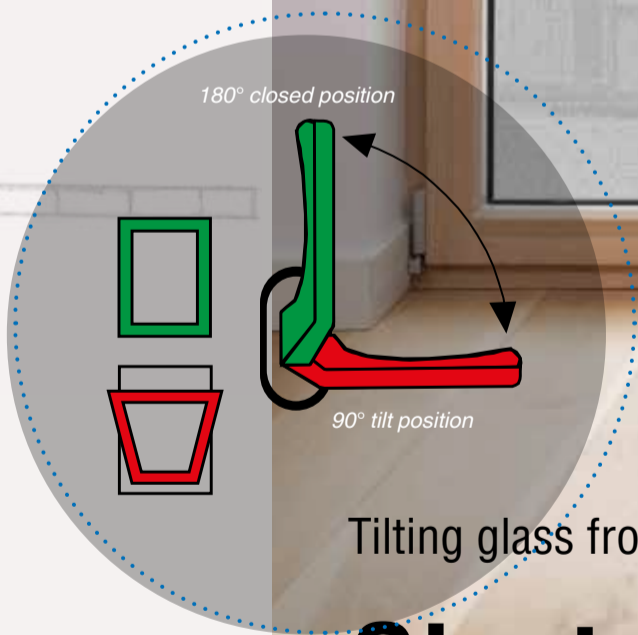
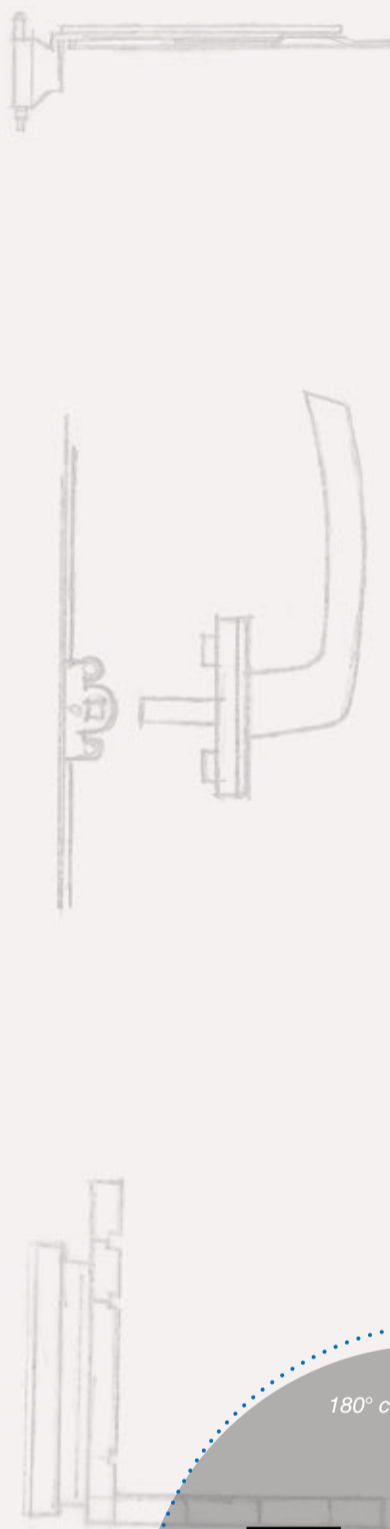
effort during production. Available as standard in silver galvanized or traffic white RAL 9016, the corner support can also be supplied powder-coated in a wide range of RAL colours. The look of the hinge can be customised and can be easily adapted to suit the profile colours, thereby allowing you to accommodate special colour requests from your customers. If special surface protection is required due to environmental conditions, look no further than TRI-COAT-PLUS for an extremely corrosion-resistance surface finish.

#### **SYSTEMATIC HARDWARE PERFORMANCE**

The sophisticated force-fitting and form-fitting coupling systems utilised by MULTI-MATIC guarantee quick and easy production, from manual assembly through semi-automated production to unmanned full automation. The mutually compatible hardware components can be applied flexibly to accommodate all special formats and special requests. The MULTI-MATIC system concept is rounded off by means of individual logistics solutions for the fabrication site, the MACO WIN software solution and the MACO Technical Online Catalogue (TOM).

#### **AT A GLANCE**

- With rebate-leg screw-fixing for casement doors and large-format PVC windows
- Up to a sash weight of 180 kg or a size of 3.6 m<sup>2</sup>; depending on the profile system
- Maximum sash rebate width 1,800 mm
- Maximum sash rebate height 2,800 mm
- No breaks in the seals, no thermal bridges in the area of the pivot post
- Suitable for casement doors with threshold as it is possible to position the hinge at the top
- Gasket compression can be adjusted via the positioning of the drilling-hole pattern
- Integrated anti-slam device as standard
- Optional scissor stay restrictor
- Possible to drill and screw with power unit
- Construction up to RC 3 possible
- Can be used on the right or left
- Optionally available in extremely corrosion-resistant TRICOAT-PLUS finish



Tilting glass fronts up to 250 kg

# Giant timber windows with fresh air guaranteed



The impressive thermal performance of modern glazing and frame profiles has greatly expanded the scope for increasing the total window area. Large-format XL windows are a popular means of increasing natural light in public and private living spaces. If architectural design is intended to give the impression of spacious, extensive rooms, the dimensions of the windows must also be able to keep pace. In this way, the spacious vision of a few becomes a living reality for all to enjoy.

#### A SASH WEIGHT UP TO 250 KG

So that users can still operate such windows, clever concepts are required which can move these light-boosting multi-pane mammoths reliably and safely over the long-term. Based on the tried-and-tested MULTI-MATIC hinge-side MAMMUT for turn&tilt windows up to a weight of 180 kg, impressive timber windows with a sash weight of up to 250 kg can now be produced. The associated hardware has been systematically designed with the user in mind when it comes to operating convenience and user safety.

#### TILT ONLY

The modified turn&tilt hardware combination only allows the timber window to be tilted. The colossal window is equipped with pivot

post and scissor stay hinges of the hinge-side MAMMUT on both sides as well as two independent central locking systems: the user operates the window using two window handles. The sash load is distributed evenly on both pivot posts and can be moved easily by the user when tilting or closing the window. The tilt depth is 128 mm. In conjunction with the large window format, this allows the room to be well ventilated.

This solution does not need a restrictor and cleaning stay, as used on conventional tilt-only windows, after all - who intends to unhinge a tilt-only window with a weight of 250 kg to clean it? The minimum bulk density of the timber must be 0.5 g/cm<sup>3</sup> or more to safely absorb and bear the resulting forces.

