

# HPRTM HIGH PRESSURE MEETS LIGHTWEIGHT

# Contents

Trade fairs, seminars, conferences and symposiums in which Hennecke will participate

## INTERZUM

Cologne • 25.05. - 28.05.

## KUZ-Seminar on PU technology

Leipzig • 05.09. - 09.09.

## UTECH Asia

Shanghai • 06.09. - 08.09.

## Composites Europe

Stuttgart • 27.09. - 29.09.

## FAKUMA

Friedrichshafen • 18.10. - 22.10.

As at May 2011



HP-RTM  
High pressure  
meets lightweight

4



Slabstock  
production  
at TAKI VITA

6

The use of  
ELASTOLINE F  
in laboratory  
services

8



Insulation  
of private  
buildings with  
PU sandwich  
panels

11



## Imprint :

## Hennecke INNOVATIONS | 111

Published by:  
Hennecke GmbH, Sankt Augustin

Design and layout:  
REpublic, Linz am Rhein

Edited by:  
Torsten Spiller, Beate Berwing

Photos:  
Hennecke GmbH, Fotolia.de  
The photos from fotolia.de  
are used within the framework  
of non-transferable sub-licenses.

Printed by:  
Printing office Engelhardt, Neunkirchen-Seelscheid

Total number of copies:  
5.000

Copyright:  
All rights reserved. No part of this  
publication may be reproduced  
without prior written permission  
of the publisher.  
No liability for mistakes.



Formed in  
Place Foam  
Gaskets

13

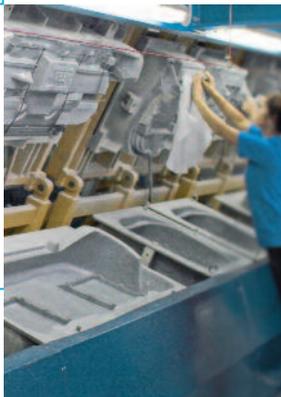


Giant merger  
at POLYTEC

15

Flexible and  
efficient:  
WKH production  
systems

17



Hennecke on  
the American  
market

19



## IN THIS ISSUE

2 **Imprint  
Fairs / Events**

### HP-RTM

4 - 5 **High pressure meets lightweight -  
Hennecke establishes customer center  
for high-volume RTM applications**

### Slabstock

6 - 7 **Polyurethane pioneers on the Nile delta –  
slabstock production at TAKI VITA**

### ELASTOLINE

8 - 10 **Multiple possibilities for Elastomer processors:  
The use of ELASTOLINE F in laboratory services**

### Technical Insulation

11 - 12 **Insulation of private buildings with  
PU sandwich panels covers half the rent**

### Formed in Place Foam Gaskets

13 - 14 **FIPFG: Hennecke high-pressure technology  
opens up new field of application**

### 360° Retrofit

15 - 16 **Giant merger at POLYTEC –  
efficient production optimisation  
in record time**

### Moulded Foam

17 - 18 **Flexible and efficient –  
the economic production of  
foamed moulded parts for car seats**

### Hennecke Internals

19 **Hennecke Inc. –  
active on the American market  
for over 40 years**



*Dear customers, dear readers,*

*It's not only excellent conditions or the largest number of unique selling points that ensure our company its top position in global competition, but also the fact that anyone who wants to be credible and successful in a dynamic marketplace has to actively seek out dialogue. This principle guides our economic activities within our company as much as our cooperation with customers and development partners. This guarantees them the best production results so that they can prove successful in a variety of markets and situations. One of the results of this principle is in your hands right now: Our customer magazine INNOVATIONS.*

*The current issue holds several examples of how this guiding principle is translated into daily practice by investing comprehensively in new technologies. By establishing a customer center for RTM applications that are suitable for mass production for instance (see p. 4), or constantly expanding our laboratory capacities for processors and developers of PU cast elastomers (see p. 8). Apart from weighing up specific options, this enables investment-related decisions to be made with few variables.*

*And those who decided for Hennecke a long time ago also benefit from our willingness to pursue a dialogue. That's how, thanks to our 360°Retrofit Service, we were able to effectively optimize production at the Austrian automotive supplier POLYTEC in a very short amount of time (see p. 15). After similar measures and more than 30 years of successful slabstock production, the Egyptian company TAKI VITA recently opted for a further Hennecke plant (see p. 6).*

*As you can see, it pays off for everyone involved to be willing to communicate. So enjoy reading the INNOVATIONS – just as I enjoy our shared dialogue.*

A stylized, handwritten signature in black ink, appearing to read 'Rolf Tripler'.

Rolf Tripler  
Managing Director, Sales

## High pressure meets lightweight – Hennecke establishes customer center for high-volume RTM applications



*Sufficient scope for high-performance parts: Hennecke's own customer center*

**Due to increasing requirements for efficiency and ecology interest in lightweight solutions for the automotive industry has been growing in recent times. The focus is especially on one process: Resin Transfer Moulding (RTM). Thanks to comprehensive investments in a new RTM center, Hennecke GmbH now offers sufficient scope to potential customers as well as raw material partners to manufacture, test and develop high-performance parts until they are suitable for mass production. The Hennecke composite specialists can score with an important further development of the RTM**

**technology that ensures unlimited suitability for mass production in terms of automation and cycle time: the High-Pressure RTM process (HP-RTM).**

Hennecke GmbH has been documenting the strongly growing demand for composites in general and lightweight solutions in particular with constant research and development and the modular expansion of its product portfolio. Thus the composite specialists regularly succeed in identifying new manufacturing processes and fields of application for producing and using composites. This already applied to PUR-CSM technology, which has

become firmly established in the production of lightweight and high load-bearing glass- or natural fibre-reinforced PU products – including sandwich structures.

