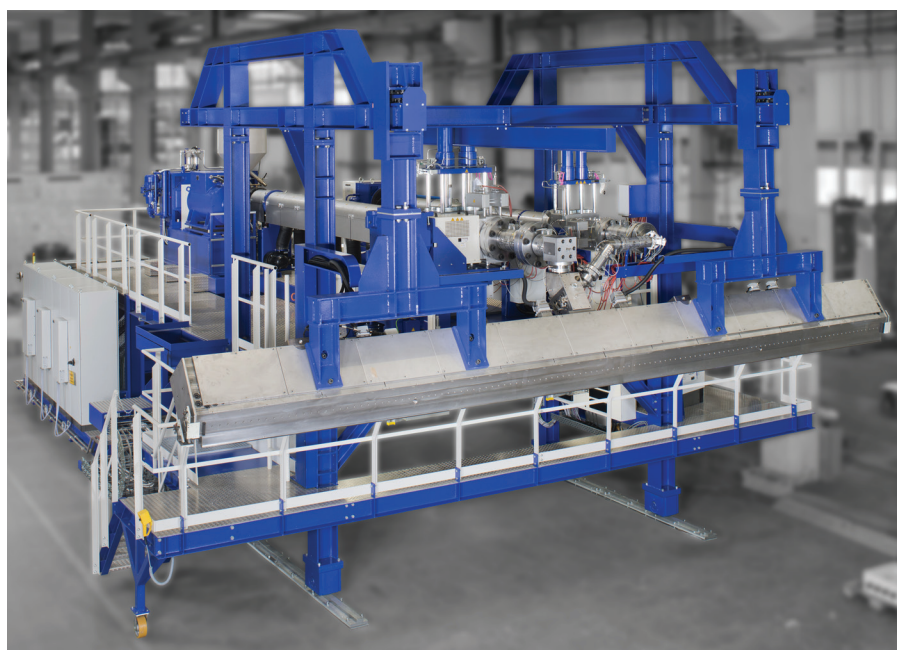


KUHNE started erection of huge Geomembrane line

Wet test in Saudi Arabia is approaching



Compact design and huge width can match: The hot part of the line

Recently, a KUHNE erection team has been working on the customer's site in Saudi Arabia near Riyadh. The assembling of the almost 9m wide Coextrusion line for the production of Geomembrane sheet is progressing well, so that the start of production is forecasted still within 2014.

The main extruder K180-36D is equipped with a 650KW powerful, water-cooled AC drive, the coextruder is a K125-36D type. Both extruders achieve a total output of up to 2,2 tons per hour in HD-, as well as LLD-PE and MD-PE.

The calendar rolls have a diameter of 1.000mm and allow the production of films within a thickness range of 0,5 to 3mm. The roller width of 8.600mm re-

presents the best possible compromise between the demand of welding as less as possible on one and easy, optimum handling on the other side. The closing of the rolls in KUHNE roll stacks has always been realized mechanically by means of spindle jacks. This proven principle has been optimized throughout the years. Meanwhile, KUHNE is using digital encoders that guarantee a precision in the range of a few microns. In addition to that, axe- crossing of the centre roll can be implemented to reduce tolerances even more.

The line is furthermore equipped with a 3-layer feedblock, an automatic die and interacting thickness measurement and regulation. Therefore, it allows thickness tolerances of below 5%.

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Prominence attends KUHNE Group

First the North Rhine-Westphalian Minister for Economic Affairs Garrelt Duin, then the South-Korean Vice-Secretary of Labour at KUHNE

On the occasion of a meeting with representatives of the Chamber of Commerce and Industry (CCI) of Bonn/Rhine-Sieg, the North Rhine-Westphalian Minister for Economic Affairs Garrelt Duin dropped in at KUHNE Group beginning of this year. After having visited the shop floor, by which he was really impressed, the Minister exchanged ideas about the general conditions of the business location with the owner of the company Peter Kuhne.

The dual education system, the parallel formation at school and in the company, was the subject of interest for the South-Korean Vice-Secretary of Labour and of Social Affairs Hyun-Ok Jeong who visited the KUHNE Group invited by the CCI Bonn/Rhine-Sieg. Peter Kuhne personally welcomed the Vice-Secretary and her delegation and proudly showed them the workshop. At the end, the Vice-Secretary had the opportunity to exchange ideas with current and former trainees.

