



TECHNO

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gramm

RAIL-SYSTEMS
A Seamless Transition -
**When in(side) and out(side)
merge harmoniously**

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Dear Partners and Friends of our company:

MACO has so far experienced a very positive start of the year 2009, with a very successful presence at Munich's BAU trade fair. Those of you who have visited the fair may have noticed that there were few signs of the current gloomy crisis affecting the construction industry. However, press reports, and objective assessments of international market tendencies, paint a different picture; a picture that is well reflected in a lot of manufacturers' balance sheets.

A corporate structure that is based on a network of different individual markets constitutes an enormous advantage in times of crises and, therefore, is more likely to compensate the slow-down of single markets in the overall balance of the enterprise.

Independently of a company's size, every business enterprise must be prepared to face harsh times and meet the challenges posed by the crisis.

Indeed, MACO did so. In particular, the company's excellent financial position, and its innovative capacity, setting new conceptual designs and production standards - e.g. MACO's new Lift & Slide hardware with additional roller, including a patented spring system - have contributed to safeguard its market position even in times of crisis.

Additionally, all members of the MACO-group have placed great emphasis on energy efficient and environmentally-friendly system-solutions and manufacturing methods.

In this respect, we can cite the production plant in Trieben, Austria, as the latest example of such efficiency measures.

In this context it is important to recall that a reduction of energy spending reduces our total production costs and, therefore, makes MACO more competitive.

In the long run, this will benefit our customers, and it will benefit you; MACO will be a reliable, competitive and long-term partner at your side.

To date, as a prerequisite to any economic activity, my major concerns and responsibilities within MACO remain the same: product development, proficient partnerships with our customers, competitiveness, and a financially sound company.

Let us therefore work together for a successful year 2009 - and, against all odds, let us turn this crisis into an opportunity. In the words of the ancient Greek philosopher Plato: "Necessity is the mother of invention".

Sincerely,

KR Dipl.-Ing. Ernst Mayer

MACO New Tilt & Slide hardware Excellent operational convenience

MACO RAIL SYSTEMS Tilt & Slide hardware complements MACO's performance portfolio in the market segment of high-quality hardware solutions for floor-to-ceiling large-scale glazing units. The following versions are part of this specific product line: T&S-S standard version, T&S-SE with automatic bottom latching function and T&S-Z with positive control and a load bearing capacity up to 200 kg sash weight. T&S-S and T&S-SE are also available with extremely resistant anti-corrosion TRICOAT surface.

THREE SYSTEMS VERSIONS, THREE FUNCTIONS T&S-Z WITH LOAD BEARING CAPACITY UP TO 200 KG

MORE BENEFITS FOR MANUFACTURERS AND END USERS

All three system versions share additional advantages for the manufacturer and end user: Manufacturers benefit from extra operational

INNOVATIVE DESIGN

The new design of guide tracks and rollers reduces the tilt angle and, therefore, facilitates the fitting of the sash to the frame. It's now a piece of cake!

Markus Hollaus

Product management RAIL-SYSTEMS

convenience, security and energy saving potential. End users benefit from a simplified fittings basis, an optimised point of entry curve dimensions, retracting distance and frame clearance. SKB-S and SKB-SE units can be used in combination with MULTI TREND and MULTI MATIC.

BRILLIANTLY OPTIMIZED

All three system version are precision optimized. The retracting distance has been increased from 122 to 125 mm and the point of entry curve has been enhanced from 50 to 53 mm. This provides additional protection and functionality to Tilt&Slide units, as it enables the possibility of using thick sash profiles, whereby even a triple glazing can be smoothly applied. The frame clearance has been set to 35 mm, reducing the threshold height, and thus allowing for easy and effortless operation, and a more level thoroughfare and trouble-free access. Therefore, costly additional profiles prove no longer necessary.



MACO added a small insertion-plate to the scissor-slider of the 'T&S-Z' system, in order to make the engaging of the scissor-stays visible.

STANDARD VISUAL CONTROL T&S-Z SYSTEM

To date, the engagement of the scissor-stays (of the top guide track) to the sliders could only be detected through acoustic check. Maco added a small insertion-plate to the scissor-slider of the 'T&S-Z' system, making the engagement of the scissor-stays visible. Thus, now, when the scissor-stays engage into the scissor-slider of the top guide track, the small plate is visibly inserted to the slider with a "click".

FUNCTIONAL CONVENIENCE

Tandem Roller
Starting from a sash weight of 160 kg, the T&S-Z system version is equipped with a tandem-roller. Its four wheels significantly increase the contact surface and provide smoothness and stability in operating the sash.

ROLLER DIAMETER OF 28 MM

In comparison to other rollers currently available on the market, the new 28 mm-diameter roller designed by MACO increases the contact face by 20%. Of course, this is also true of Maco's standard Tilt&Slide version roller.



Tilt&Slide handles for the 'T&S-Z' version are available in a new design and in five different colours.