#### LIGHT & AIR

The compelling advantage of this large-format window solution is its ability to provide ventilation via the tilt function. This means that the solution is suitable for designing ground level rooms in shops or public facilities. As the hardware mechanics prevent the window from being opened, a type of impressive tilting floodlight can be implemented, even above ground floor level – consciously taking security glazing and necessary external cleaning with technical aids into account.

#### DIFFERENT HANDLES

The position of both window handles is deliberately different to the position on conventional windows. If the window is locked, both window handles point vertically upwards. To tilt, turn the handles 90 degrees inwards to a horizontal position. It is not possible to turn the handles any further vertically downwards.

#### FOR DESIGN ENTHUSIASTS

If two visible, protruding window handles on a unit are not the look the building owner was after, then look no further than TENTAZIONE as a design element. The window handle does not protrude out of the sash. Instead, it is integrated flush with the sash profile. With its slightly raised boundary zone, the handle cover perfectly conceals milled edges. The handle element and window sash blend to form a single unit. The slender handle body is only lifted from its integrated position when it is operated by tapping the recess on the handle body. In the horizontal position, the handle can be used to tilt the window.

#### AT A GLANCE

- Timber windows up to a sash weight of 250 kg
- Tilt function only
- Minimum bulk density of the timber  $\geq 0.5 \text{ g/cm}^3$
- Two independent central locking systems
- Two pivot posts with rebated corner support
- Two rebated scissor stays with scissor stay hinge
- Two window handles: Handle position pointing vertically upwards – window locked; window handle horizontal – window tilted
- Sash rebate widths from 1,200 mm to 2,000 mm
- Sash rebate heights from 800 mm to 2,800 mm
- Maximum size 5.6 m<sup>2</sup>
- Restrictor and cleaning stay not needed
- Optionally available in extremely corrosion-resistant TRICOAT-PLUS hardware finish, particularly recommended for hard woods such as oak (tannic acid) and acetylated wood such as Accoya®



## MACO BURGLAR RESISTANCE

New standards for mechanical burglary resistance on windows

# Only from MACO: RC 3 timber system test for all hinge systems

As a pioneer in burglary resistance, MACO has dealt with numerous system tests for burglary-resistance grade RC 2 over the last 15 years. The growing number of burglaries and increasing expectations when it comes to mechanical security technology prompted us to really get to grips with RC 3.

### RC 3 TIMBER

MACO has set a new benchmark on the hardware market with the RC 3 timber and timber/aluminium system test. A long-term collaboration in partnership with several fabricators resulted in an RC 3 system test unlike anything ever seen before. The variety of possible windows (number of sashes, size), hinge systems to be used and the resulting potential of the tested opening modes were even a first for the ift Rosenheim. The testers all agreed: an RC 3 system test had never been carried out like this before.

### SEQUENCE OF THE RC 3 TEST

The test piece – non-circumferential hardware in the area of the pivot post – was selected from two different hardware matrices. On this basis, all test pieces (test windows) were equipped with the concealed MULTI POWER hardware and all tests were successfully passed. The circumferential hardware was selected for the tilt-only window and the test was also passed. An IG 91 system with double rebate in oak served as the basis. According to the ift Rosenheim,

further systems, such as IG 88, IG 90 and IG 92 can be derived from this. Tool blades from renowned tool manufacturers such as Leitz, Oertli and Gold formed the basis for the approval certificate.

In the case of the faceplate solution, only a few new MACO hardware components were required, for example a French casement drive gear with centre mounted operating lever. This meant that the application ranges of the system matrix from a WC window through to the 2-sashed patio door was fully covered. With additional measures to strengthen the system, only the faceplate was processed, otherwise the test piece corresponded to that of a normal oak window.



### BECOME A MACO LICENSEE

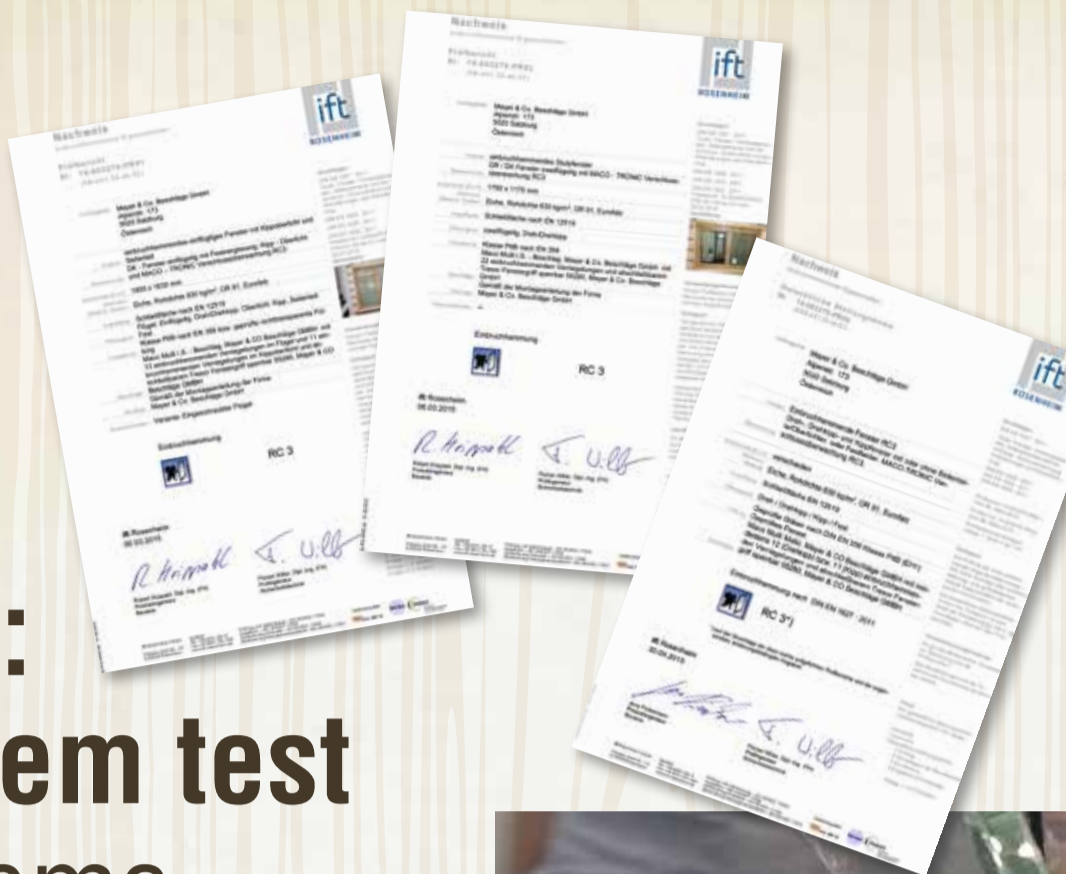
As a MACO fabricator, you can use the RC 3 timber and timber/aluminium system test in the licensee process as of 01.07.2015. Please contact your MACO consultant.