Always Peter Kuhne attached great importance to the in-house formation at KUHNE. Whole 60% of its 200 qualified employees are educated internally at KUHNE; actually 19 junior staff members have an apprenticeship at KUHNE Group. In view of the general education situation, it has become every year more complica-

ted to fill the open apprentice vacancies. "It is difficult to inspire young people for professions especially in the mechanical sector", states Peter Kuhne. "Our aim is to draw the attention of the potential junior staff members in order to generate furthermore qualified employees ,made by KUHNE'."



LTR: Peter Kuhne, Hyun-Ok Jeong, Jürgen Hindenberg from the chamber of commerce Bonn-Rhine/Sieg

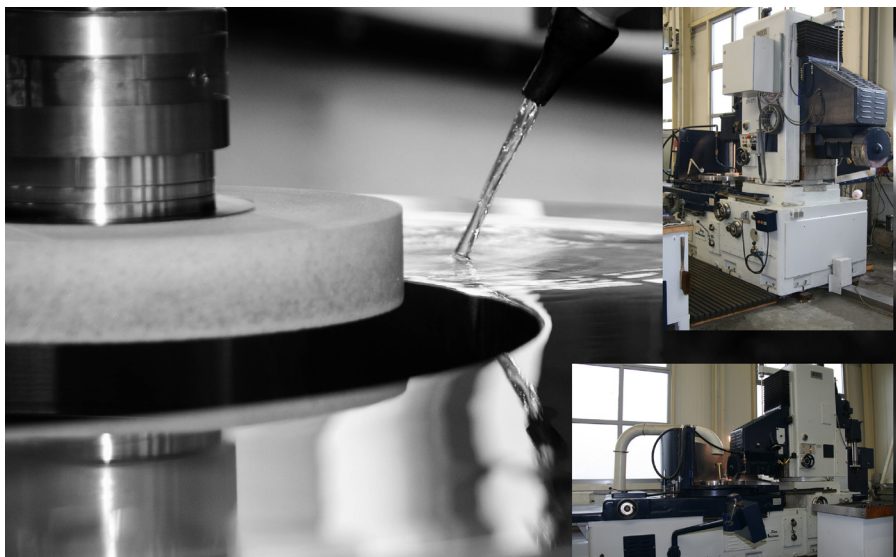
Acquisition of a new drilling machine

K-Tool: Tooling specialist extends his machine park

Since a few months, the latest member of KUHNE GROUP has enlarged its machine park with the acquisition

of a vertical grinding machine. The machine allows inner and outer grinding works up to a diameter of 900mm

and a height up to 500mm. The also existing flat grinding device performs also up to 900mm in diameter. It is now possible to work on dies, heads, feedblocks and numerous other tools, which are implemented in the extrusion lines of KUHNE ANLAGENBAU and MASCHINENBAU, with a precision of below 5µm.



These works have been outsourced until now. The new acquisition raises the internal production depth at K-TOOL, as well as processing times and work steps are reduced. Well-trained and experienced machine operators were of course hired for the grinding machine.

Since 2011 K-TOOL has been manufacturing all core components of extrusion lines such as screws, barrels, dies, blow film heads and feedblocks. In addition to this, K-TOOL also delivers tooling products according to customer's plans and machine components for external lines, which are subject to a non-disclosure agreement.