OPERATIONAL CONVENIENCE - IMPROVED HANDLE POSITION FOR T&S-Z

The automatic opening and locking function is centrally controlled via a lever. The handle's design and function in the T&S-Z-systems have been modified according to client's convenience. The three handle positions - closed, tilt and slide - correspond to the handle positions users are familiar with in other hardware systems. In the closed position, the handle is turned downwards; by turning the handle to the horizontal position, the window opens into tilt position; and when the handle is turned upwards, the sash is released into the sliding position. By turning the handle downward, the door is closed with a feeling of minimal effort.

ADDITIONAL SECURITY

I.S. cams as a standard T&S-Z is already equipped with standard burglar-inhibiting technology, but I.S. cams are its distinctive feature. Optional lockable handles are also available to provide additional security.

Anti-lockout device

Furthermore, when the handle is in the opening position, an integrated anti-lockout device prevents the sash from being unintentionally locked. Therefore, the sash may only be closed by manually turning the handle.

Optional mishandling-device

The optional mishandling-device prevents from inadvertent and incorrect use of the handle. As long as the sash has not been engaged to the bottom lateral frame striker, the handle cannot be set to the closed position. In particular, this function proves to be a great advantage to project planners, as it prevents large Tilt&Slide units from getting damaged due to the incorrect operation of the locking mechanism.

AESTHETICAL IMPROVEMENTS

In order to satisfy the aesthetic requirements of residential and commercial architecture, the cover caps are now available in a new, minimalist design and in five different colours; the cover caps positively impress for their simple forms, straight lines and reduced volume.



Your partner for energy-efficient building: a new retracting distance of 125 mm makes Tilt&Turn systems ideally suited for thick multi-chamber profiles.

The fundamental advantages of all three MACO T&S fittings systems are:

- optimal point of entry curve of 53 mm
- retracting distance of 125 mm
- frame clearance 35 mm



MACO Lift&Slide fittings enter a new dimension and set new standards

MACO RAIL SYSTEMS Lift&Slide hardware serves to complement MACO's performance portfolio in the market segment of high-quality hardware solutions for floor-to-ceiling large-scale glazing units. In the building sector, MACO Lift&Slide solutions have an excellent reputation in terms of energy-efficient design, and meet all passivhaus standards.

A general increment of freak weather conditions and a growing request for larger opening sizes, pose critical challenges to window and door manufacturers. In this respect,

Gerhard Weiss
Product management RAIL-SYSTEMS

while air permeability can be kept under control without major difficulties, water-tightness and wind-load constitute important technical chal-

lenges, which demand innovative solutions. MACO Lift&Slide units underwent air permeability, water-tightness and resistance to wind load tests, which were carried out by various independent testing institutes. Specifically, MACO Lift&Slide units performance was tested at Holz Forschung Austria (HFA) and ift Rosenheim.

MACO Lift&Slide fittings obtained extraordinary results in the categories of water-tightness and resistance

to wind load; indeed, the extraordinary results in three different performance tests reflect the high quality standards which MACO is famous for.

MACO established special fitting instructions for the three tested units, and equipped them with specifically developed seals.

T&S fittings – made in MACO

Some facts that are not commonly known: T&S fittings, associated T&S roller and the super-efficient, high quality threshold are MACO in-house developments. T&S-drive gear and rollers, including all necessary accessories, are manufactured at MACO production plant in Trieben. Technology in motion, delivering high quality standards and connecting people!

Performance test - Holzforschung Austria (HFA)

LIFT&SLIDE-WOOD-UNIT: 3000 mm x 2500 mm – 78 mm SASH THICKNESS

WATER-TIGHTNESS

The water-tightness test was carried out according to EN 1027 requirements

The classification of test results was based on EN 12208

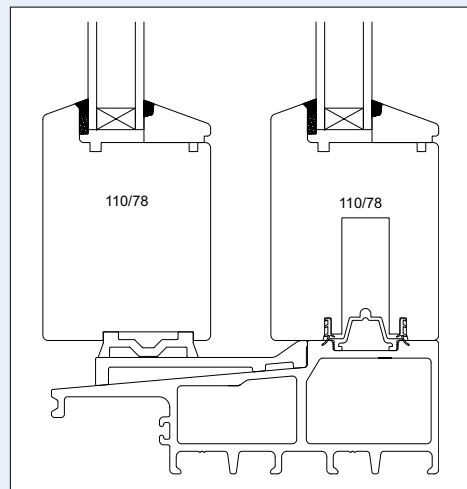
Performance test carried out by Holzforschung Austria (HFA); HFA is an applied research institute accredited for testing and quality

assurance in Austria. Lift & Slide-unit has been tested for water-tightness according to EN 1027 (test standard) and the results are classified according to EN 12208 (classification standard); the maximum applied pressure 1200Pa corresponds to a wind speed of approximately 160 km/h.

RESULT

The system is water-tight up to an applied pressure of 1200Pa. This corresponds to a level of driving rain impeding on the external face of the Lift&Slide-unit with a wind speed of approximately 160 km/h!