### SUBSIDIES FOR SECURITY AT HOME

No other topic gets people worked up as much as security. After all, security defines your quality of life. In line with this principle, support packages have already been put together in a variety of countries. In Austria, housing subsidies support the installation of mechanical protection on windows and doors, alarm systems or an additional video monitoring system. In Germany, a decision by the German Bundestag made on May 21 means that the installation of secure windows and doors as well as grates and alarm systems to protect against burglars will be subsidised with a total of €30 million; in 2015, the federally owned Kreditanstalt für Wiederaufbau (KfW) (Reconstruction Credit Institute) provided €10 million.

### SUBSIDY PREREQUISITES FULFILLED BY MACO

Security windows or doors for apartments and houses must meet at least burglary-resistance grade RC 2 or RC 3 according to EN 1627 to 1630 or ÖNORM B 5338, alarm systems must comply with the VSÖ or VdS guidelines, EN 50130 and EN 50131. MACO products comply with all the specified requirements.



## MACO BURGLAR RESISTANCE



### TESTED SYSTEM SCOPE RC 3 TIMBER

**Opening modes:** 1-sash windows, 2-sashed windows, tilt-only windows, fixed glazing with laminated safety glass or panel and screwed sash and French window sash. This results in a wide range of combination options.

**Profile certification:** frame 90 mm, standard sash, fixed mullion, deadbolt, sash bar.

**Different infills:** double or triple glazing with the specified laminated safety glass, alarm glass with toughened glass, panels with approval according to EN 356.

**Mounting of the infill panel:** both versions are possible; laminated safety glass inside and outside.

**Tested bonding agents** with verification of the edge seal compatibility were also taken into account: OTTO Chemie with OTTOCOLL S81 and Ramsauer 670 and 690.

**Installation:** standard installation, simulation for roller shutter housing.

**The system matrix** takes two systems into account: non-circumferential hardware in the area of the pivot post, which contains the MACO hinge systems MULTI POWER, MULTI MAMMUT, screw-fixed system (AS), dual-drill holes (DT) and pot (TO) and the circumferential version. Therefore all MACO hinge solutions can be used.

**Reed contact for alarm systems:** the MACO TRONIC locking monitoring was integrated into the test piece and approved.

**Flush design:** the system test has already been expanded to include a timber/aluminium system. This "vivid" system can be extended.

**Approval of various systems:** this is carried out by MACO via the window tools of the various manufacturers so that each fabricator does not have to have their system tested themselves via an institute.

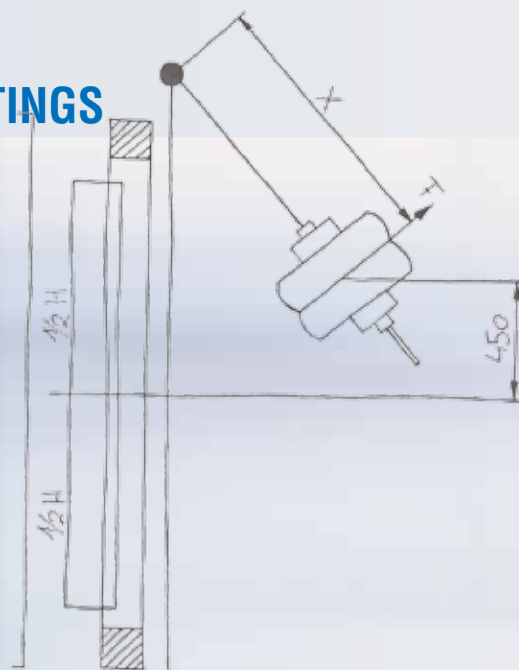


### KEY

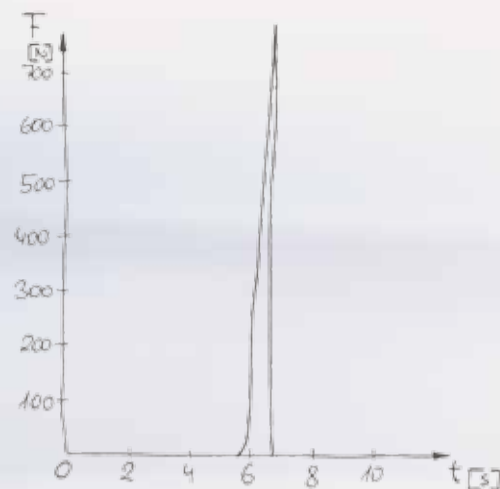
ÖNORM: Austrian standard  
EN: European Standard  
VSÖ: Verband der Sicherheitsunternehmen Österreichs (Austrian Association of Security Companies)  
VdS: Vertrauen durch Sicherheit (German testing institution for fire protection and security) RC: Resistance Class (burglary-resistance grade), standardises burglary protection on an European level.

