

# TEAMWORK UNDER HIGH PRESSURE



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

**Fipur**  
Sao Paulo • 08.11. - 12.11.2010

**Interplastica**  
Moscow • 25.01. - 28.01.2011

**PU-Tech India**  
Greater Noida • 09.03. - 11.03.2011

**JEC**  
Paris • 29.03. - 31.03.2011

**Interzum**  
Cologne • 25.05. - 28.05.2011

As at October 2010



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*Dear customers, dear readers,*

*Innovative production systems and processes alone are no guarantee of competitive advantage. What really counts are innovation and unique selling points in the end product. So one thing we never forget during the constant further development of our products is the consistent optimization of your portfolio. Thus, for over six decades now, we have been offering you first-class machine and plant technology for high-quality polyurethane processing with competitive production results. To assist you in your investment decisions we put our technical competence at your disposal already in advance and with different raw material suppliers, if necessary.*

*In the current edition of INNOVATIONS, you can read about how satisfied our customers are with this strategy in terms of process development or close-to-production raw material testing for example. In our labs we tap new areas of application and advanced uses together with our customers, whether they are start-ups (see page 15) or traditional companies with longstanding experience (see page 9).*

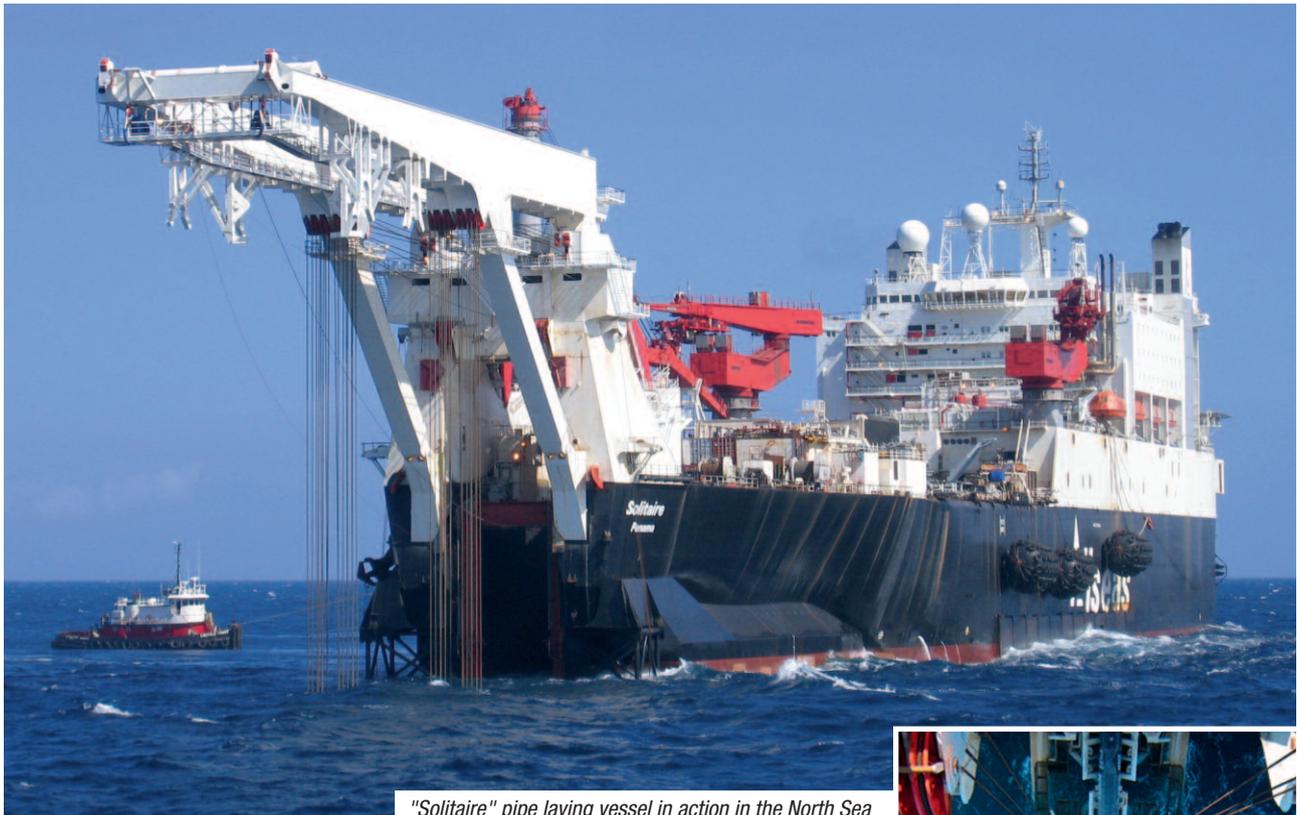
*We will present many of these innovative products to you at the "K" in Düsseldorf – the world's most important trade fair for plastic processing. They will include a pipe section from the big Nord Stream pipeline project (see page 4) and effectively insulated air handling units that meet the highest demands (see page 17). I cordially invite you to Hennecke's stand where we will be able to introduce you to more innovations and technologies and be pleased to demonstrate how we can together transform your ideas for PU-based products into reality.*

A stylized, handwritten signature in white ink on a blue background. The signature is fluid and cursive, appearing to read 'Alois Schmid'.