KUHNE ANLAGEBAU & DuPont set the way

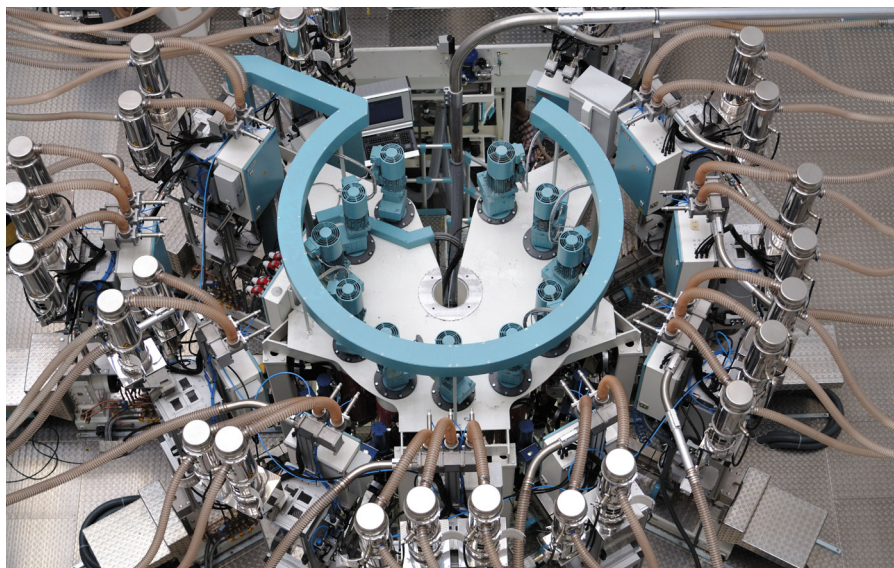
Collaboration with US Group is intensified

KUHNE ANLAGENBAU collaborates closely with DuPont in the field of multilayer film. They have brought together KUHNE's Triple Bubble® - water quenched and bi-orientated film technology and DuPont's experience and know-how in high performance packaging polymers to explore new ways of saving costs and materials in multilayer shrink and lid film applications.

With highly transparent films down gauged for a reduced environmental footprint, new shrink bag and film structures are intended to provide a multitude of advantages over existing solutions, including advanced meat adhesion as well as excellent puncture resistance, so extending shelf life and minimizing food waste caused by packaging failure during transportation.

By far the most advanced and most widespread application of such shrink films is the production of shrink bags, used to transport meat on the bone from the slaughterhouse to retailers or restaurants. A fast-emerging new trend is to use shrink bags for supermarket consumer packaging, the reason being that such films adhere tightly to the meat without any protruding edges and improve colour, odour and meat texture. Furthermore, compared with the tray-and-lid solutions weighing around 14 g that they replace, shrink bags for retail applications only weigh 4 g and can thus significantly improve the sustainability of supermarket meat packages.

The Triple Bubble®- technology significantly enhances the mechanical properties of such films due to the high level of molecular orientation brought about by biaxial stretching. Thermal relaxation which occurs in the third bubble of the process, where film shrinkage is reduced to a controlled value, is a particular challenge. Here, the effectiveness of the tie layer, which bonds incompatible functional layers



11 extruder for 11 layer in action

of the structure together, is of major significance for producing high tear and puncture resistant films which are nevertheless comparatively thin.

KUHNE's Triple Bubble®-technology is dedicated to the production of bi-orientated blown films for advanced food packaging applications, including meat, sausages and cheese, providing advantages such as high oxygen barrier.

Since 1996, when KUHNE first developed this technology, the company has continuously extended its product portfolio, which today ranges from high-speed mono-systems for sausage casings with production speeds of up to 300 m/min, via coextrusion lines of medium width for multi-layer sheets for food packaging up to huge film-system solutions, that offer extremely high barrier- and mechanical properties up to 1900mm width.

The cooling medium for the film is water, which is chilled to 4 to 6°C. This water quench technology was developed for the Triple Bubble® process by KUHNE in 1996 to permit signifi-

cantly higher cooling rates compared to other production processes, so preventing the development of crystallinity in the film and enabling a uniform downstream orientation process. In 2008, this concept for the production of water quenched blown films was extended to produce films of up to eleven layers. Moreover, Triple Bubble®-technology has recently been further developed to include up to 13 layers and large film widths and outputs of over 1 ton per hour and to convert all common raw materials including PE, PP, PET, PS, PA, EVOH, COC, EVA, EMA, Ionomers and more.

KUHNE ANLAGENBAU GMBH focuses on the development of special blown film technologies for the production of high-tech films for the food industry, the medical sector and highly sophisticated technical applications. KUHNE develops and optimizes therefore special machine technologies, final products for manufacturers of flexible packaging, special, customized raw materials in collaboration with raw material suppliers and trends and research with customers and laboratories.