### NOTE

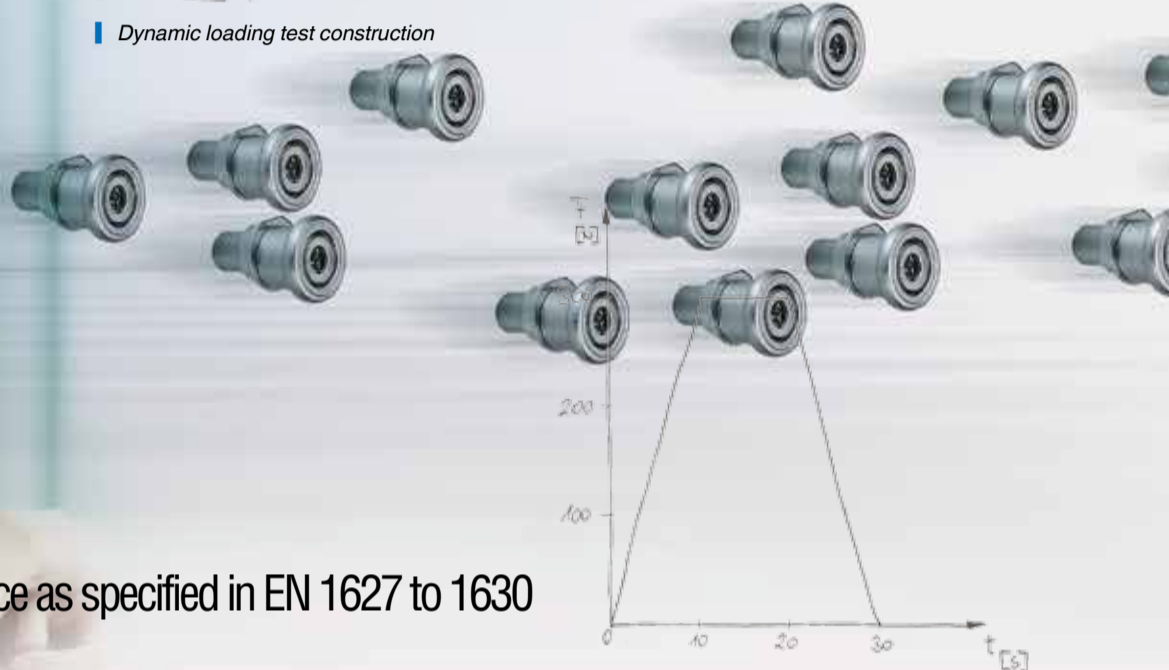
The Crime Prevention Office provides free information about security measures. Those seeking advice can find information at their local police station.



Dynamic loading test construction



Dynamic loading diagram



Static loading diagram

Principles of standardised burglary resistance as specified in EN 1627 to 1630

# Standardised burglary tests for comparable security

Modern window hardware is not just about letting in light and air. It also helps to keep unwanted visitors out. In light of the increasing number of houses and apartments that are broken into via windows and casement doors, burglary resistance is one of the most important properties of strong window hardware. The standards EN 1627 to 1630 provide the basis for this.

## STANDARDS DERIVED FROM DAY-TO-DAY REALITY

The standards are based on findings by the state criminal police offices and testing institutes. They note among other things, how burglars try to gain access to buildings and the tools that they use. This information is used to derive the conditions and environment required for a standardised burglary test. This means that the values and parameters and type or scope of the tools defined in the

standards EN 1627 to 1630 have direct practical relevance and enable standard-compliant, burglar-resistant windows and casement doors to actually withstand an attempted break-in in case of emergency. Two different load scenario tests and a realistic burglary test are carried out in a combined test process.

Combining the three test processes "static loading", "dynamic loading" and "manual attempted burglary" has resulted in a simple and clear evaluation procedure. This allows the customer to select the required burglary-resistance grade for their window according to their security requirements.

## COMPARABLE TESTS FOR COMPARABLE PROTECTION

The decisive feature of a standardised burglary test is its ability to be reproduced: the test is comparable. There are six burglary-resistance grades (RC 1 to 6) specified by standard 1627 for burglary resistance. The main difference between the burglary-resistance grades is the tool permitted and the maximum attack time. For example, the net attack time for burglary-resistance grade RC 2 is three minutes. The term "net" indicates that it is a pure test time. The tester is allowed breaks during the "attempted break-in". A luxury that a burglar could not afford in the real world.

## STATIC LOADING

The first test carried out is the "static load test method". A linear force is applied to the infill panel corners of the test unit and the con-

nection points between the sash and frame for 10 to 20 seconds increasing up to a maximum load of 300 kg (for RC 1 and RC 2) or 600 kg (RC 3 and above) and then maintained for 8 to 12 seconds. After this, the load is then linearly reduced back down to zero. This tests the stability of the hardware components, in particular the locking and hinge points. During the test up to the loading maximum, a gap gauge ( $\varnothing$  10 or 25 mm depending on the test point) is used to test whether the unit has passed.

## DYNAMIC LOADING

The second test is the "dynamic load test method". In this test, a test specimen weighing 50 kg is flung against the test unit in a pendulum motion under gravity from a height of 450 mm (for RC 1 and RC 2) or 750 mm (RC 3 and above). This impactor test is carried out once on all four panel cor-

Formula for acceleration:

$$v = \sqrt{2 \cdot h \cdot g} = 2 \cdot 0.45 \cdot 9.81 \Rightarrow 8.83 \text{ m/s}$$

Momentum:

$$p = m \cdot v = 50 \cdot 8.83 \Rightarrow 441 \text{ kg m/s}$$



ners and three times on the centre of the test unit. After the test, a gap gauge (ellipse with 250 x 150 mm/thickness 20 mm) is used to check whether the unit has passed. The dynamic test should simulate a physical attack with "throwing or jumping against or kicking".

### MANUAL ATTEMPTED BREAK-IN

The third and final test is the manual attempted break-in. This is carried out by a test team of at least two people. One of the testers attempts to create an entrance opening in the specified time using tools which differ depending on the burglary-resistance grade. An entrance opening is defined as an opening through which a rectangle of 400 x 200 mm, an ellipse of 400 x 300 mm or a circle with a diameter of 350 mm can be pushed. As window or casement doors are levered out on the espagnolette side on around every third at-

tempted break-in, the manual burglary test places particular emphasis on this method: levering out or prying open the building element. During the test, the enormous leverage force of the tools pushes the connections between the hardware components and the materials used to their limits. Only high-quality materials and production methods can ensure that the immense forces used during the test do not result in the hardware breaking.

### MACO i.S.

On the MACO turn&tilt hardware system, the i.S. security roller cams and i.S. security striker plate connections bear the main load. Both components are able to reliably withstand the resulting tractive and shearing forces.

As a door or window is shut, the i.S. security roller cam slots, with its mushroom-like shape, into the

stable i.S. security striker plates, which are screwed into the frame, thereby making it harder to pry open the door or window. The roller cams move into the striker plate very smoothly, which means that window manufacturers can provide their customers with an excellent level of operating convenience in addition to the increased security. The gasket compression of the i.S. security roller cam can also be adjusted.

### TESTED AND CERTIFIED

MACO i.S. security hardware has been tested and certified at ift Rosenheim according to the QM 314 certification scheme. They rank among the most innovative and, when it comes to burglary resistance, completely reliable solutions on the market.

### EFFORTLESS RC 2, SELECTED MATERIALS UP TO RC 4

The intelligent MACO i.S. security provides manufacturers with tested functional and application security for a variety of profile materials and unit sizes up to RC 3. With selected materials, even RC 4 can be achieved.