Apart from new drive concepts, reduced vehicle weight is an indispensable element to ensure more efficiency and a better energy balance in future automobile manufacture. In motor racing, lightweight construction has long provided for improved performance and less consumption so that it has increasingly found its way into automobile mass production. In the car body sector, automotive manufacturers meet these

requirements by using fibre-reinforced structural components that are convincing both in terms of low weight and crash behaviour. In most cases, the Resin-Transfer-Moulding (RTM)

Hennecke GmbH has tackled this problem and pursued familiar paths in polyurethane processing technology in a new way. The focus of the HP-RTM method is on a task that

is well-known and tried and tested in PU processing: the high-pressure injection of reactive mix into a mould within seconds. In combination with the appropriate raw material system, the HP-RTM process provides for accelerated reaction and extremely short curing times. In addition,

Hennecke GmbH's decades-long experience of high-pressure metering takes effect. This applies to mixheads for instance, which furnish high-quality and reproducible results at all times. Moreover, the use of the patented Hennecke constant-pressure injector ensures a controlled injection pressure - no matter whether RTM raw material systems with or without filler are being processed.

In future, customers and raw material suppliers will have the opportunity to find out more about these and further advantages at Hennecke's headquarters in Sankt Augustin.

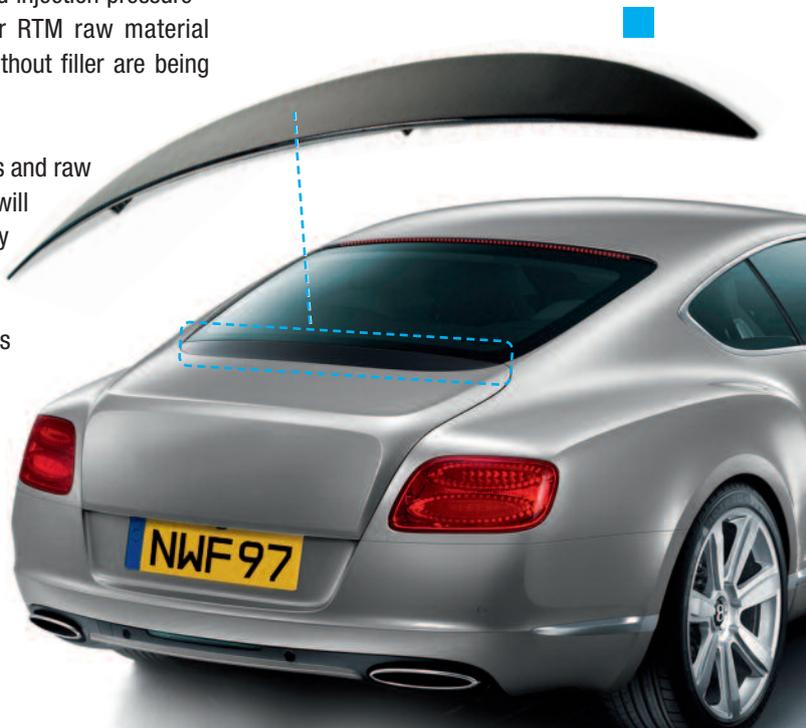
However, with the decision to establish an RTM center for testing, development and mould trials, Hennecke GmbH provides not only its equipment, but also the know-how of experienced process engineers. Hennecke Managing Director Mr. Alois Schmid points out: "We intend to optimally assist our customers with the implementation of their ideas and plans before they purchase a processing plant and support them in their investment decision-making process". This close cooperation with business partners around the globe is one reason for Hennecke's innovative strength in the area of new technologies or applications. According to Jens Winiarz, Hennecke's responsible Sales Manager for Composite Spray Moulding (CSM) and new technologies, close cooperation with raw material suppliers is one of Hennecke's good traditions: "In our customer center for CSM polyurethane spray technology, we have already tested successful raw material systems and developed PU-based sprayed products. The RTM center will carry on this way."



*The new STREAMLINE: tailor-made for HP-RTM processing systems*

method is used for this application. In the process, resin systems are injected into the closed mould at low pressure. Because of the great amount of manual work involved, the manufacture of such high-tech parts in the classical RTM method is partly characterized by extremely long process times. This is why the industry is desparately searching for manufacturing methods that are suitable for mass production and an adequate implementation of high volumes. However, increased automation alone can only optimize cycle time to some degree. The aim is to find a solution which decisively reduces the specific curing times of parts.

By introducing the so-called High-Pressure RTM process (HP-RTM),



## Polyurethane pioneers on the Nile delta – slabstock production at TAKI VITA

The Egyptian company TAKI VITA Company S.A.E. has been making high-quality furniture for the home and office for over 30 years, as well as mattresses, sofas and car seats for customers around the world. The biggest Egyptian furniture maker manufactures all the foam goods itself. Since its foundation in 1976, it has always used continuous slabstock plants made by Hennecke. The PU processor recently put a MULTIFLEX plant into operation.