According to the outstanding performance levels achieved in the performance tests, the Lift&Slide-unit has been classified within the special category E1200, according to EN 12208. The test results obtained are extraordinary and unprecedented in this market sector.



Profile cross section TIMBERELEMENT 3000 mm x 2500 mm; HFA Austria

AIR PERMEABILITY - CLASS 4 ACCORDING TO EN 12207

Class 1 (50 m³/h.m²)
Class 2 (27 m³/h.m²)
Class 3 (9 m³/h.m²)
Class 4 (3 m³/h.m²)

The tested unit meets passivhaus standard in air-tightness

RESISTANCE TO WIND LOAD - CLASS C3 ACCORDING TO EN 12210

Class 1 (400 Pa) 450 kg
Class 2 (800 Pa) 900 kg
Class 3 (1200 Pa) 1350 kg
Class 4 (1600 Pa) 1800 kg
Class 5 (2000 Pa) 2250 kg

The door resisted a wind load of 1350 kg

WATER-TIGHTNESS - E1200 ACCORDING TO EN 12208

1A (0 Pa) calm
2A (50 Pa) approx. 33 km/h
3A (100 Pa) approx. 46 km/h
4A (150 Pa) approx. 57 km/h
5A (200 Pa) approx. 66 km/h
6A (250 Pa) approx. 73 km/h
7A (300 Pa) approx. 80 km/h
8A (450 Pa) approx. 98 km/h
9A (600 Pa) approx. 114 km/h
E750 (750 Pa) approx. 127 km/h
E900 (900 Pa) approx. 139 km/h
E1050 (1050 Pa) approx. 148 km/h
E1200 (1200 Pa) approx. 160 km/h

The door is water-tight up to a wind speed of approximately 160 km/h

In comparison to average results for serial production Lift&Slide door systems in the window market (that is 450 Pa) we can proudly confirm that our test results outperformed the required standard values by 2.7-times.

However, one swallow does not make a summer. All components are essential to the performance of a door; in order to resist Pa 1200, doors need to be installed according to material requirements and mounting instructions of the manufacturer.

AIR PERMEABILITY CLASS 4

Test according to EN 1026 standards
Classification according to EN 12207

The permeability of joints was tested at a pressure of 600 Pa. Without having actually reached the loading limit, the tested element was classified as Class 4, according to EN 1026 and to EN 12207, thus obtaining the highest possible ranking.

WIND LOAD CLASS C3

Test according to EN 12211
Classification according to EN 12210

The tested unit resisted a wind load of 1200 Pa within the required time interval; therefore, it was classified as Class C3 according to EN 12210.

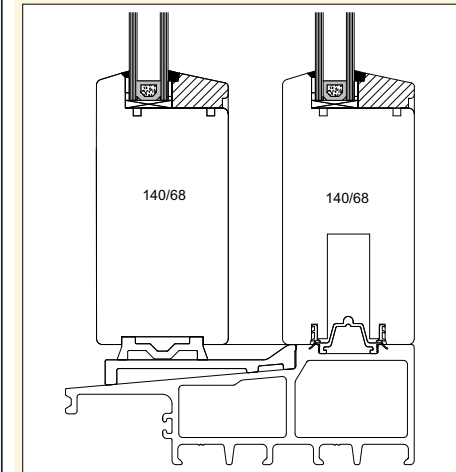


Certification Holzforschung Austria

Performance test - ift Rosenheim

LIFT&SLIDE-WOOD-UNIT: 2890 mm x 2390 mm – 68 mm SASH THICKNESS

The test was carried out under ideal laboratory conditions. In order to reach these extraordinary results all individual components that are part of the unit need to be processed and mounted according to all material and installation requirements, at the manufacturer's responsibility.



Profile cross section TIMBERELEMENT 2890 mm x 2390 mm; ift Rosenheim

WATER-TIGHTNESS

Test according to EN 1027
Classification according to EN 12208 1200 Pa 1200 = approximately 160 km/h

Lift&Slide- Wood -Unit was tested at a pressure of 1200 Pa by ift Rosenheim, in cooperation with the VBH Deutschland GmbH, and passed with flying colours.

AIR PERMEABILITY CLASS 4

Test according to EN 1026
Classification according to EN 12207

The permeability of joints was tested at a 600 Pa pressure. Without having actually reached the loading limit, the tested element was classified as Class 4, according to EN 1026 and to EN 12207, thus obtaining the highest possible ranking.

WIND LOAD CLASS C3

Test according to EN 12211
Classification according to EN 12210

The tested unit resisted a wind load of 1200 Pa within the required time interval; therefore, it was classified as Class C3 according to EN 12210.