*Alois Schmid  
Managing Director Technology*

# Nord Stream Pipeline

## Teamwork under high pressure



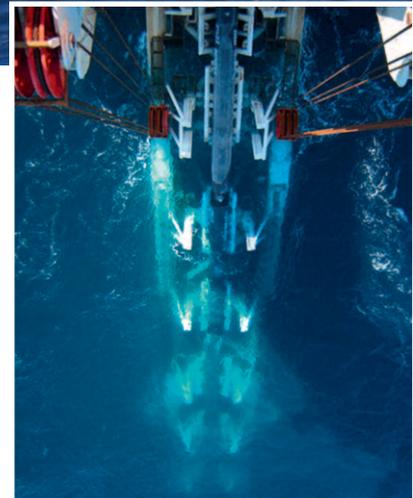
"Solitaire" pipe laying vessel in action in the North Sea

**When two high-performing companies come together, the best results are already in the making. And this goes for Hennecke GmbH and the Allseas Group S.A. The two firms have cooperated closely together and developed a technology, which is proving itself day after day in the hardest of conditions.**

We are talking about the Nord Stream project – an offshore gas pipeline that will stretch from Portovaya Bay near Vyborg in Russia to the German Baltic coast near Greifswald. The Nord Stream Pipeline consists of two 1,224-kilometre long parallel pipes. This means that some 200,000 pipes have to be welded and some 200,000 weld joints have to be sheathed.

The open-cell PU rigid foam Elastopor H is the right tool for the job. It is a product that a leading raw materials supplier has further developed and optimised in the past two years with regards to solidity and processing speed.

The Nord Stream Pipeline will join Russia and the European Union directly via the Baltic Sea and will transport up to 55 billion cubic metres of natural gas to companies and private individuals. The first pipe is due to start operating in 2011 and the second in 2012. The laying work is already underway at full speed. In April this year, Saipem S.p.A.'s "Castoro Sei" was set to sea to begin the construction of the pipelines and Allseas' "Solitaire" pipe laying vessel has been hard at it since



August. Polyurethane from one of the major raw materials suppliers as well as Hennecke technology in the form of two TOPLINE HKs 1400/1400 with tank farm control are also on board. In the past, the Solitaire has already broken several pipelay records in terms of laying speed and depth.

## Special technology for special applications

The optimised Elastopor H was developed over the past two years. The PU systems used consist of two liquid components, which are pressurised by Hennecke high-pressure foaming machines on the “Solitaire” itself and mixed by the MT 26 mixhead before being used to fill the hollow space in the fitting. The MT 26 is a new mixhead that has been especially designed for rigid foam. As an add-on mixhead it has an output of between 1 and max. 3 kg/s. Moreover it is equipped with constant pressure nozzles that allow the output to be varied without the pressure conditions changing.

Thanks to its good flow properties, the polyurethane system is quickly and uniformly distributed throughout the hollow space. In order to prevent the polyurethane rigid foam from being buoyant, it is configured to be open-celled so that hydrostatic pressure causes it to fill up completely with water. Its dimensional stability is crucial here. The material stands out with its high density of 160 kilograms per cubic metre, which maintains the exacting physical properties of this product. These characteristics are needed to protect the weld joints from anchor and net damages.

### Hennecke and Allseas – a strong team

Founded in 1985, the Swiss-based Allseas Group is one of the major offshore pipelay and subsea construction companies in the world, operating six specialised vessels, which were designed in-house.



Also on board: TOPLINE 1400/1400, embedded in a special container

At the last “K” trade fair Allseas approached Hennecke with an enquiry about a special machine that had to be mobile so that it could be fitted onto a ship. It also had to have an output of over 3 kg/s and be suited to raw materials systems with mixing ratios of 50 to 100 to 150. Moreover, it had to have its own cooling circuit for ambient temperatures of between minus 30 and plus 50 degrees Celsius.

At their meetings, the Hennecke and Allseas specialists decided that the HK 1400/1400, fitted with an MT 26 mixhead, was the best solution. In order to attain the necessary output the high-pressure foaming machine was fitted with frequency converters. Process data acquisition was also introduced

for this special application. Trace heating was fitted to the pipelines between the mixheads and machines to prevent the pipes from freezing. The machine itself has been embedded in a container to ensure that it operates independent of the ambient temperature. Dieter Müller, Hennecke’s Regional Sales Manager, says that “the whole solution was developed step-by-step with the customer. The difficulty was that the machines, which are usually stationary had to move along the pipes, with all the equipment. We solved the problem by putting the machines in containers with temperature control.” Hennecke is still in constant contact with Allseas, adjusting the machines according to need. Hennecke employees have been trained and continue to be trained for special work at sea.



# Nord Stream Pipeline

Allseas has already successfully realised 12 pipeline projects with Hennecke technology, including in the North Sea, the Atlantic, the Red Sea, the Mediterranean and in Argentina where a pipeline was laid through the Strait of Magellan. The company has said it especially values the reliability of Hennecke technology and the fact that results can easily be reproduced. Given the dimension of the Nord Stream project, there has to be a high level of confidence between the executing and supplying companies. Moreover, quality and availability of the technology play a key role in ensuring that tight schedules are met.

## Safe and sound on the seabed

The Nord Stream pipe joints are each 12 metres long and are made out of an especially durable steel that is appropriate for underwater applications. They have a diameter of 48 inches and are provided with a polyethylene anti-corrosion coating. The pipe is sheathed by a layer of steel-reinforced concrete that is between 60 and 110 mm thick. This sheathing protects the pipelines from mechanical damage and prevents the pipes from floating up because of their weight.



**One shot  
every 8 minutes**

*Exibited at the K trade fair:  
Pipe joint with PU fitting*

The steel pipes are automatically welded during the pipe-laying process. Shrink tubing is then pulled over the weld site and the interruption of the concrete sheathing is sealed with a sleeve. The hollow space that is formed is then filled with Elastopor H. Up to 45 (!) kgs can fit into such a fitting. Some 200,000 fittings have to be filled, meaning that HK machines are performing one shot every 8 minutes, 24 hours a day and 7 days a week until the pipe laying operation is over.