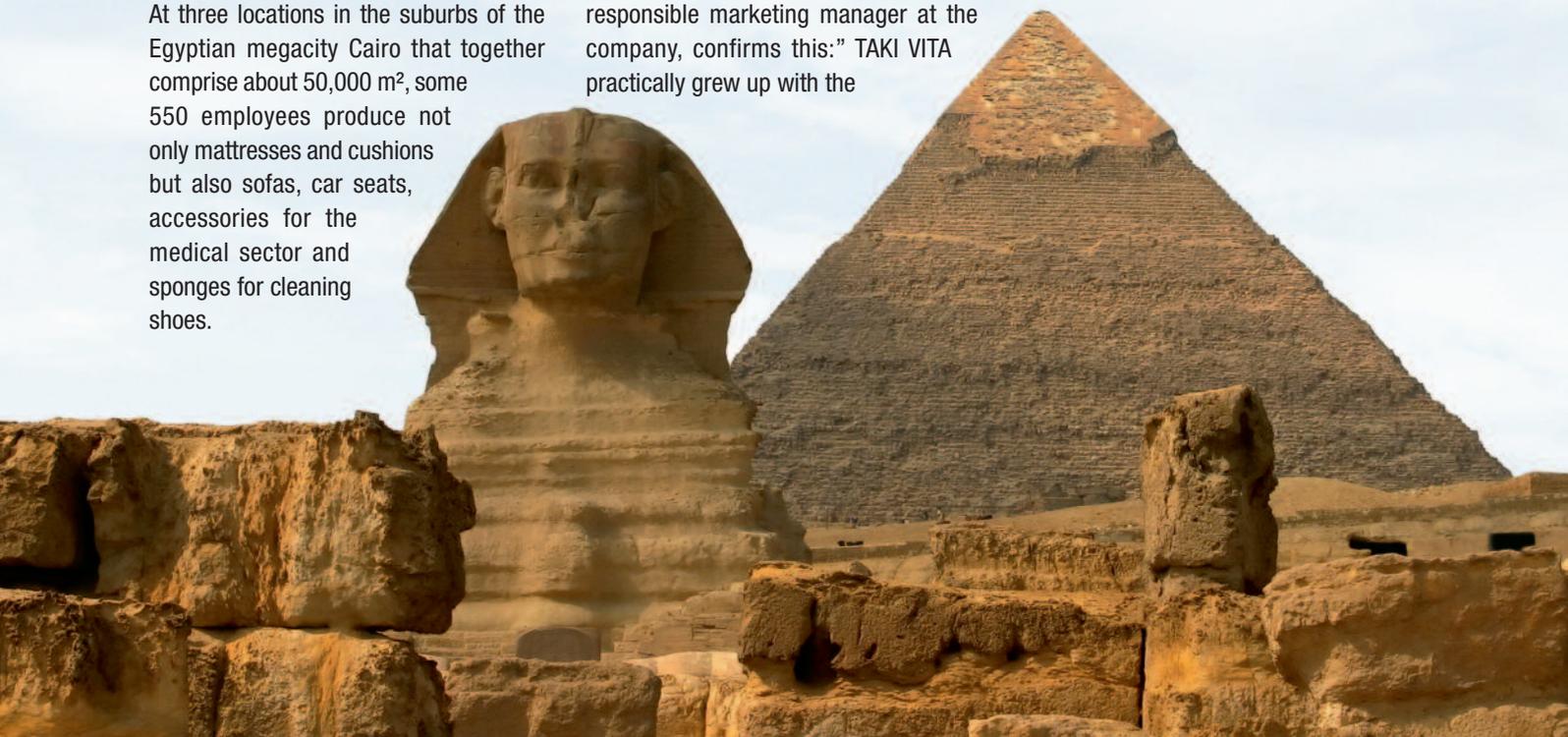


*Skilled in manufacturing slabstock: the TAKI VITA team*

When it comes to processing polyurethane, TAKI VITA is a true pioneer. In the 1970s, it was the first company in Egypt to start producing high-quality slabstock for mattresses and medicinal cushions. It now covers a wide spectrum in the area of foam goods manufacturing, and this above all has to do with TAKI VITA's wide product portfolio. At three locations in the suburbs of the Egyptian megacity Cairo that together comprise about 50,000 m<sup>2</sup>, some 550 employees produce not only mattresses and cushions but also sofas, car seats, accessories for the medical sector and sponges for cleaning shoes.

Hennecke plant technology has accompanied TAKI VITA from the very start. Shortly after the firm was established, Hennecke supplied a continuous UBT slabstock plant to Cairo, which ran successfully and without being modified for almost three decades in a row. Tamer Elsendiony, who is the responsible marketing manager at the company, confirms this: "TAKI VITA practically grew up with the

Hennecke UBT. The plant worked extremely well and played a part in TAKI VITA's success story." In 2008, the plant underwent a comprehensive maintenance and modernisation overhaul that included a complete change of conveyor drive.



Based on continuous contact TAKI VITA shortly after decided to invest again in Hennecke plant technology. One year later, it was time – after the technical details had all been clarified, the final negotiations about the delivery and installation of a Hennecke MULTIFLEX slabstock plant came to a successful close. The plant was delivered in August 2010 after being tailored to meet TAKI VITA's specific requirements.

By choosing the MULTIFLEX, TAKI VITA was not only opting for state-of-the-art technology in the field of foam manufacture for furniture and mattresses, but for a plant that can produce a variety of technical foams to the highest standard. This has opened up many avenues to TAKI VITA in a segment that is growing extremely fast. Moreover, the production and processing of technical foams promises further opportunities for expansion as few suppliers in the local market are able to achieve similar production results as TAKI VITA.

And the investment in Hennecke plant technology was worth it to TAKI VITA not only because of the technical unique selling points, but because of the Hennecke engineers' and service technicians' know-how, which played a decisive role in a positive sense, as Tamer Elsendiony emphasizes: "Hennecke has not only convinced us with its reliable machine technology but also because our co-operation is so smooth.



*Foam production to the highest standard: Hennecke's MULTIFLEX lines*

We can always rely on the Hennecke experts if there is a problem." The CEO of the TAKI group, Dr. Zeinab El-Ghazaly, also values the business relations with



*Dr. Zeinab El-Ghazaly*

Hennecke that are almost 30 years old. "Our business partnership with Hennecke goes back many years and has always been characterised by constructive and professional co-operation. The investment in modern production technology is a cornerstone for future success in the market, just as the old plant used to be in the past."



## Multiple possibilities for Elastomer processors: The use of ELASTOLINE F in laboratory services



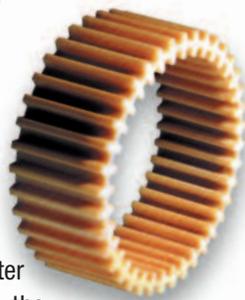
**ELASTOLINE has stood for top-quality PU cast elastomer processing for over ten years now. Last year, Hennecke introduced the ELASTOLINE F, which is especially attractive because of its constantly flexible machine design. PU cast elastomer processors and others who intend to process PU cast elastomers can now test the various production possibilities of the new machine generation in Hennecke's technical laboratory. Thus, the machine and plant manufacturer is consistently expanding its already very comprehensive laboratory capacities in a fast-growing market.**

High mechanical strength, excellent elongation capacities, outstanding attenuation and extremely good impact resistance: Products made from PU cast elastomers have excellent dynamic qualities and can therefore be used in a whole range of applications. This is why demand for elastomer-based products has risen steadily over the past few years. ELASTOLINE machines optimize the manufacture of elastomer parts, both in terms of quality and quantity, by reducing the amount of manual work involved, improving hygiene in the workplace and streamlining operational processes.

presented to about 100 raw material suppliers and processors during the Hennecke ELASTOLINE Days. The ELASTOLINE F supports processors in the production of different PU elastomers. The design has proved to be consistently flexible, offering enough scope for customer-specific tailor-made solutions and later modifications thanks to the modular structure of the metering lines and the compact size. It is perfectly adapted to the market and to the needs of the customer.