AIR PERMEABILITY - CLASS 4 ACCORDING TO EN 12207

Class 1 (50 m³/h.m²)
Class 2 (27 m³/h.m²)
Class 3 (9 m³/h.m²)
Class 4 (3 m³/h.m²)

The tested unit meets passivhaus standard in air-tightness

RESISTANCE TO WINDLOAD CLASS C3 ACCORDING TO EN 12210

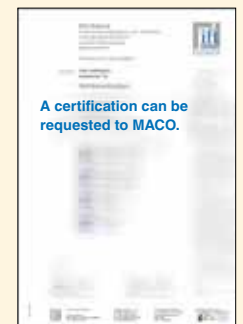
Class 1 (400 Pa) 450 kg
Class 2 (800 Pa) 900 kg
Class 3 (1200 Pa) 1350 kg
Class 4 (1600 Pa) 1800 kg
Class 5 (2000 Pa) 2250 kg

The door resisted a wind load of 1350 kg

WATER-TIGHTNESS - E1200 ACCORDING TO EN 12208

1A (0 Pa) calm
2A (50 Pa) approx. 33 km/h
3A (100 Pa) approx. 46 km/h
4A (150 Pa) approx. 57 km/h
5A (200 Pa) approx. 66 km/h
6A (250 Pa) approx. 73 km/h
7A (300 Pa) approx. 80 km/h
8A (450 Pa) approx. 98 km/h
9A (600 Pa) approx. 114 km/h
E750 (750 Pa) approx. 127 km/h
E900 (900 Pa) approx. 139 km/h
E1050 (1050 Pa) approx. 148 km/h
E1200 (1200 Pa) approx. 160 km/h

The door is water-tight up to a wind speed of approximately 160 km/h

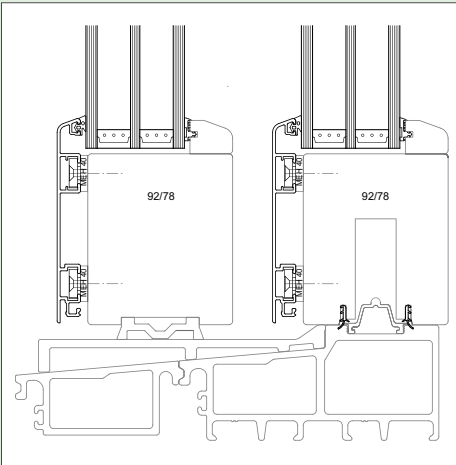


Certification ift Rosenheim

Performance test - ift Rosenheim

LIFT&SLIDE-WOOD-ALUMINIUM UNIT „ALTO NOVA“

PROFILE DIMENSIONS: 4500 mm x 2500 mm – SASH THICKNESS: 78 mm



Profile cross section TIMBER-ALUMINIUM ELEMENT "Alto Nova" 4500 mm x 2500 mm; ift Rosenheim

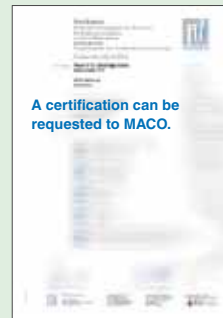
The test was carried out under ideal laboratory conditions. In order to reach these extraordinary results all individual components that are part of the unit need to be processed and mounted according to all material and installation requirements, at the manufacturer's responsibility.

WATER-TIGHTNESS
Test according to EN 1027
Classification according to EN 12208
900 Pa = approximately 139 km/h

A 68-mm-wood element equipped with MACO lifting sliding fittings was tested at ift Rosenheim in cooperation with the Franz Lagler GmbH (Melk/Austria) and is watertight up to 900Pa. This corresponds to a wind speed of approx. 137 km/h! Therefore, the Lift&Slide-System was placed into the special class E900 according to EN 12208.

WIND LOAD - CLASS C3
Test according to EN 12211
Classification according to EN 12210

The unit was subject to a pressure of 1200 Pa without showing any deformation of its dimensions within the required time interval; therefore, it was classified class C3 according to EN 12210.



Certification „Alto Nova“ ift Rosenheim

AIR PERMEABILITY CLASS 4
Test according to EN 1026
Classification according to EN 12207

The permeability of joints was tested at a 600 Pa pressure. Without having actually reached the loading limit, the tested element was classified as Class 4, according to EN 1026 and to EN 12207, thus obtaining the highest possible ranking.

AIR PERMEABILITY - CLASS 4 ACCORDING TO EN 12207

Class 1 (50 m³/h.m²)
Class 2 (27 m³/h.m²)
Class 3 (9 m³/h.m²)
Class 4 (3 m³/h.m²)

The tested unit meets passivhaus standard in air-tightness

RESISTANCE TO WIND LOAD - CLASS C3 ACCORDING TO EN 12210

Class 1 (400 Pa) 450 kg
Class 2 (800 Pa) 900 kg
Class 3 (1200 Pa) 1350 kg
Class 4 (1600 Pa) 1800 kg
Class 5 (2000 Pa) 2250 kg