Hennecke will present a field joint (pipe with PU fitting) at the 2010 "K" Trade Fair.

## Flexible plant technology at the Hennecke ELASTOLINE Days

When it comes to processing polyurethane-based cast systems and raw materials, Hennecke GmbH has been setting the standards for six decades.

Machines from the ELASTOLINE series are a familiar term for elastomer processors all over the world. On the occasion of this year's ELASTOLINE Days at Hennecke's corporate headquarters, interested processors and representatives from the press were informed about the benefits of the ELASTOLINE F. The completely new type is the ideal partner for processing MDI and TDI systems. It is very attractive because of its modular machine concept which is perfectly tailored to meet specific customer requirements.

Technical components made of polyurethane cast elastomers are indispensable in mechanical engineering and many other industrial sectors today. Thanks to their extremely high

resistance to wear, their great mechanical resilience, their low residual deformation and their vibration-absorbing effect, there are many different applications. It's no surprise that the demand for PU-based cast elastomers has grown continuously over the past few years. In order to optimize the manufacture of elastomer parts in terms of quality and quantity, ELASTOLINE machines reduce the amount of manual work required, improve hygiene in the workplace and convince through optimized functional sequences. Based on long-standing experience and continuous



re-engineering, the machines always represent the state of the art in elastomer processing. The same applies to the latest machine generation of the ELASTOLINE series: the ELASTOLINE F. The machine supports the processor in the production of MDI and TDI-based PU elastomers of all types and ensures top-quality production results even when very different requirements and extremely difficult processing parameters are to be met. The new machine completely lives up to its name affix „F“: Its machine concept has a consistently flexible structure and thanks to its modular setup of the metering lines and its compact design, it offers enough room for customized order adjustments and subsequent modifications. The tank sizes of up to 320 liters are equally flexible. Proven hot air technology is used to control the component temperature of tanks and pump unit. Thanks to the 60mm thick insulation of the work tank cabins, considerable energy savings are achieved. Another highlight is the advanced mixhead technology that is



Customer demonstration of the new ELASTOLINE F. From left to right: Jürgen Wirth (Manager, Application Technology), Matthias Klahr (Sales Manager Series Products & Head of Marketing)

# ELASTOLINE Days 2010



Production of elastomer coupling systems (live demonstration). From left to right: Berthold Schimmelpfennig (Hennecke), Jens Geuer (Hennecke), Dr. Ralf Fritz (BASF), Christoph Evers (BASF)

equipped with a hydraulic control system for extremely short switching cycles and superior metering quality right from the factory. As a matter of fact, the construction and design of the forward-looking elastomer plant is able to keep up with considerably more costly solutions. The high-quality design of the

ELASTOLINE F is a Hennecke hallmark. It ensures an extremely long service life, even if the production environment is harsh. The price-optimized setup and the corresponding sales strategy will certainly be of special interest to processors and potential customers. For processing NDI systems, the successful ELASTOLINE V is still available to Hennecke customers.