The most recent generation of machines in the ELASTOLINE series was officially launched last year when it was

In Hennecke's technical lab, processors and raw material suppliers can find out just how





*Material development, low volume production and mould trials: extensive capacities at Hennecke's technical lab*

flexible this new generation of machines really is. By opening a permanent customer center for PU cast elastomer applications, Hennecke has expanded its laboratory capacities in a market that has a bright future. Customers and raw material suppliers now have access to a wide spectrum of possibilities for material development, low volume production and mould trials, not least because the laboratory machine is particularly well-equipped. The metering line has three main components and two supplementary components and the possibility of metering different additives. This means that the laboratory machine is appropriate for the continuous

and discontinuous processing of massive or cellular PU cast elastomers based on TDI, MDI and NDI systems. Moreover, the basic configuration of the ELASTOLINE F is also remarkable: Tank sizes of up to 320 liters, an efficient temperature control system for tanks and pumps, and energy saving because the tank cabins

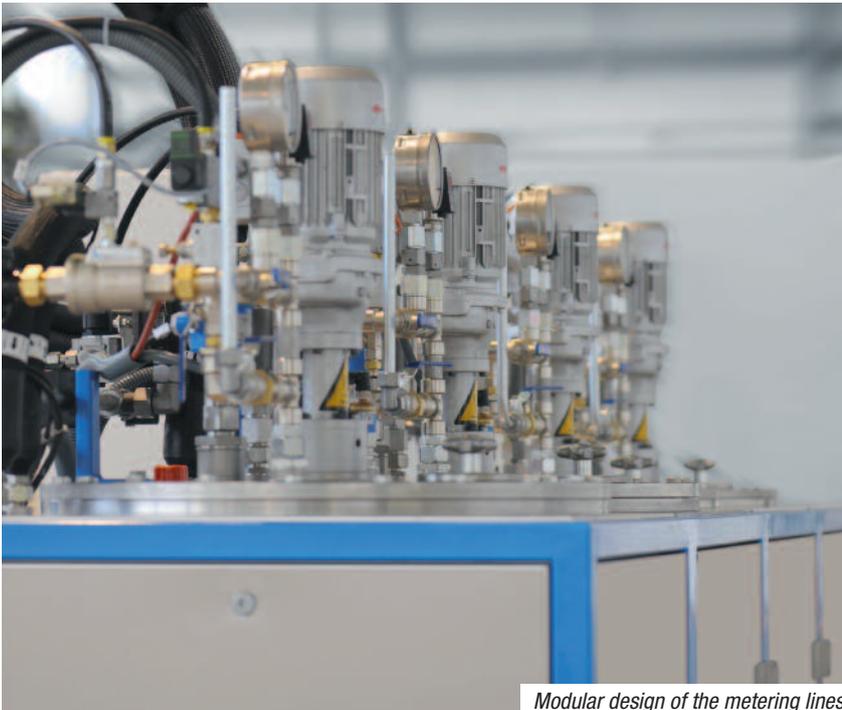
are effectively insulated all guarantee high-quality end products even if the processing parameters



*Flexible plant concept: the ELASTOLINE F with three components and special boom*



are extremely tough. The mixhead is also impressive. Hydraulically-controlled mixhead nozzles mean that switching cycles are extremely short and synchronized, while the sophisticated mixing chamber and stirrer geometry ensure the highest mixing quality. In the technical lab, the mixhead is used on a special boom, so that moulds can be handled in different positions.



*Modular design of the metering lines*



*MEL mixhead with hydraulic valves*

## Insulating prefabricated houses with PU sandwich panels covers half the rent

As part of the current discussion about energy and the need to minimise CO<sub>2</sub> emissions, effective insulation of buildings is becoming increasingly important. Whereas many prefabricated houses here continue to be insulated with mineral wool and cork, in Great Britain the construction industry is one step ahead. PU sandwich elements have been used to insulate prefabricated houses for about five years now. The trend is now conquering Germany – slowly but surely!



*Optimum insulation: timber frame houses with SupaWall panels*

Fifty percent of the energy used in the European Union goes on heating houses. So it is clear that good insulation can save a great deal of energy. But what is efficient insulation? Scotframe Limited, a Scottish timber frame house company, has opted for PU sandwich elements. It makes its panels with Hennecke technology and then puts them in its houses, dramatically reducing costs.

The British firm SupaWall Limited provides licences and technical 'know-how' for technology transfer

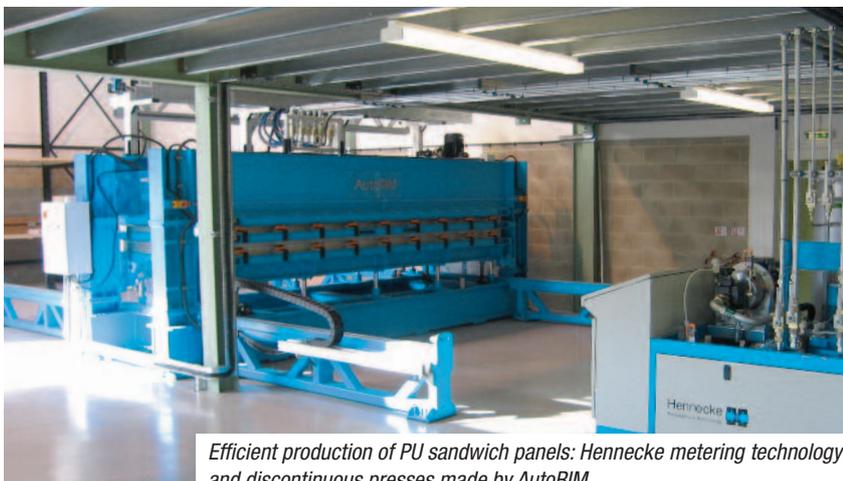
including structural building analysis and technical calculations for SupaWall licence holders.