EVOH-layer – Always thinner, always more precise

Further development of the patented feedblock for barrier films

Barrier films are used in the food industry as packaging materials for example for meal trays or coffee caps with the objective to protect the product, which should be consumed, from water or oxygen influences. Therefore, the flavour is preserved and the storage life of the foods is significantly prolonged.

During the last years, KUHNE could strengthen its excellent reputation in the market thanks to its line concepts for 7- or 9-layer barrier films. The core of these extrusion lines consists of the patented KUHNE lamella feedblock. "With about 40 sold exemplars he became a bestseller" resumes Rainer Bobowk, Business Unit Manager for flat film and sheet lines. "We advance the feedblock constantly in order to face the continuously increasing requirements of the customers with the adequate answer."

The individual adjustable position of the 5mm wide and on a hexagon head bolt strung lamellas enable to achieve the optimal contour of the EVOH- and

tie layer. Together with the use of melt pumps for the extruders, the tolerances of the different layers can be significantly improved with the lamella-feedblock. At the same time, it is possible to attain thinnest and very precise layer thicknesses of for example just 5 µm for the EVOH-layer which reduces the use of expensive raw materials and thus the raw material costs.

The lamella feedblock is available in two different versions: the regrind and new material layers are applied either by lamellas or by melt bolts, which are borrowed by the classical KUHNE feedblock with melt bolts. Actually, new developed lamella inserts are tested at a customer's place, which allow to not only adjust the EVOH-, tie or regrind layer, but also the external layer, which consists of virgin material.

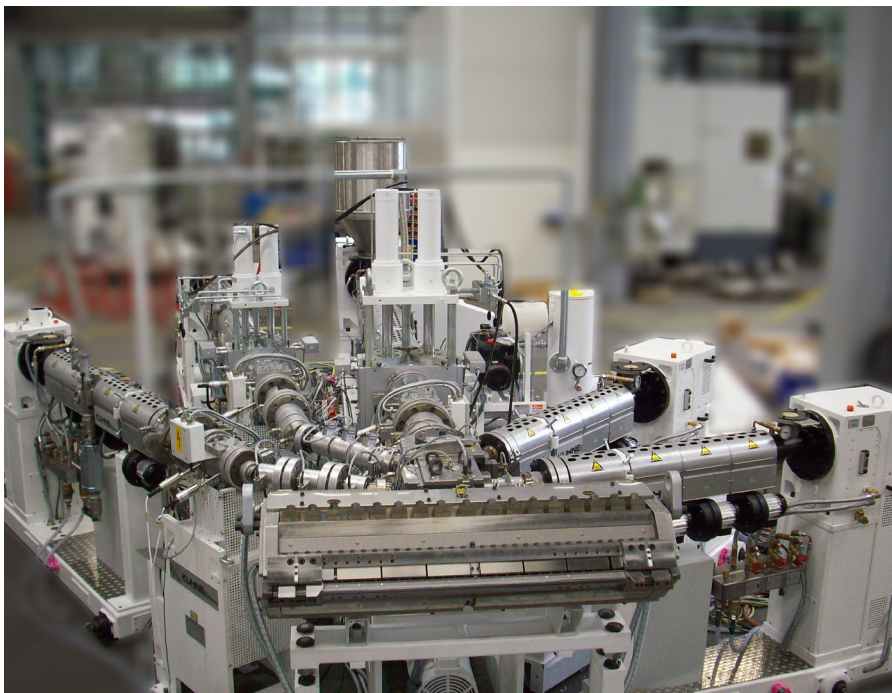
The original lamella feedblocks were used exclusively for symmetrical layer structures. Now the first lamella feedblocks are in service at customers with the possibility to switch flexibly from

symmetrical (e.g. PP-EVOH-PP) to asymmetrical layer structures (e.g. PS-EVOH-PE).

A specific KUHNE construction especially designed for this application offers the possibility to reduce the melt flow in one of the external melt channels of the feedblock. That melt channel is used for a relatively thick regrind layer in case of a symmetrical layer structure for example, but it can also be simply reduced for the asymmetrical product in order to achieve a very thin tie layer.