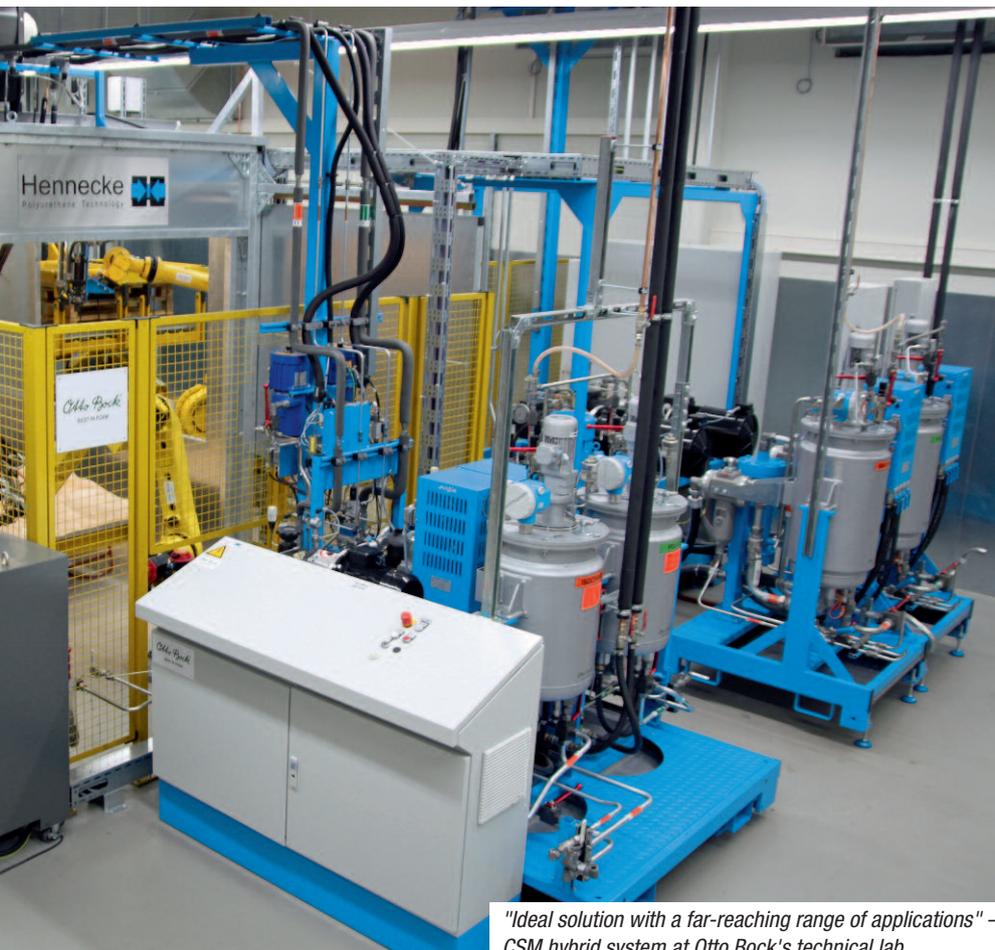


ELASTOLINE mixhead with hydraulic control

For the second time after 2007, the polyurethane specialists invited elastomer processors and representatives from the press to the Hennecke ELASTOLINE Days to inform them about the special technical features and process benefits of the new machine. The focus of the two-day event that took place on 15 and 16 June was on various papers and presentations and a demonstration of the ELASTOLINE F.

Nearly 100 visitors from the national and international elastomer processing environment attended the Days and obtained first-hand information about the unique selling points of the new machine generation. Among them were various cooperation partners from the raw material segment who took very great interest in the machine concept of the ELASTOLINE F. On the whole, both event days were characterized by interesting shop talk and discussions on specific projects. The Hennecke ELASTOLINE Days 2010 were thus a very successful event with positive feedback from both the organizer and customers.

## Efficiency in combination – a CSM hybrid system for Otto Bock



*"Ideal solution with a far-reaching range of applications" –  
CSM hybrid system at Otto Bock's technical lab*

**With its motto "Best in Foam", Otto Bock Kunststoff GmbH underlines its competence in manufacturing state-of-the-art PU foams for all areas of application. According to the globally-operating medium-sized firm, its constant principle is to spend on research and development and on new technologies. The decision to invest in a modern and extremely flexible CSM hybrid system for developing raw materials in spray skin and flexible foam applications certainly fits the general picture.**

To always conduct research into new possibilities. That was and is Otto Bock Group's key philosophy. It goes back to 1953 when the search was for a suitable material that could act as an alternative to the poplar wood used in orthopaedic prosthetics. Dr Max Näder, Otto Bock's son-in-law, recognised the vast potential of plastics and laid the cornerstone for Otto Bock Kunststoff GmbH. Today, the company is one of the most important technology partners for the renowned firm Otto Bock HealthCare and for successful developers

and suppliers of PU-based plastics. It is no wonder, then, that the cooperation with Hennecke goes back a long way. The machine manufacturer supplied one of the first continuous slabstock lines for producing ether and ester foams shortly after it had been founded in the 1950s. After 30 years of successful production, the machine was replaced by a considerably larger "UBT" plant, which in 2000 was supplemented with another state-of-the-art slabstock line. Further international projects followed in the area of continuous slabstock manufacture and the production of polyurethane gel.

The two polyurethane specialists' most recent project is less about manufacturing than about product research and further development. The aim is to find a way of manufacturing spray skins in a flawless and reproducible manner using various Otto Bock raw material systems. The traditional company also wants to test and optimise its in-house raw material systems in the area of moulded foam applications. By using a tailor-made CSM hybrid system, Hennecke can cope with the different requirements in an extremely efficient way. The state-of-the-art laboratory plant is used in the on-site training center and has separate metering lines for spray skin and moulded foam applications, which can also be utilised in combination for certain processes.

A TOPLINE HK 650 with 60-litre work tanks is used for manufacturing flexible foams. Combined with the latest design of MT 18 mixheads, all common foam systems can be processed without





*Spray skin expert: MN6 CSM mixhead with spray lance*

any difficulty. In conjunction with a big-sized industrial robot, the mixhead is mainly used on an automatic mould carrier that is similar in type and design to a Hennecke WKH system for producing car seats. In this way, real production conditions can be exactly simulated. Apart from the fully-automated operation

on the mould carrier, the metering line can also be used manually and is available as a stand-alone system for countless laboratory applications. When processing polyurethane spray skins, the observance of all process parameters is as important for the application as the maintenance of a homogeneous surface distribution. The PUR-CSM metering line relies on a MICROLINE 45 CSM metering machine that is equipped with typical laboratory, small-volume tanks so that the components can be switched rapidly. The metering line is ideally suited for the use of different raw material systems, including high-viscosity components as are needed for the production of tear-resistant and heavy-duty spray skins. The MICROLINE also has a specially-fitted temperature control system for high processing temperatures. The MN6 CSM mixhead, equipped with a spray lance and a suitable industrial robot, ensures the optimal mixing of components and injection into the mould. An automated turntable rounds off the design, allowing the mould to be positioned correctly.

The turntable has a further function: Thanks to the possibility of switching positions between the injection robots, the device is literally the pivotal element of the flexible foam and spray skin line. Thus, the laboratory plant can be used to produce back-foamed spray skins, for example. This offers the user real added value, as the Technical Director of Otto Bock Kunststoff GmbH, Dr Marc Herrmann confirms: "The multifunctional CSM technology convinced us right in Hennecke's spray center. For Otto Bock, the new laboratory plant is an ideal solution with a far-reaching range of applications." Those responsible at Hennecke are also convinced by the CSM system's hybrid design, as Jens Winiarz, the Sales Manager in charge, says: "It is clear that Hennecke is in a position to offer tailor-made laboratory systems for developing demanding and advanced raw material systems. A nice side effect is surely that a long story of trusting cooperation will be continued with success."