So that the PU sandwich elements can be made, Hennecke delivers mixing solutions to AutoRIM, Hennecke agent for the British Isles. These include HK series metering machines from 650 onwards, metering technology for the blowing agent pentane as well as the hand-held MXL mixhead with deviation and air cleaning system. MXL mixheads are particularly appropriate for areas that are difficult to access

and discontinuous manufacture because they are operated by hand.

AutoRIM is a systems integration specialist, manufacturing the presses for discontinuous production of PU sandwich panels, and a year ago it put the line that included the Hennecke wet end into operation at Scotframe in Aberdeenshire.

It is clear why the trend to insulate houses with PU sandwich panels makes sense. On the one hand, requirements to reduce CO<sub>2</sub> emissions (higher insulation demands) as well as rising energy costs (demands for more effective solutions). On the other, the rising costs in the construction sector (simple and fast installation of PU sandwich panels) and increasingly high transport costs (a growing number of sandwich panel production centres on the ground). Moreover, polyurethane is superior to mineral wool as an insulating material because it coalesces and sticks more completely between facings and the cells are closed, which means that no air can circulate.



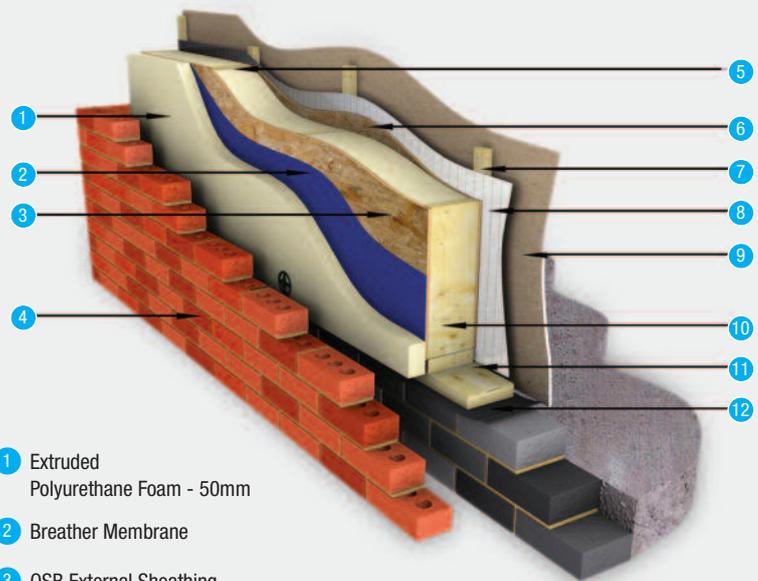
*Efficient production of PU sandwich panels: Hennecke metering technology and discontinuous presses made by AutoRIM*

# Technical Insulation

Because the cells are closed in PU sandwich elements only a limited amount of moisture can get through. Condensation only forms, if at all, on the outer surfaces. Whereas when mineral wool is used water gets in and the insulation is limited allowing bacteria and fungi to form. PU sandwich elements are also better than panels that are filled with mineral wool in terms of fatigue and physical decomposition. Furthermore, as opposed to in mineral wool in polyurethane there is no movement of air because the insulating gas is bound.

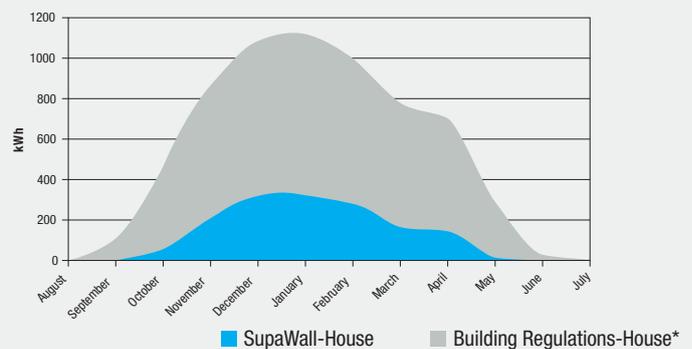
The advantages of insulating prefabricated houses with PU sandwich elements are obvious. It is thus only a matter of time before this is done all over Germany. Hennecke already has the appropriate machines and systems technology.

Typical structure of an exterior wall with SupaWall panels



- 1 Extruded Polyurethane Foam - 50mm
- 2 Breather Membrane
- 3 OSB External Sheathing
- 4 External Cladding
- 5 Injected, Expanded Polyurethane Foam
- 6 OSB Internal Sheathing
- 7 Counter battens - 25mm/35mm
- 8 Vapour Control Heat Reflective Membrane
- 9 Plaster Board
- 10 Studs at 600ctrs - 140mm
- 11 Soleplate - 140mm
- 12 Damp Proof Course DPC

Energy Requirements for Space Heating



\*refers to the legal requirements in the UK

# Formed in Place Foam Gaskets

## FIPFG: Hennecke high-pressure technology opens up new field of application

**In the past, sealing beads - also called Formed in Place Foam Gaskets (FIPFG) - were almost exclusively manufactured in a low-pressure process. Hennecke GmbH has now developed a special variant of high-pressure technology that enables a highly reactive PU sealing foam system to be processed and applied to a car door module. The reactivity of the PU system has been accelerated so as to synchronize the manufacturing time of the door module in the injection moulding process with the sealing application and its curing.**

Hennecke GmbH – a leading supplier of PU processing technology – invests considerable resources in research and development each year. This is beneficial for the user as the most recent example of gasketing under high pressure illustrates.

Low pressure systems prevail in the production of gaskets because very low outputs of under 5 g/s are usually required. The disadvantage of the low-pressure process is that the reactivity of the foam has to be slow enough to maintain the processability of the reaction mixture. In addition, the mixer needs to be cleaned with solvent or the mixing element has to be replaced after completion of each part while high-pressure mixheads are self-cleaning.