You only need a few MACO i.S. locking parts for an RC 2-equipped window or casement door. Other commercially available solutions require more locking points or even additional components to ensure RC 2.

And you can rest assured: burglar-resistant MACO security hardware can be retrofitted at any time – keeping your customers safe and sound.



Maximum performance proven by independent certification process

# New locking monitoring for lift&slide doors with certification according to DIN EN and VdS

**Electronic measures are the ideal complement for mechanical burglary protection, as they help to ensure secure locking even on lift&slide doors. Electronics themselves cannot prevent or delay a burglary. However, they can ward off an attempt - comparable to external motion detectors or alarm sirens. Electronic monitoring systems are worthwhile, mainly because they send additional notification to the alarm system or to a connected station if a burglary is attempted.**

## STRAIGHTFORWARD INSTALLATION – RELIABLE OPERATION

The new adapter with contact sensor for MACO lift&slide drive gear provides tried and tested locking monitoring on lift&slide doors. The adapter has a pre-mounted screw which connects it to the deadbolt on each lift&slide drive gear. The locking monitoring function is guaranteed via the 26 mm travel of the drive gear – the same as the well-known function on the window hardware. The position of the contact sensor is pre-specified. Since the start of 2015, it has been indicated by a symbol on each MACO lift&slide drive gear.

## NO FALSE ALARMS

A package leaflet is included with the delivery. It describes how to mount the magnetic switch in detail. When the detector is installed, this ensures that it only signals "locked" when the contact sensor is engaged (VdS guideline 2311). This practically excludes any risk of a false alarm for the user.

## HOW THE MAGNETIC CONTACT WORKS

The magnetic switch is a wired monitoring system that is integrated into the hardware. Combined with the adapter with contact sensor for lift&slide drive gear, the magnetic switch acts as a signalling contact to issue status signals to the central monitoring system. If a lift&slide door is not closed, i.e. not locked, an alarm is triggered. An attempt to open the lift&slide door by force interrupts the reed contact installed in the magnetic switch: An alarm is triggered via the burglar alarm system.

The magnetic switch can be integrated in all conventional bus systems. It is fixed in the lift&slide door frame. The contact sensor is installed in the lift&slide sash and

controlled via the deadbolt of the lift&slide drive gear. This means that it can be moved. We make a distinction between two different types of monitoring.

## LOCKING MONITORING

This consists of a magnetic switch and a moveable magnet in the lift&slide drive gear. It monitors the proper locking of the lift&slide door. If the lift&slide door handle is turned or the deadbolt of the lift&slide drive gear moves, the contact sensor moves away from its magnetic switch and thereby out of the switching area. As a result an alarm is triggered – regardless of whether the lift&slide sash been opened.

## COMBINED OPENING AND LOCKING MONITORING

Like the construction of the locking monitoring system, this consists of a magnetic switch and a movable contact sensor in the lift&slide drive gear. This monitors the proper locking and opening state of the lift&slide door.

## YOUR CHOICE

The following MACO solutions recognised by DIN EN and tested by VdS can be used as a magnetic switch:

Magnetic switch for combined opening and locking monitoring

- Combined opening and locking monitoring, VdS No. G 108015, Class C

Screw-in magnetic switch for combined opening and locking monitoring

- Locking monitoring, VdS No. G 108033, Class C
- Combined opening and locking monitoring, VdS No. G 108503, Class B
- Opening monitoring according to DIN EN 50131-2-6, security grade 2

## SAFE AND SECURE

Magnetic switches and contact sensors for electronic lift&slide door monitoring are installed in the frame or sash, which means they are not visible from the outside. The assignment of security grade 2 of EN 50131-2-6 and the VdS classes B and C certify that MACO locking monitoring for lift&slide doors satisfies the highest performance requirements. This has been verified in independent certification procedures.



Magnet symbol  
on drive gear

Position of the  
magnets

#### THE TEST DEVICE FOR REED CONTACTS

is used to determine the wire allocation of the connected reed contact and the function test quickly and easily. The switching states are signalled visually and acoustically.

The test device is primarily used to install new reed contacts. This means that you can perform a functional check on the lift&slide door during production, even before the unit is delivered to the construction site. The fitter on the construction site can also use the test device to verify the functional integrity of the unit in situ; for example for acceptance testing by the building owner. This prevents possible complaints right from the outset.

Please note the following: The test device is used to check the cable assignment and functional integrity of the reed contact that is connected via the contacting system. Only reed contacts may be connected to the contacting system. No other use of the contacting system is permitted.

Test device for reed contacts



Hello holiday – goodbye ventilation?

**Ventilation obligation** even during extended periods of absence



Your holiday is approaching. Finally some time off, a chance to recharge your batteries and experience the nature and culture of another country. Leaving you feeling refreshed and ready to go. A great idea: travelling allows you to get away from everyday life. But who will look after your home during this time?

## RESPONSIBILITY OF THE TENANT

The fact is: while you are away, doors and windows are closed, the heating is turned down and temperatures reduced to their lowest settings. If you are a tenant and you go away for an extended period, you must accept responsibility for the property or for a regulated procedure. This means the tenant is also obliged to exercise due diligence for the property while they are away.

Tenants have the right to use the rental property but they do not have an obligation to use the property. Therefore they do not need to be permanently present in the property. However, the tenant must ensure that the property is not damaged during their absence. This includes ensuring that the landlord can gain immediate access to the rental property in the event of an emergency.

## AVOIDING FORESEEABLE DAMAGE

Damage that could be avoided before a tenant goes away or on holiday relates to fire damage, water damage, mould growth and a wide range of moisture damage.

It goes without saying that main water taps must be turned off, electrical devices must be unplugged and doors and windows must be shut. Drainage systems should be checked and, if necessary, cleaned, so that rain water is able to run off balconies. This prevents water from building up and causing damage to the building structure.

## REGULAR VENTILATION TO COMBAT MOULD FORMATION

From the point of view of ventilation technology, moisture levels

need to be kept constantly within defined limit ranges and indoor air pollutants must be kept to a minimum. High levels of relative humidity are becoming an increasing problem, particularly in new builds, but also in refurbished properties, as the building shell is extremely well sealed. The moisture condenses on cold surfaces and results in moisture damage in the long run. To prevent mould from forming inside the property and on the external walls, regular ventilation must be ensured, even when the occupier is away.