*Satisfied faces during the acceptance inspection. From left to right: Dr. Marc Hermann (Technical Director Otto Bock Kunststoff GmbH), Dr. Peter Gansen (CEO Otto Bock Kunststoff GmbH), Jens Winiarz (Sales Manager Hennecke)*

# Slabstock plants

## Hennecke remains true to itself – innovations in slabstock production

For over six decades, Hennecke GmbH has developed and produced high-quality polyurethane processing technology. It is considered the market leader in the field of slabstock plants. But instead of resting on its laurels, the company continues to put more innovations on the market – such as a new screw-type stirrer and a flexible laydown system.



New laydown system with flexible outlet geometry

### New stirrers for continuous slabstock plants MULTIFLEX, QFM and UBT

When slabstock is manufactured, stirrers have the task of mixing polyol, isocyanate and additives homogeneously. The mixer is also an important tool for controlling cell structure. Stirrer speed and mixing chamber pressure have a significant influence on cell size. However, the foamer has a dilemma: In conventional stirrer geometries, when pin stirrers are involved for example, the mixing chamber pressure changes when the stirrer speed is varied and the pressure rises with increasing speed. So the size of the cell is changed in two directions: A higher speed allows the cell size to shrink and the rising mixing chamber pressure increases it.

Because of its geometry, Hennecke's new screw-type stirrer has a conveying effect on the mixture. Thus the speed is decoupled from the mixing chamber pressure. The screw-type stirrer can especially help reduce the pressure in unfavourable conditions.

The new screw-type stirrer provides the foamer with an additional influencing parameter on the size of the cell, opening up new degrees of freedom in cell control.

### Flexible laydown system for ester and special foams

Ester foamers generally face the task of dispensing a uniform mixture with a good age distribution onto the conveyor. In practice, the mixer is operated in a traversing way or several different outlet systems are developed and used. Hennecke has simulated laydown flows



More freedom in cell control: new screw-type stirrer

mathematically in order to develop a new, flexible laydown system.

An interview with Karsten Brückner, Sales Manager Slabstock Plants

### What function does the adjustable laydown system fulfil?

Because of the special and flexible outlet geometry it is possible to distribute centrally-pouring reaction mixture with a very good age distribution onto foaming widths of up to two metres at least. This is achieved because an adjustable gap between the upper and lower plates subjects the parts of mixture which flow forward to a significantly higher flow resistance than the amounts of mixture which flow to the side. And because this relationship can be adapted by the gap adjustment, the necessary flexibility for different formulations is achieved. On top of this, the modular design with its easily exchangeable upper and lower plates allows for even more flexibility regarding the different process parameters.



# Slabstock plants

*What benefits do the customers have?*

The adjustable laydown system means that an excellent age distribution can be achieved in continuous slabstock. Highly viscous mixtures in particular can very well be poured centrally and without traversing, and then distributed onto foaming widths of up to two metres (and more if necessary). This means that a relatively good shoulder structure with a striation-free cell structure can be achieved without a calibration device, which is especially advantageous for ester foams that are often produced without a top paper. Moreover, transitions can be kept short when colours and formulations are changed.

*What is the most important area of application?*

The most important field of use for the flexible laydown system will initially be the flexible foam area for ester applications. Foamers often work with several different self-made outlets. When it comes to foaming widths of over 1.7 metres, pouring often takes place in a traversing way which almost always leads to striation because reaction mixtures of different age flow into one another.

*Have tests already been conducted under production conditions?*

Yes, field tests have shown that the foaming widths reached so far can be extended. And in future it will be possible to use a stationary mixer for many foams that have been produced in a traversing manner up to now. Thanks to the high flexibility of the system, only one laydown device will be required to cover

*Uniform age distribution over the entire width*

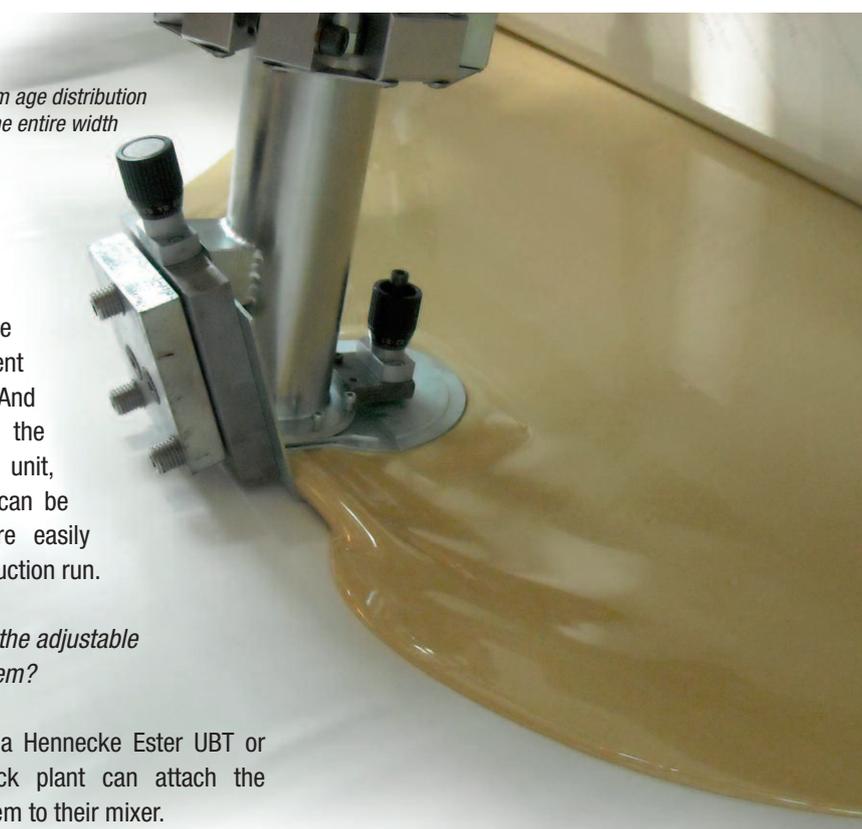
a wide range of very different formulations. And by adjusting the distribution unit, formulations can be changed more easily during a production run.