Further disadvantages of low-pressure technology are long curing and processing times.

The endeavour of many manufacturers to constantly increase efficiency is thus limited by the technical capability of the low-pressure process.

A successful method of making production more effective is the combination of manufacturing steps, i.e. manufacturing processes are linked and synchronized. An essential requirement for this is the synchronization of the cycle times of the individual production steps including the combination of thermoplastic injection moulding with polyurethane processing. The reactivity of the PU mixture has to be simultaneous with the curing of the injection moulded part that carries the gasket in this case. This means that new, highly reactive PU systems are required which can only be processed under high pressure. With a MICROLINE polyurethane high-pressure metering machine and the MT mixhead for very



*Optimal solution for metering very small outputs: the MT*



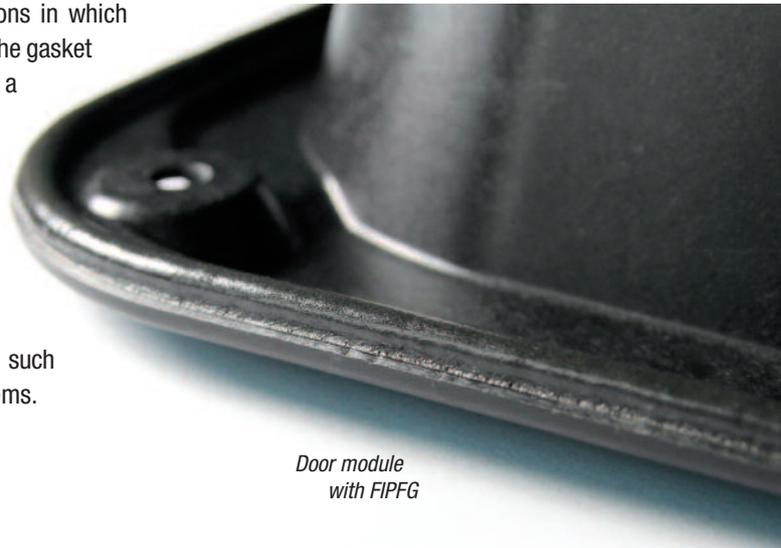
# Formed in Place Foam Gaskets

small outputs, Hennecke is able to process a highly reactive PU system that is especially suited for high pressure and to execute the application to a door module within the cycle time of injection moulding production. With outputs down to 2 g/s of reaction mixture, more complex part geometries can also be provided with gaskets. To this end, the mixhead is either handled by a 6-axis robot or an injection portal or the part is moved under the fixed mixhead - depending on the geometrical complexity of the part.

Applications are not restricted to door modules. According to Jürgen Wirth, Manager Application & Development Technology, „drum lids, control cabinet doors, body panels and case parts as well as extraction booth gaskets etc. are also possible.

Basically all applications in which the cord thickness of the gasket to be provided has a width of at least 3 mm.“

For an FIPFG mass production, the MICROLINE can be combined with automation equipment such as mould carrier systems.



*Door module  
with FIPFG*



## Giant merger at POLYTEC – efficient production optimisation in record time

Hennecke GmbH's RIMDOMAT plants for RIM and RRIM technology are electronically-controlled, leak-free piston metering machines for maximum stroke volumes and extremely large outputs. Thanks to their large output they are considered the real "elephants" of metering machines. But what can be done if a RIMDOMAT cannot reach a desired output of more than 5 kg/s per component? Two RIMDOMATs can simply be "merged". That's what happened thanks to Hennecke at the renowned Austrian automotive supplier POLYTEC FOR Car Styling GmbH & Co KG in the record time of two months.

Hennecke GmbH has not only been developing and producing high-performance PU processing technology for over six decades but thanks to its 360°SERVICE also provides various services at competitive prices. One of these is the 360°RETROFIT service which apart from standardised innovations also includes specially-adapted innovative solutions for simple and fast retrofitting. One clear example of this is the successful combination of RIMDOMATs of type HS 3000 and HS 2200, which together can attain an output of up to 11 kg/s.

The Austrian firm POLYTEC has trusted Hennecke piston metering machines for over 20 years. Last year, the car specialist came to Hennecke with a request to upgrade its RIMDOMATs so they could produce bumpers for bigger vehicles.

"There was the possibility," recalls Peter Böhm, Manager Service Sales at Hennecke, "of upgrading the existing



Large shot weights within short metering times: RIMDOMAT piston metering machines

HS 3000 RIMDOMAT. But this was comparatively costly and suboptimal from the point of view of the necessary output. So we decided to bring together two RIMDOMATs that were already in use and to make one machine out of two.



Peter Böhm

We connected them mechanically and electronically and then included a Siemens S7 joint control system."

Thanks to the intelligent and modern control system POLYTEC can now use the RIMDOMATs separately for small and medium-sized parts or together for large parts. Moreover, a by-pass between the complete new system and the existing production equipment has been set up so that if there is a failure or the plant needs to be maintained the new combined system can take over the production.

Christian Schobesberger, POLYTEC works manager, is very satisfied with the system. "We saved on the costs for a new plant and now have a consolidated

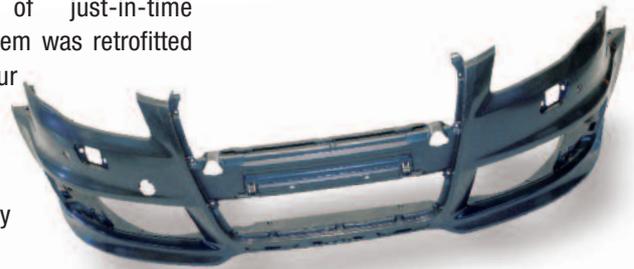


position in the market because the combined system covers the whole range of parts. Moreover, the production is guaranteed to work around the clock



*Metering cylinder of a RIMDOMAT plant*

thanks to the back-up solution - this is particularly crucial in the automotive sector because of just-in-time production. The system was retrofitted and adapted to our individual needs within two months and the Hennecke employees did very good work."