The door resisted a wind load of 1350 kg

WATER-TIGHTNESS - E1200 ACCORDING TO EN 12208

1A (0 Pa) calm
2A (50 Pa) approx. 33 km/h
3A (100 Pa) approx. 46 km/h
4A (150 Pa) approx. 57 km/h
5A (200 Pa) approx. 66 km/h
6A (250 Pa) approx. 73 km/h
7A (300 Pa) approx. 80 km/h
8A (450 Pa) approx. 98 km/h
9A (600 Pa) approx. 114 km/h
E750 (750 Pa) approx. 127 km/h
E900 (900 Pa) approx. 139 km/h
E1050 (1050 Pa) approx. 148 km/h
E1200 (1200 Pa) approx. 160 km/h

The door is water-tight up to a wind speed of approximately 139 km/h



Perfect handle-synthesis for large-scale units - A perfect match

Besides offering great operational convenience, MACO's flush-pull handles are very much appreciated by inspired architects and house-builders for their attractive and stylish appearance. Less is more, especially when it comes to large size door-openings: large-scale units may give access to extraordinary panoramic views that we don't want to obstruct.

RAIL-SYSTEMS-LIFT&SLIDE HANDLES AND FLUSH PULL HANDLES

At MACO we aim to give extra value to your living: the "L&S Handle 08"

Robert Andexer
Product management
PROTECT Doors and EMOTION Handles

combines MACO's expertise and the elegance of a minimalist design.

Lift&Slide doors perfectly harmonize with the new design of MACO EMOTION Lift&Slide handle sets.

L&S HANDLE DESIGN – STYLE SIMPLICITY

The new and fresh handle design is striking. The approximately 240 mm long, straight corpus ends in a flattened oval-shape. Thus, the new MACO L&S handle suggests an unostentatious elegance, and perfectly matches with the pleasing straight lines of the L&S unit.

The flush pull handles enable to operate the Lift & Slide units up to 400 kg in a smooth and effortless fashion, while offering, at the same

bilities: interior Lift&Slide handle in combination with an exterior flush pull handle, etc.

FLUSH PULL HANDLES
The symmetrical flat flush pulls were designed to satisfy special requirements from our customers, and will positively impress you with their stylish design and functionality. Thanks to its flat shape the flush pull handle only protrudes 3mm from the door, and thus prevents the door gasket from being damaged.

The surface of the handle is available in stock colours and - like the surface of the Lift&Slide handle - it is easy to clean and extremely robust.

A FIRM GRIP ON QUALITY
The combination of "L&S Handle 08" and Maco flush pull handles constitute a perfect synthesis with L&S units: an ideal alternative for those who fancy reliability, simplicity and elegance in design, in addition to a pleasant feeling to the touch.

A WIDE RANGE OF SOLUTIONS: WE HAVE THE RIGHT COMBINATION FOR YOU!
Simplicity of style and a wide range to choose from! In addition to the stock colours, MACO offers set combinations in special colours of your choice. MACO can provide L&S-handles the way you like them, the way you need them!

From the standard version to any specification you may require, we will satisfy any style preference: interior and exterior Lift&Slide handles - with or without recessed cylinder in profile version or round cylinder version. Additional possi-

"L&S Handle 08" and Maco flush pull handle, as all Maco handles, are subject to regular quality tests according to DIN EN ISO 9001:2000; thus ensuring longevity, durability and functionality.

L&S flush pull handles are the perfect solution for L&S systems, which are indeed becoming more and more popular in contemporary designs. A simple, yet stylish looking design that is easy to install.

The new MACO "LS-Handle 08" with locating lugs and Euro cylinder.



All handles are available for delivery in the standard colours: bronze, champagne, titan, silver (eloxal) and white (powder coated).



Additional roller with patented integrated spring system

Today, the market requests Tilt&Slide solutions of highest standards in various fields; in order to meet the increased requirements on thermal insulation, acoustic performance and burglary resistance, profiles get thicker and sash weights considerably heavier. Therefore, the demand for Tilt&Slide solutions with a load bearing capacity of up to 400 kg, which can operate smoothly and safely, is sharply rising.

LIFT&SLIDE SYSTEMS FOR SASH WEIGHTS UP TO 300 KG AND 400 KG

MACO-HS-STANDARD 300 KG

While the standard sash weight was formerly 250 kg, it has now been increased to 300 kg. Drive gear lock and Lift&Slide roller have

been modified in order to increase the load bearing capacity to 300 kg. In July 2009 MACO will launch on the market a completely in-house developed Lift&Slide

fitting with a load bearing capacity of 400 kg. All Lift&Slide fittings are tested by MACO applying the maximum values for sash thickness and weight.

A NEW ADDITIONAL PATENTED ROLLER WITH PATENTED INTEGRATED SPRING SYSTEM

Starting from a sash weight of 300 kg the system is equipped with a roller to guarantee safe and smooth operation. The secret of the additional roller lies in the two integrated springs, which contribute to lifting and supporting the door in the opening phase.

No additional adjustments are necessary, and no technical changes to the mechanisms required:

MACO rollers and fittings have not been modified: we have simply added one single component.

BRAINS, NOT BRAWN

In the closing position, the wheels of the roller are normally lifted from the tracks.