*Who can use the adjustable laydown system?*

Operators of a Hennecke Ester UBT or QFM slabstock plant can attach the laydown system to their mixer.

*Mr. Brückner, thank you for the interesting conversation.*

Please contact Dept. Service Retrofit,  
Mr. Peter Böhm  
peter.boehm@hennecke.com,  
Tel. +49 2241 339-210  
with your enquiries about the screw-type stirrer or ester laydown system.



## QFOAM is gaining ground – successful market launch

**QFOAM – the new generation of extremely compact metering machines based on tried and tested Hennecke technology – was launched on the market over a year ago. This is reason enough to take stock.**

The brand QFOAM stands for a machine design that combines the advantages of PU high-pressure technology with an impressive price-performance ratio. It is the ideal alternative to low-pressure systems which require intensive cleaning. It comes in two sizes – the QFOAM and the QFOAM XL, which has more basic equipment and a significantly higher range of options.

“Now that the QFOAM has been on the market for over a year, we can take positive stock,” says Matthias Klahr (Hennecke's Head of Sales for Series Products and Head of Marketing). “We have already sold more than 40 machines across the world. One important sales area is India, where we have already delivered 6 machines for different rigid and flexible foam applications.”

The first QFOAM sold to India went to Promens (India) Pvt. Ltd, whose founder and CEO is Dave Swetang.

Promens operates worldwide and manufactures a wide range of plastic products. The Indian subsidiary, with its 100 employees, uses QFOAM to produce insulated plastic containers for the cold chain in the food and pharmaceutical industries.



We spoke to Dave Swetang about his experiences after one year of production.

*Mr Swetang, what is your experience of QFOAM 720 so far?*

The machine is running without any problem and the foam quality has become much better. The high on-stream time, the reduced reject rate, the compact design and the user-friendliness all helped to impress even the operating staff. This coincides with our experience of Hennecke machines in our Spanish factory.

*What do you particularly like about the QFOAM?*

The QFOAM has the versatility and flexibility of a Hennecke high-pressure machine. The new mixhead is easy to handle and creates an excellent mix quality. And it is easier to fill cavities with foam thanks to the mixhead's laminar output.



*Can you tell us in just a sentence what the main advantage of QFOAM is?*

QFOAM combines almost all the characteristics of high-end machines and has an optimal price-performance ratio.

*Could you give us a brief description of your professional history?*

I have a Master's in process engineering from the Technical University of Berlin. When I came back to India I founded Promens (India) Pvt. Ltd – in 1996. I am now the Vice President of the Society of Asian Rotomolders Association.

*Mr Swetang, thank you for the interesting conversation.*

Finally, it should be mentioned that Hennecke will continue to upgrade the QFOAM series. This means that all customer needs in the market segment of standardised PU metering machines will also be met in the future.



*The QFOAM proves itself in harsh everyday production, on the left: Dave Swetang (CEO Promens India Pvt. Ltd.)*

# PUR-CSM

## More than skin-deep – CORIUM uses PUR-CSM technology for homogeneous polyurethane products

**When it comes to manufacturing spray skins, PUR-CSM technology fulfils the highest requirements in terms of processing possibilities and specific processing quality. Various applications in the field of water-resistant seating and other flexible foam parts as well as surfaces of complex automotive interior trim components testify to a multitude of innovative and practice-oriented uses. Word has reached beyond Europe now that the process stands for efficiency, reliability and continuous further development. CORIUM is the first Canadian company to opt for PUR-CSM in the manufacture of high-quality end products for the automotive and outdoor industries.**

CORIUM is of Latin origin and translated literally means “tough skin”. An appropriate name for the Canadian start-up company that has specialized in the manufacture of high-quality polyurethane-based surfaces since it was founded in 2005. Apart from seating for all kinds of applications and components for instrument panel supports, CORIUM’s product range also comprises decorative elements for meeting high standards with regard to the look and feel of products and their durability. Outside of the automotive sector, the company is now considered one of the most important independent suppliers of PUR parts on the whole North American market. Its main business area is the substitution of products that until now were made with other process technology.

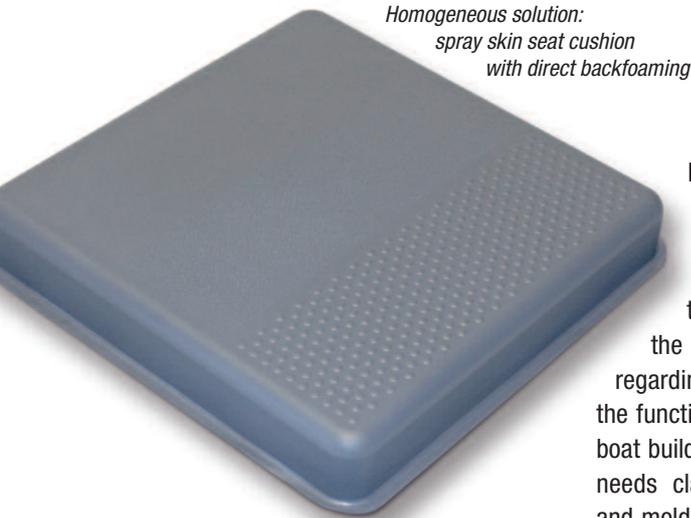
The spray skin experts just recently won a National Marine Manufacturers Association innovation award in the “Furnishings and Interior Parts Category”. In spring 2010, CORIUM invested in a PUR-CSM processing plant with separate metering lines for spray skins and moulded foam applications. The tailor-made production system offers superior product quality in spray skin applications with and without direct backfoaming, and has all the USPs of CSM technology. For example, the shots can be interrupted at any time during the spray coating process. Depending on the application this can lead to material savings of over 10 percent. Moreover, the system can also process high-viscosity components for particularly durable spray skins without any problem, doing credit to the company name.



