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Market chance of mechanical retrofitting
Blessing or disaster for the window manufacturer

1 Market chances of mechanical retrofitting

1.1 Mechanical security devices – A closed book?

Historically, the attitude of experts towards "mechanical security devices" has been one of scepticism. In many cases mechanical security devices have been conceived as untested products without proof of successful practical application and the companies specialized in retrofitting mechanical security devices (installers of mechanical security devices) have been considered as unqualified due to the fact that this professional group lacks vocational training specific to this trade as well as clear trade identification. Consequently, retrofitting of mechanical security devices has oftentimes been referred to as a service characterized by poor workmanship and excessive costs. This is opposed by disproportionately high expenditure when windows must be replaced after only a few years of service as a result of burglar intrusion because homeowners want to improve burglar resistance or insurance companies request such measures. The following discusses the procedure of how to be included in the list of approved installers of mechanical security devices, the requirements for security devices, the potential of practical application, qualification concepts and the market opportunities arising from such concepts for window manufacturers.

1.2 Statistics justify mechanical security systems

According to the statistics of the Bavarian criminal investigation department of Munich (Landeskriminalamt München), there is clear evidence that mechanical security devices prevented a total of 1,416 attempted burglaries in Bavaria in 2004. The number of unsuccessful burglaries in 2003 totals 1.230. Of the 1.416 reported crimes, 1093 were prevented by mechanical security devices. In 323 cases, the burglar was deterred by the sound of the burglar alarm system.

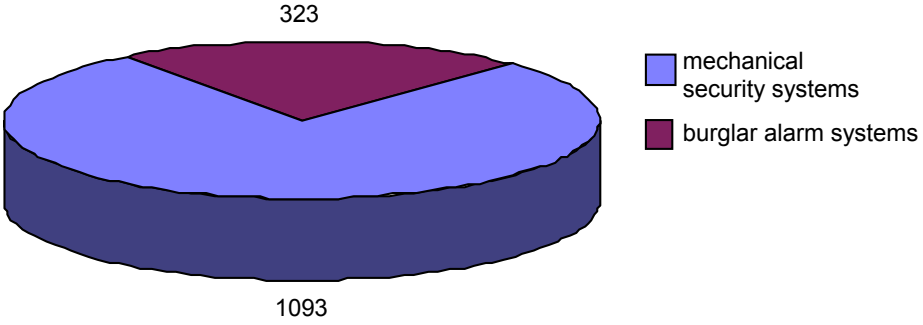

Figure 1
Burglaries prevented by security systems in Bavaria in 2004:
Total number 1,416, statistics by "Bayerisches Landeskriminalamt, Zentrale Kriminalpolizeiliche Beratungsstelle" (Bavarian Criminal Investigation Department, Police Crime Prevention Office)

As regards the number of cases, the CID (LKA - Landeskriminalamt) of Bavaria points out that ”the number of actual cases is likely to be much higher because not all unsuccessful burglaries were reported. This includes in particular those cases where the installed security devices deterred the burglars and no attempt was made to break into the house. Neighbours who watched out for the other’s homes prevented another 231 burglaries.“

1.3 Implementation of approval scheme for installers of mechanical security devices further expanded in Germany

In recent years the list of approved installers of mechanical security systems (approval scheme) has been developed further under the leadership of the LKA Munich. Ten German Laender have now implemented the scheme of listing approved installers of mechanical security systems. They are as follows: Baden-Wurttemberg, Bavaria, Brandenburg, Hamburg, Hesse, North-Rhine-Westphalia, Rhineland-Palatine, Saxony, Saxony-Anhalt and Schleswig-Holstein. The German Laender Berlin, Mecklenburg-Western Pomerania, Lower Saxony, Saarland and Thuringia are still in the introductory phase and plan to introduce it this year. Bremen remains the only German Land without any activities related to introducing the list of approved security installers. With the exception of North-Rhine-Westphalia, a performance specification applicable at the national level will be prepared that harmonizes the requirements for companies applying for inclusion in the list of approved security installers at the national level. During police crime prevention counselling, this list of approved security installers is handed over free of charge by the police to those in need of advice. The list of approved installers of mechanical security devices is thus a reference list of companies of particularly high expertise in this field.

Figure 2 The quality mark of certified companies specialized in fitting mechanical security systems

For those window and door manufacturers that are located close to the borders of two German Laender, this means that they have the chance to be listed as approved security installers by these two German Laender at the same time. Furthermore, companies that have attended a one-day upgrade training with special focus on concealed security devices will now be distinguished by a specific mark in the list of approved security installers. This identification mark will be another qualification feature.