This task can be left to a trustworthy person who is able to ventilate the entire property at regular intervals at least three to four times a day, every day. Or you can use window ventilation systems, which provide the necessary minimum level of ventilation needed to prevent moisture damage without any action required by the user.

## USER INDEPENDENT MINIMUM VENTILATION

The concealed MACO-VENT ventilator ensures intelligent, automatic regulation of the air flow and provides optimised exchange of air, and protection against moisture according to DIN 1946-6. Even when you are away from home, the ventilator reliably removes any arising moisture, and guides fresh outdoor air in, thereby providing the necessary exchange of air. Tenants can rest assured that they have fulfilled the standard and will not be subject to liability claims – and there is no need to bother anyone with the task of ventilating the property several times each day.

Nonetheless, tenants should still give a key to a trustworthy person while they are away. This allows access in the event of water damage or a fire. The tenant should tell the landlord who has the key – or the landlord should get one themselves. If not, the tenant may be presented with a claim for compensation in the event of damage.

## MACO-VENT VENTILATOR

- User-independent, natural ventilation for reliable exchange of air and protection against moisture according to DIN 1946-6
- For PVC windows in multi-storey residential buildings and detached houses
- Aerodynamic draught-free operation (subjective perception)
- Can be activated/deactivated at any time
- Can be inserted and retrofitted with just a few simple steps
- Without additional routing work on the window
- Cost-effective purchase, no wear and tear
- Easy to clean and maintain without third-party companies
- No additional energy outlay

## DID YOU KNOW THAT...

...it takes one to two years for the building moisture in new builds with solid construction to disappear from all the rooms? Increased heating costs can be expected during this period. This can be shortened through increased ventilation and use of dehumidifiers. The MACO-VENT ventilator ensures that air is constantly exchanged and removes moisture without any action required from the user.

...each person adds around half a litre of water to the surrounding air each night? To stop this water from settling on the walls, the invisible MACO-VENT ventilator guides this moisture out, thereby preventing moisture damage and mould formation.

...the MACO-VENT ventilator automatically closes its flaps if the air pressure is too high? Cold draughts are thus a thing of the past.

...even though the air is constantly being exchanged, the MACO-VENT ventilator helps protect burglaries? This is because windows remain closed while the room is ventilated and do not need to be tilted further open. Homes remains secure – and well ventilated, at all times. Even while the residents are away!

## MACO-VENT HOLIDAY CHECKLIST

- ☐ Have you turned off all the taps in the house?
- ☐ Have you ensure that there will be adequate ventilation while you are away?
- ☐ Have you unplugged or switched off all critical electric devices?
- ☐ Are the windows closed, i.e. have you ensured that burglars cannot gain access?
- ☐ Can the landlord gain access in the event of an emergency?
- ☐ Will the letter box be emptied regularly?
- ☐ Will the landlord be informed immediately if any damage is sustained or an incident occurs?

## FOCUS ON FABRICATORS



Vornbäumen produces up to 450 windows a day.



MACO striker plates before installation.



An aerial view of the Vornbäumen site.



Normally, switching to a new supplier is a project that is planned long in advance. However, it does not have to be this way, as evidenced by the Fritz Vornbäumen Fenster-Glasbau GmbH & Co. KG in the town of Bünde in North Rhine-Westphalia, Germany. In March of this year, the company, which produces up to around 450 windows per day, switched to MACO as a supplier of turn&tilt hardware in just under two weeks.

### INNOVATIVE FEATURES AS STANDARD

"We have been aware of the benefits of the MACO products on the market for a while, such as the option of enhancing even standard versions of windows with innovative features such as the sash lifter with integrated mishandling device. Not only that, MACO solutions involve less hardware components in comparison to other suppliers, which ultimately reduces

warehouse stock and speeds up installation. All this makes for an interesting partnership", explains Managing Director Jörg Thurow.

### SECURITY, CONVENIENCE, HEALTHY LIVING SPACES

Ultimately, the reason why everything had to take place so quickly was mainly because their data processing system changeover unexpectedly had to be brought forward by a few weeks. However, there was also another important reason for the Managing Director: "The marking is changing rapidly. Security is becoming more important due to the increase in burglaries. Alongside this, healthy living and convenience also play a major role. MACO offers the ideal products in this regard and they will also help us to stand out from the crowd."

MACO has also been aware of Vornbäumen for a while. "It had been suggested that our solutions might make us an interesting supplier, but there were no specific discussions about a possible collaboration. So we were all the more surprised when we got the call at the start of March to say they were ready and wanted to switch to MACO – but without interrupting production", says Sales Manager Jürgen Volkert. Everyone responsible immediately agreed to devote all our efforts to this challenge.

### WELL-MAINTAINED MASTER DATA

During the crucial 14-day phase, four MACO employees were practically on site in Bünde 24/7. Ensuring that sufficient goods were available, processing these via associated trade partners and adjusting the processing machines and assembly benches accordingly was the "easy" part. The real challenge was the maintenance of the master data. However, noth-

ing could faze Jörg Weber, who, along with his team, is responsible for purchasing and software at Vornbäumen. All the data was entered perfectly and on time. The availability and integrity of this data is essential for the operation of their dealer software, which will soon be available to key Vornbäumen customers. This software allows windows to be designed in detail on the computer and then ordered online – another step towards increased efficiency.

### EMPLOYEE TRAINING

Employee training was also an important aspect of the changeover. 75% of the 110 employees were directly and indirectly affected by the changeover to MACO. "Our training sessions covered the specifics of working with MACO hardware. Even here, our collaboration ran smoothly for everyone involved" says Jürgen Volkert.



**Celebrating a successful collaboration (from left to right):**  
MACO Area Manager Marco Brauckmeyer, authorised signatory Andrea Vornbäumen, Managing Director Jörg Thurow and MACO Sales Manager North Jürgen Volkert.

VORNBÄUMEN wants to stand out from the crowd

# Changeover to MACO in record time



Jörg Thurow  
Managing Director Vornbäumen  
Fenster-Glasbau

"We are sure that we have the right partner at our side with MACO. The hardware products, the service, their reliability and the way we work together – everything is spot on!"

"The entire hardware change-over took place in just under two weeks and there was a real sense of "sportsmanship" for everyone involved. There were no significant problems because everyone really pulled together during this phase. We are very pleased."