RIMDOMATS work on the basis of slow-stroke metering cylinders and are geared to achieve the required shot weight in one metering stroke. Because the metering machines can process raw materials containing fillers in a safe way without any problem, they are especially appropriate for manufacturing high-quality moulded parts such as side skirts, mounting parts for front and rear bumpers as add-on elements or complete car fronts and backs.

# Moulded Foam

## Flexible and efficient – the economic production of foamed moulded parts for car seats



*Suitable for six main components  
that can be switched separately:  
the MT 22-6*

**An important element in the overlap between man and automobile is the car seat, which is expected to be comfortable and safe. Foamed moulded parts made from polyurethane help to ensure this. WKH production systems, used by Johnson Controls or Lear Corporation, demonstrate how these moulded parts can be produced economically when there is a large number of car models but smaller quantities and increasingly shorter cycles.**

The main use of Hennecke oval conveyors is to produce PU foam parts for car seats and backrests, as well as smaller parts such as armrests, headrests and side bolsters. As in many other areas of car manufacture the number of variations is also growing in seat production. Flexible production technology for manufacturing moulded foam, as is provided by Hennecke WKH oval conveyors, is the solution for this challenge. "The current situation in the production is as follows:



*Placing of inserts in the moulds*

To make seats for various manufacturers and car types that have different formulations on one system. Thus the plant's capacity utilization is optimized," says Nils Boigk, moulded foam specialist at Hennecke.

In WKH oval conveyors (with horizontal carriage chain), the mould carriers perform the mould closing and opening movements and absorb the forces that arise from the process. The mould carriers move continuously in a chain in the oval. The insertion, foam injection and removal take place on the long side and then the foam cures on the back straight. The mould carriers can be automatically moved in or out during production so the moulds can be changed.

### **Ergonomic assembly**

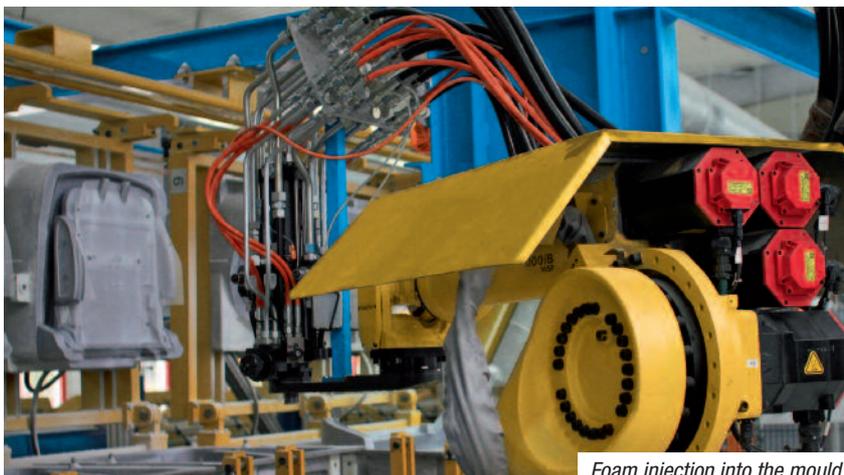
The first operation is the application of release agent in the open mould. In many cases this is done by hand. "When systems have very fast cycles, one or two robots are used for dispensing the release agent," says Boigk. The second step is for the operators to place inserts such as clips, wires, fleece elements or foam pads. "There can be up to 30

different parts depending on the mould configuration of the plant", explains Boigk. To enable an ergonomic assembly, the moulds are inclined towards the operator. Once all inserts are in place the bottom part moves back into the horizontal position so that it can be filled with foam by one or two robots. The system recognizes the mould and automatically adjusts the formulation and amount of foam. Depending on the type of seat the foam is produced in mono or dual hardness technology. "The use of foaming robots has been designed in a very flexible manner. One robot can fill a mould or two robots can fill a mould together," says Boigk. The foaming plant has an output of ca. 500 g/s and the weight of the foam parts can range from 800 grams to five kilograms depending on the system.

The lid is either closed hydraulically, mechanically by skids or via a closing station. "We have optimized the opening and closing by skids and users are very pleased with this," says Boigk. "It is a purely mechanical process that does not cause any wear and requires little maintenance. However, the closing operation depends on the speed of the plant. This is not a problem for most users



# Moulded Foam



Foam injection into the mould

as the systems always run at full capacity.” An air cushion under the mould ensures there is a parallel stroke of about 20 millimetres and thus provides the appropriate clamping force against the foam that creates pressure from within. The foam then cures on the back straight. At the end, shortly before the bend, there is a brief intermediate ventilation as the air cushion deflates so that gas residues can be removed. In or after the bend the lid opens completely so that the workers can take out the finished foam parts. “When we remove the parts we are very dependent on the operators’ skills with their hands as undercuts are very often left in the moulds,” says Boigk. “It takes a lot of skill to take the foam parts out of the mould without any breakage or tearing.” The plant manufacturer is currently working with car seat makers to increase the automated processes in the oval conveyors. “Apart from removing the parts carefully, the biggest challenge is placing the inserts. Because of the great variety of materials and types of inserts the limits of robots and gripping systems are quickly reached.” In the last step, the mould is blown dry with compressed air so that it is again ready for the application

of release agent. Depending on the size of the foam part the cycle ranges from nine to 20 seconds.

## Constant pressure

The plant manufacturer has developed the MT 22-6 mixhead to meet the high demands of customers such as Johnson Control and Lear. “This mixhead is the high-end solution for the production of foamed automotive seating,” reports Boigk. The mixing system is suitable for six main components that can be switched separately. Hennecke’s patented constant pressure injector technology ensures that the foam is discharged with constant pressure. Thus, the quality

of the foam is always of an equally high standard regardless of fluctuations in output. The mixhead can also be switched very fast, in about 500 milliseconds, so that it can be cleaned in between and formulations can be changed within the production process. “The optimization of our internal workflow regarding costs and processing times has led to strong demand in the market,” says Boigk. “The new mixhead has convinced many users. With the generous variation of formulation from one shot to the next we have taken the flexibility of our lines even further.”