On the contrary, the wheel of the new roller will remain set to the track position, while the sash weight is

Gerhard Weiss

Product management RAIL-SYSTEMS

transferred by the additional roller, pushing downwards and compressing the two springs. When the door handle is in use, the spring will stretch, pushing the sash bottom-up, and actively lifting the weight.

The additional roller carries about 80 kg of the total sash weight. Two additional rollers added to a 300-kg-element will carry 160 kg of the weight; thus, the user will only have to lift the remaining 140 kg, and the L&S System will be much easier to operate.

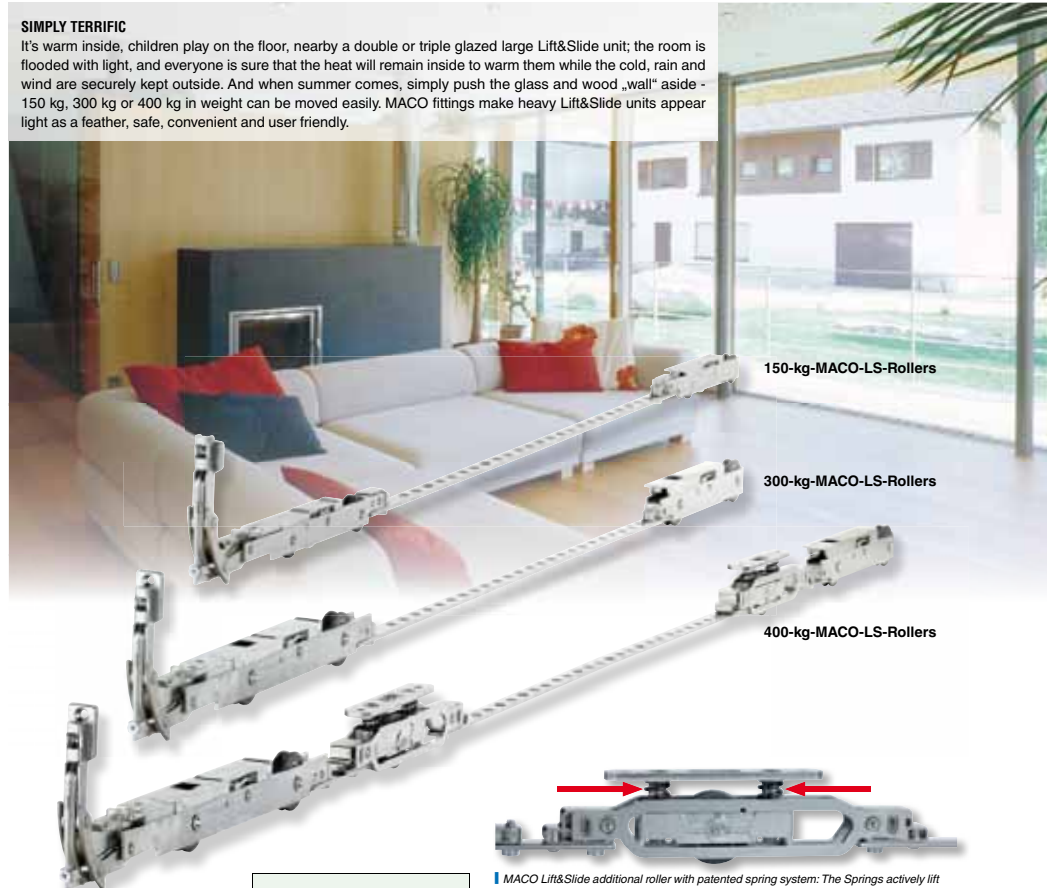
Therefore, sliding doors of extraordinary size and weight can be opened and closed with "a push of a finger". For L&S Systems with a load bearing capacity of up to 400 kg, a two wheel roller is added to each of the two rollers, therefore providing a total of 6 wheels that bear the sash weight.



MACO fatigue test carried out on a 400 kg Lift & Slide unit with a sash thickness of 30085 mm and a frame width of 6800 mm at MACO's internal test centre in Salzburg; the sash weight is reproduced through applied metal plates. The operating intervals correspond to the standards set by accredited testing institutes.

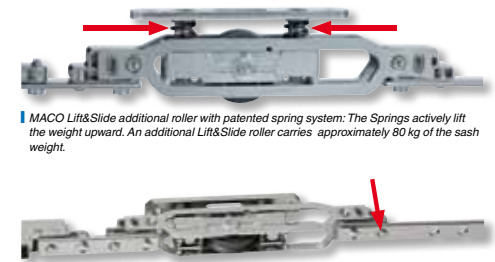
SIMPLY TERRIFIC

It's warm inside, children play on the floor, nearby a double or triple glazed large Lift&Slide unit; the room is flooded with light, and everyone is sure that the heat will remain inside to warm them while the cold, rain and wind are securely kept outside. And when summer comes, simply push the glass and wood „wall“ aside - 150 kg, 300 kg or 400 kg in weight can be moved easily. MACO fittings make heavy Lift&Slide units appear light as a feather, safe, convenient and user friendly.