The INNOVATIONS team spoke with CORIUM’s president and founder George Magirescu and executive vice-president Pierre Maheux about German machine technology, business relations with Hennecke and the advantages of homogeneous polyurethane products.



Arrival of the MICROLINE in Canada: George Magirescu (President, CORIUM) and Pierre Maheux (Executive Vice-President, CORIUM)



*Homogeneous solution:  
spray skin seat cushion  
with direct backfoaming*

#### INNOVATIONS:

*Since May of this year your production has put its trust in Hennecke. How did you come across the Hennecke group and what were the determining factors for your decision to invest in the German machine and plant technology?*

CORIUM: We first came across Hennecke machines at an American firm that is specialized in the manufacture of PU foam goods. So we have known about Hennecke and its good reputation for decades. But our decision in favor of the German company was not only based on its technological competence. The Hennecke team in Pittsburgh convinced us with its experience of the market and wide-reaching knowledge regarding PUR-CSM technology. On top of that, German machine and plant technology also has a good reputation in Canada of course.

*INNOVATIONS: Your company is the first in Canada to opt for CSM spray technology. How did you find out about this technology and what are its most important advantages in your opinion?*

CORIUM: Spray skins became increasingly popular in the top sector of the automotive industry towards the end of the 1990s.

It was immediately clear to us that this technology would solve all sorts of problems in many areas – both for the producers as well as for the users. We don't mean only regarding look and feel but especially the functional optimization. Think about boat building for instance where certain needs clash. For example water, UV and mold resistance as well as extreme durability for a long time. PUR-CSM enables us to manufacture a product, which is pleasing to the eye because the Hennecke technology - in contrast to traditional production methods - gives us complete freedom regarding design. Moreover, it is considerably easier to recycle at the end of its life cycle thanks to the homogeneous PUR solution.

*INNOVATIONS: Could you make such products without PUR-CSM technology?*

CORIUM: Traditional production methods can't keep up when it comes to design and specific surface texture unless various manual processes are also used. But this would cause the manufacturing costs to explode. The spray technology also offers the user other advantages. One single, automated process allows color or embossment to be chosen very easily.

*INNOVATIONS: What trends are you currently witnessing on the American PU market?*

CORIUM: There is a growing demand for spray skins, particularly in the American automotive industry. Many models are opting for backfoamed spray skin solutions, whereas before simple plastics

were used. And this too is not only for optical reasons. The environmental impact and the possibility of recycling materials are becoming more and more important to American manufacturers.

*INNOVATIONS: What does the future hold for CORIUM? Are you going to expand your business? What role will PUR-CSM spray technology play?*

CORIUM: We already have concrete plans to double our production capacity over the next 18 months. We will be counting on polyurethane spray skins and PUR-CSM technology to do so.

*The Innovations team thanks the two friendly Canadians for the interesting conversation. Hennecke wishes CORIUM further success with spray skins based on PUR-CSM technology.*

You can find out more about CORIUM by going to [www.corium-ut.com](http://www.corium-ut.com).

## Efficient air conditioning technology thanks to PU insulation



Continuous and space-saving: door production with the ROTAMAT KTR-8

**Hennecke recently completed a major capital equipment installation for Trane to produce residential air handlers with Polyurethane foam insulation. For over 100 years, Trane (part of Ingersoll Rand) has been a worldwide leader in the production and sale of heating, ventilating, and air conditioning systems for both residential and commercial applications. Recently, Trane decided to introduce a new line of air handling units (AHUs) for residential applications. The new “Hyperion” AHUs have many innovative technological advancements from earlier systems. One of these enhancements is in using PU foam as an insulating barrier within the cabinets and doors of the AHU.**

Historically, mineral wool has been the insulation material used within AHUs. However, use of PU instead of mineral wool has several benefits:

- PU can be poured automatically into the AHU, whereas mineral wool must be applied manually within the AHUs, which is both costly and a potential safety and health hazard (having production employees working with a glass fiber product and working within metal enclosures to apply that product)
- PU (due to its flowability) completely seals the cabinet, increasing efficiency of the AHU
- PU maintains its insulation value (“R” value) through the life to the AHU, whereas mineral wool has virtually

zero “R” value once it is wet, which oftentimes happens from “sweating”, leaks, during installation, etc.

- PU adds to the structural stability of the end product, whereas mineral wool does not.

In part due to these reasons, Trane decided to switch from mineral wool to PU foam to increase the quality of their AHUs. However, Trane was a newcomer to using PU foam insulation and needed a partner to work with them every step of the way from design to full-scale production. Hennecke became that partner of choice. Hennecke supplied all the new capital equipment required for the conversion to PU foam. This equipment included “wet” end equipment and “dry” end equipment.