Jürgen Volkert  
MACO Sales Manager North



### COMPLETE MACO RANGE

Vornbäumen can choose from an extensive range of hardware for their windows. Even the standard version of the Vornbäumen windows equipped with MACO hardware complies with burglary-resistance grade RC 1 N. The pivot post and scissor stay hinges of the hardware are each available in the RAL colours white coated, grey aluminium and brown. Hardware that complies with RC 2 N (with system test), parallel-slide-tilt (SKB) and parallel-stop hardware (PAS) are also used. Likewise, the barrier-free deluxe hardware and the fully concealed MULTI-POWER hardware for sash weights up to 150 kg are also applied where required. If the sash is even heavier, then MULTI MAMMUT, which can support 180 kg, comes into play. If requested by customers, window hardware can also be

equipped with the MACO-TRONIC locking monitoring according to VdS class B and C and the motorised E-hardware for automatic window tilting and closing. The MACO-VENT ventilator for reliable minimum ventilation for moisture protection according to DIN 1446-6 is also used by Vornbäumen.

### SPECIALISED DEALERS

MACO hardware products are exclusively available from specialised dealers. "This is an important aspect for us as we have been working closely with Meesenburg Großhandel KG for many years. After the changeover, we still had a single competent contact partner for all the components needed for window profiles", explains Jörg Thurow.

### THE RIGHT CHOICE

The supplier changeover was a real feat for all involved and fortunately there were no major problems. "This kind of endeavour brings people together. After this intensive phase, I was sure that we definitely had the right hardware partner at our side with MACO", beams Jörg Thurow. Both MACO representatives Jürgen Volkert and Area Manager Marco Brauckmeyer are pleased that it all went without a hitch: "A changeover in a company of this size is something special indeed. Nor-

mally we allow around four weeks to make sure everything is in place and allow enough of a buffer. However, Vornbäumen have demonstrated that there is always a special solution for special situations, providing you have the relevant flexibility."

### VORNBÄUMEN

The company was founded as a building and art glazery on September 1, 1963 by Fritz Vornbäumen. The founder is still an active member of the management team today. Thanks to the increasing activity in the building industry in the 1970s Fritz Vornbäumen began to produce insulated glazing units. The increasing demand finally led them to offer glass and windows together as a unit and thereby begin production of PVC windows.

In 1980, their first window manufacturing building with office wing was constructed and just four years later it was extended to include another production hall. Production grew steadily over the following years until they reached the limits of their capacity.

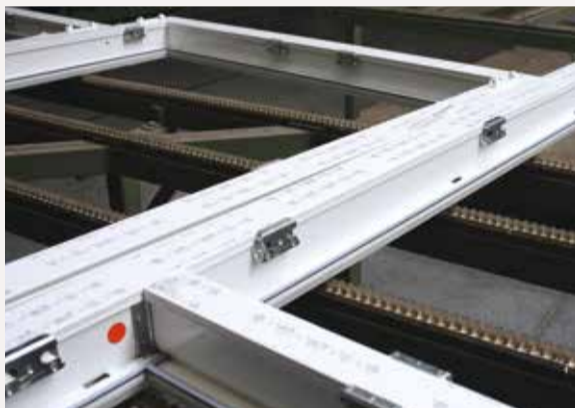


Thomas Lenkemeyer, Head of Production, tests the window's functions.

Vornbäumen started stocking the MACO turn&tilt hardware right at the start of the changeover.



MACO Area Manager Marco Brauckmeyer was more than satisfied that the hardware was optimally installed.



At Vornbäumen, even standard windows offer protection against burglary.

At the start of September 1995, work began on the current production site. A new production hall with an administration wing was built on a 18,000 m<sup>2</sup> plot. Over the years this was also steadily extended. In 2009, a production site was finally set up on the opposite side of the road for the manufacture of aluminium doors. Once again they soon outgrew this too and in 2013 a new production site of around 1,600 m<sup>2</sup> was commissioned nearby for processing aluminium products from Heroal.

Today, the company's founder Fritz Vornbäumen is supported by his daughter Andrea as authorised signatory and Jörg Thurow, Managing Director. Jörg Thurow joined the company in 2012. Long-term succession planning was also introduced as he joined the company.

Between 1975 and the end of 2004, Vornbäumen produced its



This image of part of the Vornbäumen profile warehouse shows the wide variety available.

PVC windows from Salamander profiles. After that, Dimex profiles were used up until 2009. Since April 2009, Vornbäumen has only worked with profiles from Rehau. By constantly expanding their production and supply programme, Vornbäumen is now in a position to offer a product portfolio which ranges from roller shutters and front door infills right through to model windows. The ready-to-mount building elements are transported to customers, and

on request, directly to the construction site on their ten own road trains. Vornbäumen focuses on its customers in the south west of Germany and also increasingly those in neighbouring France.

[www.vornbaeumen-fenster.com](http://www.vornbaeumen-fenster.com)



## FOCUS ON FABRICATORS

**In 2015, the ZECH group can look back on a successful history spanning 111 years. They have made a strong name for themselves, especially in recent decades, as a general supplier for doors, windows, sun and burglary protection. This family company which has around 200 employees and an annual turnover of approximately €24 million has since become one of the leading manufacturers in Austria, Germany, Switzerland and Liechtenstein. Reason enough to take a peek behind the scenes at this company, which has been in operation since 1904, and chat to Managing Director Roman Zech.**

### THE THIRD GENERATION

The successful development over recent years was down to owner Roman Zech, who took over in 1983 together with his brother Markus. The brothers are the third generation of the family to run the company. "One day I suddenly had to take over the family company. I had to jump in at the deep end and face the challenges that come with independence", explains Roman Zech about the early days. Successful years were to follow: over the course of three decades, he turned his father's carpentry workshop in the Rhine Valley, which had around 25 employees and manufactured a wide range of products such as furniture, room and garage doors and much more, into

a modern company. They reduced the variety of products and concentrated on the construction, production and installation of windows and façade elements.

### TECHNOLOGY & SECURITY

Today the company offers ten different window systems and almost 60% of their turnover comes from timber and timber-aluminium systems. "With our unique 3-rebate window systems with up to four gasket levels in timber, timber-aluminium, timber-glass or PVC we currently offer the highest technical standards in window manufacturing. Our windows exhibit exceptional sound and thermal insulation values, which means we can offer them in passive house versions as standard", explains Zech proudly.

However, it takes much more than innovative technology to create the perfect window. An appealing design, customer-specific service and the ability to provide a sense of security are all just as important. Therefore, even the standard windows, which are equipped with MACO hardware, meet burglary-resistance grade RC 1 N.