LS-Rollers as Standard		
LS-Sash-Weight	MACO LS-Rollers	MACO Additional-Rollers
150 kg	2	-
300 kg	2	-
400 kg	2	2

Optimal possibilities over 200 kg sash weight for an effortless operation		
LS-Sash-Weight	MACO LS-Rollers	MACO Additional-Rollers
150 kg	2	-
300 kg	2	2
400 kg	2	2



MACO Lift&Slide additional roller with patented spring system: The Springs actively lift the weight upward. An additional Lift&Slide roller carries approximately 80 kg of the sash weight.

Connection of standard and additional carriage through a flat rod. The rods are fixed to the roller with bolts and additionally, over a second supporting point.

Together they are invincible: MACO Lift&Slide System and GRP-threshold

Today, "building and modernising" means planning ahead: construction projects should guarantee long lasting quality building. Nowadays, new constructions often need to meet energy-efficiency requirements. For example, Germany and Austria have introduced an "energy-efficiency licence". Therefore, a sustainable building strategy entails building according to energy-efficiency standards.

LONG LASTING AND DURABLE

AN EFFICIENT COMBINATION

In order to reach satisfactory energy-efficient building, MACO recommends the combination of a Lift&Slide Unit with 78mm profile thickness, which has been successfully tested at "Wiener Holzforchung Austria (HFA)" according to EN 1026 and EN1027 standards, with a GRP glass-fibre reinforced plastic threshold. The profile thick-

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Product management RAIL-SYSTEMS

ness allows for multi-pane glazing and the GRP bottom threshold offers outstanding material properties. Moreover, additional slide-in profiles will optimise the U-value (overall heat transfer coefficient).

GRP-THRESHOLD

Composite materials – such as the glass fibre reinforced plastic used in the GRP-threshold – consist of at least two components and significantly increase the mechanical properties of materials; e.g. resistance and rigidity are greatly enhanced. Thus, the GRP-threshold is equipped with an extremely robust surface.

The threshold is made of a high-quality GRP (glass fibre reinforced plastic) material composition, an extremely versatile and durable structural material composed of unsaturated polyester resin and fibre-glass. Any object made out of this material, obtained by manual or mechanical layering, is characterized by a low specific weight, high resistance to corrosives and atmospheric agents, and low thermal and electrical conductivity. Compared to steel, its major advantage consists in the low specific weight, guaranteeing also high resistance to corrosives and atmospheric agents, and low thermal and electrical conductivity. Therefore, profiles made of glass fibre reinforced plastic provide a high level of thermal insulation. Composite materials can be tailored to any specific need, thus providing an extraordinary advantage in thermal insulation; according to the intended use, the material composition and collocation of the fibres can be altered in order to most effectively meet the requirements of any specific context. This has successfully been achieved in the GRP-threshold.

KEY1: ADJUSTABLE

The core pieces of the threshold are available in the following stock sizes: 140 mm and 180 mm. The core piece can also be extended up to 308 mm using a profile extension; if necessary, however, the threshold may even be further extended through additional extension thresholds, without any limitation to the maximum width.

The threshold is complemented by fastened plates that connect the threshold to the frame. The versatile applicability of the GRP threshold - in relation to timber profiles' thicknesses from 56 up to 98 mm - guarantees manufacturers full freedom to choose the most appropriate profile thickness.

KEY 2: SUPERIOR

Even in extreme temperature range conditions, the new threshold material hardly expands. A very low material expansion is the basis for dimensional stability and guarantees permanent optimal operational convenience. Our offer covers a wide range of colours: the threshold is available in the standard silver version, but the surface-finish can be also painted in any colour that meets your wishes. The threshold, with a high step of only 17 mm, is designed to be accessible for wheelchairs and suitable for disabled people.

KEY 3: ENERGY EFFICIENT

MACO offers slide-in profiles that significantly improve the thermal performance of the threshold. The heat transition coefficient is so low that thermal breaks are no longer necessary. Slide-in profiles are available for delivery upon request.



Connecting profiles:
158 mm / 56 mm; 164 mm / 56 mm;
216 mm / 56 mm; 260 mm / 56 mm.



Slide-in profiles for MACO GRP-threshold



MACO GRP-threshold plus slide-in profile plus MACO Lift&Slide connecting plate plus frame piece 164 mm

MACO GRP-threshold plus slide-in profile and MACO Lift&Slide connecting plate plus frame piece 260 mm

THIS POSSIBILITY PROVIDES AN EXTRAORDINARY ADVANTAGE TO MANUFACTURERS

Adjustment possibilities: basic body 180 mm + 88 mm or 128 mm
basic body 140 mm + 88 mm or 128 mm
guide track flat or high