A further novelty of the KUHNE lamella feedblock represents the simple but brilliant principle of encapsulation, the production of mono-material edge trim. Therefore, an additional extruder was necessary in the beginning which fed via a separate melt channel in the feedblock both edges of the film-sandwich with new material. "Nowadays, we can completely avoid that additional extruder. The lamella bolt disposes now in the edges of several one-piece and closed lamella pairs for the EVOH- and tie layer." states Rainer Bobowk. By this means, both side areas of the produced film, which are cut as edge trim in a further step, are free of high-priced materials. In contrast to the conventional edge trim with EVOH- and tie content, the waste management is not anymore necessary as the mono-material edge trim can easily be recycled – an additional plus of the KUHNE lamella feedblock.

Feeding from 5 extruder into the 7-layer lamella feedblock and following die



Come and visit us in 2015:



10. – 13. January 2015
Arabplast



27. – 30. January 2015
Interplastica



23. – 27. March 2015
NPE 2015

A review from May Interpack & Open House at KUHNE



KUHNE GROUP headquarter in Sankt Augustin

During this years INTERPACK in Düsseldorf, GERMANY in May, KUHNE GROUP opened its gate for an OPEN HOUSE in Sankt Augustin. Both members of the

Group presented highlights and running machines of their scope of supply. MASCHINENBAU showed a PET conical twin-screw coextrusion line with an output

of 1t per hour of un-dried bottle flakes material and a net width of 800mm. Visitors were also impressed by the second machine, a 7-layer extrusion line for the processing of PP barrier films. That machine is equipped with 4 extruders, although the lamella-type feedblock developed by KUHNE allows even the alignment of up to 6 extruders to run for example asymmetric configurations or PS/PE combinations.

KUHNE ANLAGENBAU convinced the numerous visitors with the presentation of their 11-layer Triple Bubble®-line designed for the production of for example shrinking bags, lid films or / and stand up pouches. The machine disposes of one extruder for each of the 11 layers, all equipped with melt pumps. The film is biaxially stretched, water-cooled and can be processed with shrink values from 0 up to 70%.

The baton is passed on Change in the sales team at KUHNE GmbH

After 42 years of working with KUHNE GmbH, our Area Sales Manager Hans-Gerd Blum started his well-deserved retirement at the end of April to the regret of his long-term customers. He started in 1972 in the engineering department as technical draughtsman and at the end left his footprint in the sales department.

Beginning with a small extruder, via technical high-end flat film lines up to big sheet lines, Hans-Gerd Blum consulted customers in the German, Belgium and Dutch market with competence and great success. As farewell gift, his colleagues could fulfill one of his biggest wishes: a flight with a hot-air balloon.

Joachim Menzel (49), engineering graduate in construction design and technical business management, succeeded Hans-Gerd Blum after an intensive training phase. Passing several stations in the plastics industry, e.g. at KMB Seide Technology, Joachim Menzel can



LTR: Hans-Gerd Blum and his successor Joachim Menzel

contribute with his big expert knowledge of the worldwide sales of components and systems. He serves the markets Germany, Belgium, Netherlands, Austria and Switzerland.

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Full House in Sankt Augustin

KUHNE family day becomes a great success



With heart and soul at work: Young and old pimp up the KUHNE site with their career aspirations

Over more than 220 participants attended this year's family day on KUHNE premises in Sankt Augustin on the 26th of September. From all three members of KUHNE GROUP, employees with their families and friends were

following the invitation of Peter Kuhne. Especially pleasant was the great number of children, who tested the goal wall, took the bouncy castle by storm and painted a huge wall in one of the break rooms. Workplaces and –stations were

presented to family members, a lot of socializing was done – all that along with a lot of laughing, eating and drinking. A price draw without blanks rounded up the celebration which ended only late in the evening.

2015 is right around the corner



Once again, a year comes to its end. 2014 at KUHNE GROUP has been challenging and labour-intensive, in the same time also interesting, innovative and – last, but not least – successful.

We wish all our worldwide customers, suppliers, partners and agents happy and peaceful Christmas holidays with their loved ones and a good transition to the New Year 2015. We hope for an ongoing, trustful and satisfying collaboration!