*Efficient cabinet production:  
WKH oval conveyor*

The wet end equipment included bulk chemical storage systems as well as chemical metering systems. The dry end equipment included foam fixture devices for the cabinets (oval conveyors) and for the doors (ROTAMAT).

Trane decided to utilize a two part polyurethane foam. The poly side is pre-mixed with the blowing agent and all other additives. Both the poly blend and the iso are received in tanker truckloads. Hennecke supplied the unload skids, bulk chemical storage tanks, closed loop temperature conditioning systems, chemical transfer skids, and all controls for the bulk system. Additionally, Hennecke designed and installed the bulk system

pipe loop to supply chemicals to all four lines within the facility. Each line incorporates a Hennecke TOPLINE HK 270R metering system with MX mixhead to meter the foam into the cabinets and doors. These metering systems include day tanks with closed loop temperature control of the chemicals, metering pumps with variable frequency drives and magnetic couplings, flow meters, pressure and temperature sensors, and all the other high quality components typical of Hennecke metering equipment.

For production of cabinets, Hennecke supplied two oval conveyor lines. These lines include universal foam fixture devices with profile-specific tooling mounted in each fixture. The lines operate automatically and continuously – the only operator involvement during normal production is manual loading of non-foamed cabinets and manual unloading of foamed cabinets which have been cured by the time they reach the unload area of the oval conveyor line. Hennecke utilizes optical sensors to ensure a cabinet has been loaded into a tool prior to foaming (to prevent pouring foam into a fixture that does not contain an actual cabinet). Hennecke also utilizes RF tags to determine which part is being foamed. This information is used to automatically adjust the metering system parameters to ensure the correct foam fill for each unique sized cabinet. The mixhead is mounted on a robotic arm and line tracking is used to properly position the mixhead to the pour hole of the cabinet as the line runs continuously in order to complete the foam fill. The oval conveyor lines have a convenient quick change load and unload area for changing out cabinets in rapid fashion if necessary.

For production of doors, Hennecke supplied two RotaMats to allow for closed mold pouring of the preformed doors. A ROTAMAT is a vertically operational foam fixture device that takes up much less floor space than a typical turntable sized for the same part capacity requirements. Each station of the ROTAMAT can accept several individual door molds. As with the oval conveyor lines, the ROTAMAT lines operate automatically and continuously, with the only operator involvement being the loading of non-foamed doors and the unloading of cured foam doors. Also as with the oval conveyor lines, Hennecke incorporated optical sensors to ensure a door has been loaded into a mold prior to foaming and RF tags to determine which part is being foamed in order to automatically adjust metering system parameters to the unique part requirements. The mixhead is mounted on a linear actuator to position the mixhead at the pour hole location of each of the doors prior to foaming. Changing of molds within the ROTAMAT is extremely simple and fast via bolt connection with centering pin.

Hennecke utilized state-of-the-art Allen Bradley controls for all the equipment within the plant, with remote log-in and troubleshooting and with data highway communications to Trane's internal plant production management system.

## Open House in Japan - the 2nd "PU-Tech Days" at MEG-MARUKA

The Japanese machine manufacturer and polyurethane specialist MEG-MARUKA has long been a partner of Hennecke GmbH. The two companies' business cooperation in the field of technology and sales goes back to 1982. Ever since, they have represented their common interests in Japan together, offering their customers regional service all over the Asian continent. At an open house event in September this year, they presented their joint success in the form of innovations and novelties to a wide audience.

processing industry and have a vast potential of technological competence.

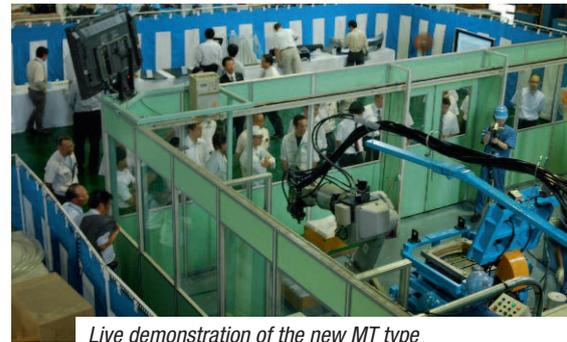
This was  
reason  
enough to  
present the  
wide range of

machine technology and services at the "PU-Tech Days" that took place for a second time at the MEG-MARUKA plant near Nagoya (Japan) on the 7th and 8th of September. A year after an extremely successful start of the event, customer interest was even stronger. On both days, interested polyurethane processors from all over Japan and Asia and representatives from the Japanese specialist magazine "The Foam Times" came to Nagoya to attend the product presentations and live demonstrations.

The first day was mainly directed at customers in flexible foam processing, whereas on the second day customers were more interested in rigid foam applications.

MEG-MARUKA and Hennecke are not only linked by a long alliance.

Both companies enjoy an excellent reputation within the polyurethane



*Live demonstration of the new MT type*

Detailed and interesting presentations gave the visitors an insight into various new products as well as pioneering innovations. Product specialists from both companies jointly presented the advantages and USPs of their respective product portfolio. The main focus was on a WKH oval conveyor plant for manufacturing foamed seating, on the additional units CARBOMAT and PENTAMAT and on several applications from sandwich panel production in a batch process. Between the presentations, visitors were able to find out more about the advantages of QFOAM at live demonstrations, where different seat cushions were foamed using a mixhead from the new MT series.

The success of the event has already been proven by many detailed inquiries about the products that were presented. One more reason to continue with the event next year in close cooperation with MEG-MARUKA, and to make it a tradition within the partnership and cooperation of the two companies.



*Long-time partners: the team of MEG-MARUKA and Hennecke GmbH*

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