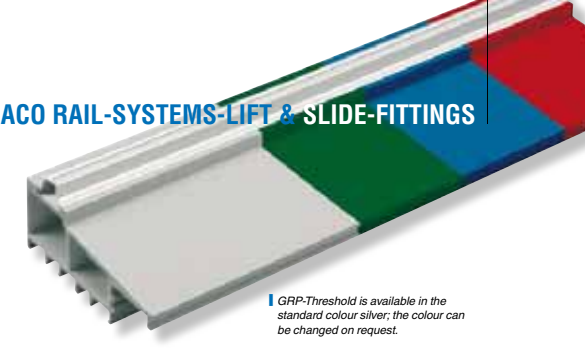
180 mm + 128 mm = 308 mm

Basic body with 180 mm and high guide track

Extension profile 128 mm or 88 mm

Basic body with 140 mm and flat guide track

Extension profile 128 mm or 88 mm

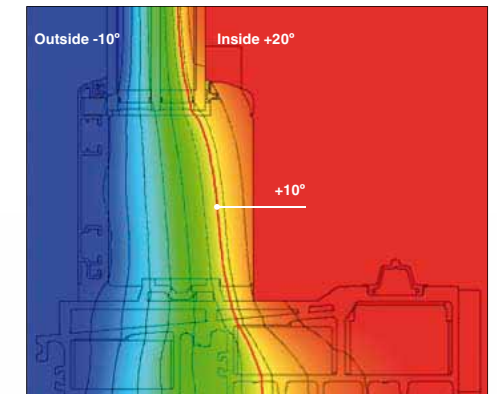


GRP-Threshold is available in the standard colour silver; the colour can be changed on request.

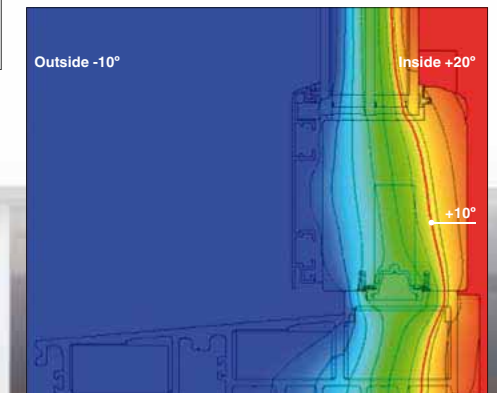
SAVE ENERGY AND MONEY!

Using MACO GRP-threshold drastically improves the energy performance of a building; it reduces energy consumption and leads to significant energy-cost savings. If we take as an example a single-family house equipped with a "standard" aluminium threshold, employing 10 linear metres of

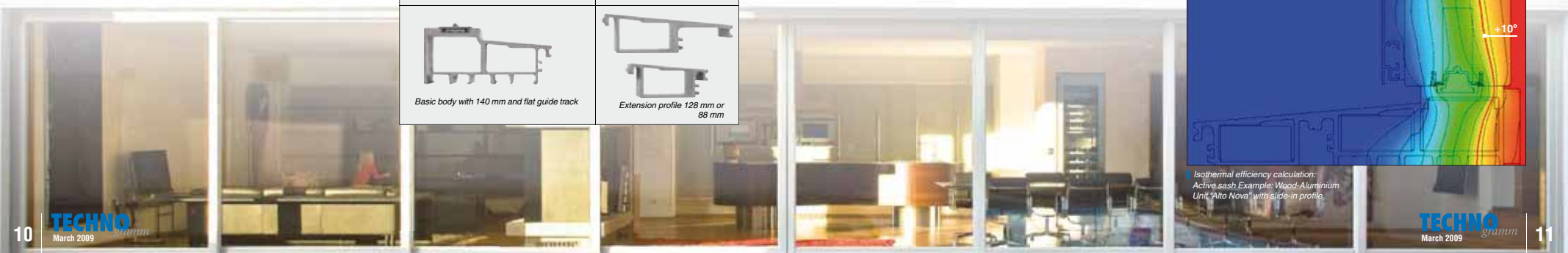
GRP-threshold, together with slide-in profiles, will save approximately 25.6 litres heating oil per year. This corresponds to about 2.6 litres per linear metre. If you then project these figures over a period of about ten years, using MACO's GRP-threshold will guarantee you an impressive saving of 260 litres of heating oil.



Isothermal efficiency calculation: Passive sash
Example: Wood-Aluminium Unit "Alto Nova" with slide-in profile



Isothermal efficiency calculation:
Active sash Example: Wood-Aluminium Unit "Alto Nova" with slide-in profile.



16-Metre Long Lift&Slide Unit



In an extraordinary project Martin Cserni used a 16-metre long Lift&Slide unit, composed of eight sashes!

A production hall was turned into a living space characterised by a 16-metre long glass front. The system solution was developed in-house by an Austrian window manufacturer who was contracted for this specific project.

The Austrian architect was particularly impressed by the sensational insulating standards reached thanks to MACO's GRP threshold. "It is the only system that has worked for this unusually long glass-wall," said Cserni, reflecting on his experiences using different systems



Dipl.-Ing. Martin Cserni

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TECHNOLOGY IN MOTION

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