### CUSTOMER-SPECIFIC

Despite state-of-the-art production technology, each of the 15,000 windows produced each year remains a piece of outstanding craftsmanship. "Each shape and

design is constructed, produced and installed according to customer requirements. Each of our windows reflects the passion and characteristic style of the employee", says the 59-year old company owner enthusiastically before explaining the company's own vision: "When it comes to a standard window, we want to set ourselves apart from the competition with better technology, better equipment, higher quality and top service in order to survive in a high income state such as Vorarlberg."





ZECH: Regional premium provider with many years of experience

**Continuous innovation and  
outstanding quality =  
a recipe for success**



### PVC WINDOWS

"It was my father who recognised the trend for PVC windows. At the start of the 1970s, ZECH was the first company in Vorarlberg to offer this", recalls the Managing Director. In the 1990s, the PVC window production hall was equipped with state-of-the-art technology under the leadership of Roman Zech. Today over 7,000 pieces are produced each year. Even on PVC, only the fully concealed MULTI POWER hardware from MACO is used in Austria.

### CONTINUOUS GROWTH

To begin with, production was carried out at a plant in Götzis, but in 1997 and 2006 ZECH expanded its production capacities to three production plants by taking over two insolvent window manufacturing companies in Götzis and Dornbirn. In 2012, a fourth site was added in Ludesch. ZECH currently has four manufacturing sites in Vorarlberg with a total production site of around 7000 m<sup>2</sup>. They plan to take over another production plant with an area of 5,000 m<sup>2</sup> in the coming months.

The fourth site mainly manufactures special items, for example large units such as lift&slide doors or front doors. "Here, we make the technically impossible possible in terms of architecture", says Roman Zech. When it comes to hardware for the growing area of sliding units, ZECH puts its trust in products from MACO.

### BROAD BASE

As well as focussing on windows and burglary prevention, the ZECH Group has also added the fields of sun protection and doors to its portfolio. In terms of doors, the Vorarlberg-based company also offers front and apartment doors as well as cellar, internal and fire doors – and, needless to say, they are equipped with MACO PROTECT door locks.

### A COMPANY FULL OF INSPIRATION

A world of experience for building owners and architects, the likes of which has never been seen before – that was the company owner's vision for ZECH World. Today, this vision is a reality: the customer and innovation centre, which opened in 2011 on an exhibition space of 1,200 m<sup>2</sup> presents the ZECH Group's entire product range. ZECH lives up to its motto "We're there for customers when others are closed - 7 days a week" with long opening times during the week and even on Sunday.

### SHARING KNOWLEDGE INTERNALLY

The traditional company has also felt the effects of the much discussed lack of skilled workers. Which is why ZECH promotes in-house training. "For decades we have been passing on our collective knowledge to our apprentices. We are currently training 38 apprentices and nine more will be starting in the autumn", reports the Vorarlberg visionary. Whether they want to be carpenters, carpentry technicians, structural engineering draughtsmen, sun protection technicians or office clerks – there are a wide variety of careers on offer for young people at this family company. ZECH is also helping to promote the career of the "window and façade technician": "Carpenters require completely different skills for this compared to furniture production. I am already in contact with regional politicians about this." Around 50% of the employees work in production, around 20% in assembly and approximately 30% in the offices.

### CHALLENGING PRODUCTION LOCATION

The primary aim of the family company is to safeguard jobs in Austria over the long term: "As a company, we also have a responsibility to the region. In a high income state such as Vorarlberg, this is a real challenge. Nonetheless, we carry out all our production in the Rhine Valley as this is the only way to ensure the required quality." The ZECH Group were awarded the title "Best employer in Vorarlberg 2014" in the 101-300 employees category which demonstrates that not only have they nailed it in terms of quality, they have also got working conditions and employee satisfaction spot on.

### IMPRESSIVE QUALITY

To meet this high quality standard, the company focuses on continuous innovation and trusted suppliers as well as highly trained em-

ployees and top notch customer service. "MACO also manufactures in Austria and thereby provides us with a guarantee that the hardware will be of the necessary superior quality. After all, this holds the sash in the frame and plays a part in thermal, sound and burglary protection", explains window specialist Zech while also emphasising how smoothly collaboration has been: "We rely on sustainable, long-term business partnerships based on trust. MACO has been such a partner for over 30 years. I highly value the close and personal level of care and our collaboration as partners on an equal footing."

### CLEAR SALES FOCUS

ZECH currently sells around 90% of its products directly to end customers, 10% are sold via a distributor network or specialised dealers – and this is increasing. With high quality products with a

ZECH's range features ten different windows systems.



ZECH also uses MACO hardware solutions in the growing business area of large-format units. These are mainly produced at what is now their fourth production location in Ludesch.

strong focus on design, ZECH is primarily aimed at an exclusive clientèle. Architects are an "extremely important target group, with whom people seek and maintain close contact". Sales are focused on western Austria, the main export markets are Switzerland (60%) and southern Germany (15%). The sales strategy deliberately excludes low-end markets.

Instead the focus is on quality and special designs and solutions, which are increasingly requested in modern architecture – particularly around the architecture hub of Lake Constance.

At the 1,200 m<sup>2</sup> ZECH World customer and innovation centre, visitors can find out more about the entire range of products from the window and door specialists.

Competent care for decades: MACO sales representative Philipp Steger (right) always finds the right hardware solution together with ZECH.



A glimpse into production in plant 4.

### RESEARCH & INNOVATION

Just like his grandfather, Roman Zech is also brimming with new ideas. As a result, research and innovation have always had a firm place on the agenda at this traditional company in Vorarlberg. An in-house development department is devoted to finding new solutions for window construction, as impressively demonstrated by innovative developments in fire and landslide protection or the launch of a burglary and bullet-proof window. Research also focuses on the durability of windows as well as their robustness, thermal insulation, security and comfort.

### WHAT NEXT?

The enthusiastic amateur sportsman and motorbike fan outlines where he is headed on this journey through the window industry: "Older people, for example, will be a substantial target group in the future. For them, barrier-free, security and operating convenience are the most important factors."

Trends are moving away from traditional turn&tilt windows to virtually or acoustically operated window units and large-format windows." In addition, he also sees the window industry making a return to double glazing in the future: "Units are getting increasingly larger and thereby heavier. It is becoming almost impossible to install these with triple glazing. New tools and methods are needed. Three-dimensional curved windows and façade elements, which are features of modern architecture, will also be the challenges of the future."

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#### TECHNOLOGY IN MOTION

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