2 Qualification of retrofitters or installers

Proper performance of burglar resistant windows and doors as well as efficient retrofitting using tested security devices depend to a large extent on the expertise of the installer as regards the selection of suitable devices and installation. Expert opinions have shown that failure to comply with these requirements is the main reason for a negative outcome of tests and inspections. Thus, as a rule, the recommendations of the police crime prevention offices are based on the companies’ qualification and whether they have been approved.

At present, there are two schemes in the market: With the exception of Bremen, the scheme of approved installer of mechanical security devices will be implemented by the German Laender by the end of this year all over the country. The responsible CIDs of the German Laender will publish performance specifications that define the

requirements for approved installers of mechanical security devices. Furthermore, a harmonized and uniform performance specification is actually under preparation. This specification will then apply to all German Laender.

The essential requirements are, among others:

- Police certificate of good conduct,
- Participation in basic training,
- List of installation work carried out over the past 6 months,
- Certificate of training.

Certification of specialized companies with additional qualifications is possible at the national level. Specialized companies certified for installation of mechanical security systems are characterized by high expertise and competence. This is of vital importance in particular for the sensitive subject of “burglar resistance“. Apart from the above requirements, the specialized companies are audited by an independent surveillance body on an annual basis. The certification process includes on-site inspections to assess the workmanship of the security installation. This on-site inspection is the decisive feature of certified specialized companies that distinguishes them from those without certification.

3 The requirements for mechanical security devices

At present, assessment of the performance of mechanical security devices is based on two standards, i.e. DIN 18104-1 and -2. The two standards differentiate between two types of mechanical security devices: additional burglar resistant products attached from the outside and those integrated into the rebate. Part 1 of DIN 18104 covers security devices attached from the outside such as additional locks, bolt locks or transversal bolt locks whereas Part 2 addresses security devices fitted into the rebates of windows and doors. They are mainly burglar-resistant tilt and turn fittings or hinge security provisions. Mortise locks are excluded. The requirements for these products are set out in DIN 18250 ”Mortise locks for fire doors and smoke control doors“ and DIN 18251 “Mortise locks for doors“.

The following discusses the fitting of windows and doors with mechanical security devices in accordance with DIN 18104-2.

3.1 Objective of fitting mechanical security devices into rebates in accordance with DIN 18104-2

The objective of this standard is to show the efficiency of retrofitting windows and casement doors of newer designs with mechanical security devices by replacing the tilt and turn fittings incorporated into the rebate with burglar resistant fittings. The use of mechanical security devices is advisable in those cases where the resistance of the building components should be increased to such an extent that burglar intrusion with simple tools such as screw drivers and wedges becomes difficult. A number of tests performed at the **ift** Rosenheim showed repeatedly that depending on the frame material and design/workmanship, window elements that had been retrofitted with security devices in accordance with DIN 18104-2 resisted manual attacks performed by the ”**ift**-experts” for about 1 to 2 minutes. However, it should be noted that mechanical security devices do not meet the requirements of resistance class 2 of DIN V ENV 1627 with regard to mechanical burglar resistance.

3.2 Characteristics of wood and PVC windows fitted with mechanical security devices

Key to retrofitting windows and casement doors with mechanical security devices are of course the burglar resistant fittings. DIN 18104-2 describes two classification schemes of these products.

The first classification scheme comprises static and manual tests (3 minutes) based on the test arrangement described in DIN 18104-2. The bur-

glar-resistant hardware is mounted to multiplex-beech plywood and tested under ”ideal“ conditions.

Classification of burglar resistance of hardware is also possible by testing the unit to the requirements of resistance class 2 of DIN V ENV 1627. However, it should be noted that the results obtained from such tests can be applied only to a limited extent to the relevant frame material and the tested window size.

DIN 18104-2 recommends further measures when it comes to retrofitting windows or casement doors with burglar resistant devices. Background to this is the fact that “the chain is only as strong as its weakest link”. Therefore, despite having fitted tested mechanical security devices, weak spots are likely to remain in the construction.

The following is recommended:

- Use security glazing resistant to manual attack in accordance with DIN EN 356 Class P4A,
- Secure the glass connection with screw connections or by adhesive bonding of the glazing beads (Fig. 3),
- Introduce compression resisting packing between glazing and glazing rebate platform at the locking points (Fig. 3),
- Reinforce wall attachment.