The Hennecke moulded foam team (from left to right): Reto Schönsee, Daniel Enge, Joachim Bahlke, Lars Baumann, Sven Burchardt, Annegret Zimmermann, Nils Boigk

## Hennecke Inc. –

active on the American market for over 40 years

Hennecke has been represented on the American market and the NAFTA region for over 40 years. „Hennecke USA“ was established in 1968 and offers local customers far more than just sales and service activities. The American subsidiary has become one of the major partners in the global network of the Hennecke group.



*Hennecke Inc.'s headquarters in Lawrence, Pennsylvania*



In 1977, as the company's business activities grew steadily, the headquarters of the American Hennecke subsidiary relocated to Lawrence, Pennsylvania on the east coast. The company trades under the name of Hennecke Inc. since it was taken over by Adcuram Group AG in 2008. Altogether, the local team is composed of 27 employees, including experienced specialists in sales, project management, design and service. Hennecke Inc. offers its customers expert consulting and engineering services for retrofitting as well as a comprehensive sales and after-sales portfolio. A laboratory for presentations to customers was set up in 2009.

Since mid-2010, the American Hennecke subsidiary consists of a new team including

Patrick Brüninghaus (Operations Manager) and Lutz Heidrich (Sales and Marketing Manager) as competent contact persons. Both have a great deal of experience in the whole NAFTA region and work closely with their parent company in Germany. Recent orders prove that transatlantic cooperation combined with efficient team-

work in America holds attractive solutions for the local PU market in store. Not only was a big contract with climate specialist TRANE clinched this year but

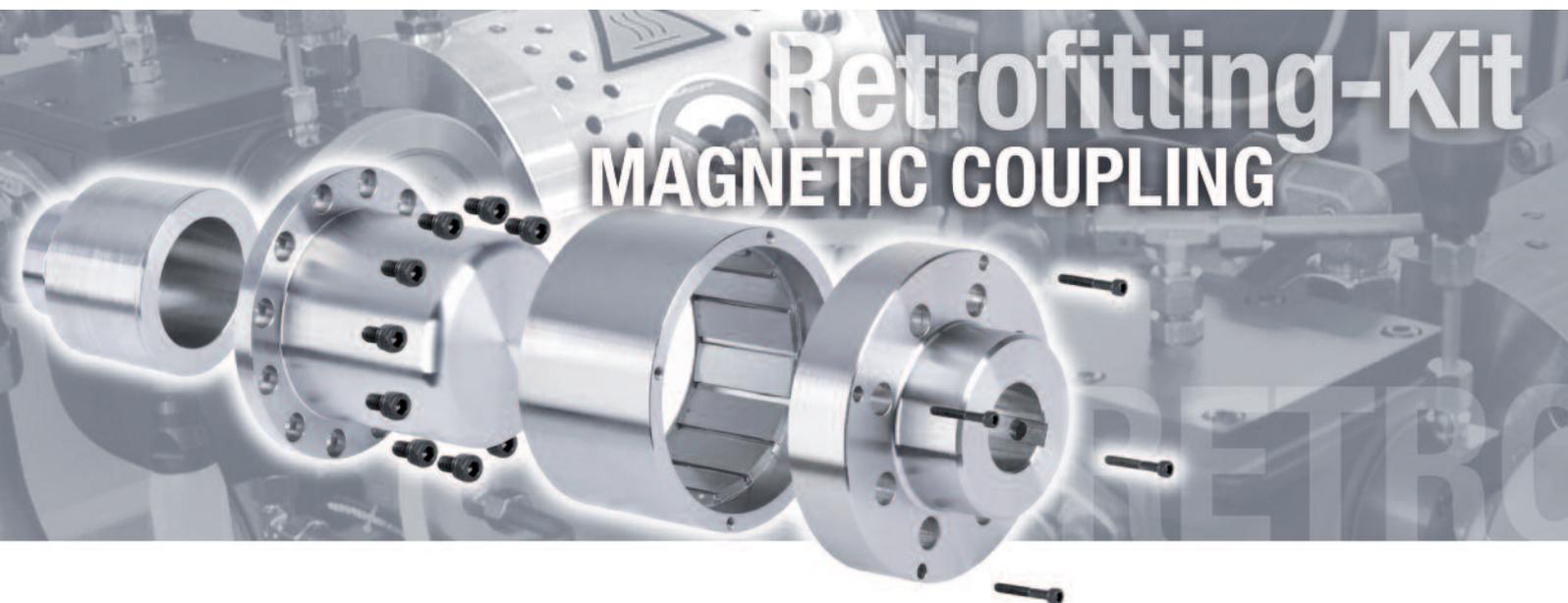
several CSM systems have been sold. And because energy efficiency is an increasingly important topic for Americans, the PU insulation sector is hoping for a strongly growing demand in the future.



*Good team with a lot of experience: Hennecke Inc.'s staff*

# Innovation for Retrofitting

## 360° RETROFIT



The magnetic coupling retrofitting kit is available in different designs for all Hennecke metering machines of the **TOPLINE**, **BASELINE** and **MICROLINE** type series.

Type	Size					
TOPLINE (current generation)	65	130	270	650	1250	2500
TOPLINE (until year of construction 2004)	55	135	270	650	1250	2500
BASELINE	65	130	250	470	720	1400
MICROLINE	45	130				

The magnetic coupling retrofitting kit is also available for other metering machines. For a quote, please contact our service center.

The magnetic coupling retrofitting kit offers you innovative technology for retrofitting your polyurethane metering machine fast and simple. Standard shaft seals are replaced by a maintenance and wear-free static seal system. This ensures your production process practical advantages at a very attractive price-performance ratio.

- **Reduced downtimes** - because seals on the pump shaft no longer need to be replaced regularly thanks to the maintenance-free magnetic coupling
- **An extra plus in operating safety** - because openings in the component system have been reduced to a minimum and leakages or impurities are prevented effectively
- **Cost efficiency** - because the investment pays off quickly due to higher plant availability and noticeably reduced costs for service personnel and spare parts

>> For information about further attractive retrofit offers, please see [www.hennecke.com/360](http://www.hennecke.com/360)