4 Summary

The significance of mechanical security systems has increased in recent years in Germany. Support by police crime prevention offices has been in high demand as regards advice in mechanical security devices. Furthermore, the approval scheme for installers of mechanical security devices in Germany has been implemented in almost all German Laender. There is still need of qualified professional companies, including window manufacturers that will address the not simple but interesting market of mechanical security devices. The framework conditions for mechanical security devices have improved thanks to the wide variety of tested and certified products, including the necessary fitting technology.

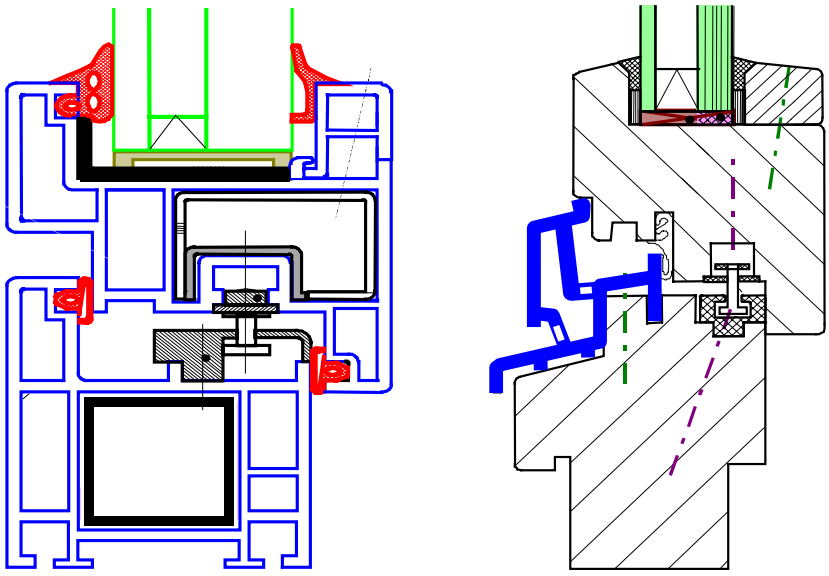

Figure 3 Characteristics of burglar resistant wood and PVC windows

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Born on August 25, 1969 in Vogtareuth, Germany

1985 – 1988	Trained as a joiner
1988 – 1991	Attended vocational studies preparatory centre in Wasserburg and vocational training college in Rosenheim
1991 – 1996	Studied at Rosenheim Polytechnic University, specialising in Wood Technology, intermitting for one year to do basic military service
1996 – 1997	Final year project at **ift** Rosenheim on “Damp on wooden windows“
1997 – 1998	Production Manager at Alpenküchen in Brunneck, South Tyrol
since July 1998	Staff member at **ift** Rosenheim
October 2000	Director, testing division for doors, gates and safety at **ift** Rosenheim
since Oct 2004	Head of **ift** centre Doors, Gates, Safety, Security

Volker Schirrmacher, state-appointed sworn expert

Born on Juni 2, 1959

1976 – 1979	Vocational education as industrial mechanic, Kampf Mechanical Engineering
1979 – 1981	Overseas assembly, Kampf Mechanical Engineering
1982 – 1984	Studies of Mechanical Engineering at the Rhine Academy, Cologne, including acknowledgement as instructor
1984 – 1988	Project Engineer for USA, Canada and Mexico, Kampf Mechanical Engineering Concept and Sales, main emphasis on cutting and coiling machines for rolls of paper, foil and film
1988 – 1992	Export Manager, Brankatsch GmbH – Automation Systems, Krombach
1992 – 1994	Export Manager Huwil-Werke, production of locks and hardware for furniture, Ruppichteroth
1994 – 1996	Technical Marketing Consultant in the field of small- and medium sized enterprises aiming to enter the US-market; junior partner of GATEC (German American Trade Center), Atlanta/Georgia, USA, c/o Kichniawy & Partner, Düsseldorf
1995	Formation of a company in the field of repair and maintenance of hardware for windows and doors; development and realization of the first concept in Germany for advice on / retrofitting of tested burglar resistant hardware for windows and doors
1998	DIN CERTCO certification as the first company for mechanical retrofitting products in Germany; new trade name: Schirrmacher Safety Engineering GmbH;
2001	Public appointment and swearing-in as the first expert in the specific field of mechanical safety engineering;
2002	**ift**-certification, producer for mechanical safety features and equipment with European certification

further:

- State-Certified Engineering Technician
- Managing single partner of ‘Schirrmacher Safety Engineering GmbH’
- Speaker at LBS Münster, Security Conferences for CID-officers
- Speaker (irregularly) at the Police Academy , Neuss
- Speaker in the field of mechanical prevention for assurance companies
- Security adviser for companies in different industries
- Speaker at **ift** Academy (Trade Marketing)