

## Safe, delicious and fresh packaging – a KUHNE story of success.



Only a few of the available lamellas for the KU7 feedblock.

For more than a decade now, KUHNE has offered its KU7 – a patented 7 layer lamella feedblock – for the production of high-barrier films for the packaging industry.

During this time, Kuhne Maschinenbau has delivered more than 25 of these feedblocks; most of them in turn-key extrusion systems from the KUHNE Group. However, the number being retrofitted to competitor's lines is constantly rising.

At numerous production sites – mostly throughout Europe and increasingly in North America – all types of food products are being packed and protected for long term storage and shelf life. Coffee, for example, can be kept fresh for 12 months or more. The key is the EVOH layer; uniformly distributed as the barrier in the feedblock. Too much EVOH would become prohibitively expensive, too little would risk the needed barrier properties and therefore the durability and safety of the product. Eco-

nomie efficiency is also optimized by the possibility of processing a high percentage of regrind material. The achievable tolerances for tie and EVOH layer are significantly below 10%.

Most layer combinations utilize PP while others consist of asymmetric PS/PE structures. A minimum of 4 and a maximum of 7 extruders are being used depending on the resin adhesion compatibility and/or the decision to produce different colored inside and outside layers.

The KU7 is used in both in-line and off-line machines with excellent success and high quality results.

KUHNE offers bolt and lamella type feedblocks from 3 to 11 layers. A combination of the bolt and the lamella type is used when producing 9 and/or 11 layers. (KU9; KU11) This enables the production of multiple and varied structures. Capsules, boxes, and other food containers made on KUHNE lines are currently being produced by almost all leading packaging groups worldwide.

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## KUHNE GROUP: Sheet goes West

### New North America Office Established

Peter Kuhne, President of KUHNE Group based in Sankt Augustin, Germany announced the opening of a new North American office to represent KUHNE's Smart Sheet Division effective January 2015.

The new office based in Connecticut is being managed by David Citron, former managing partner and Vice President of Sales & Marketing with American Kuhne for their first 15 years. Prior to American Kuhne, Mr. Citron was involved in the sheet business units of Egan Machinery and Davis-Standard.

Mr. Kuhne sold his controlling interest in American Kuhne more than two years ago in order to better focus on the KUHNE Group's core machinery business for turn-key systems in the Sheet, Blown Film, and Triple Bubble® packaging film markets. KUHNE's lineage in Europe dates back over 60 years and they have had sheet equipment operating in North America for 40 years. The new North American office demonstrates KUHNE's deep commitment to provide outstanding support to the existing North American customer base and expand awareness of the broad range of sheet technologies and patents.

Mr. Citron is in the process of developing relationships with proven North American organizations who will be trained by KUHNE as „factory authorized“ mechanical and electrical install, start-up, and service technicians. Citron stated “and we have secured a climate controlled warehouse where we will soon stock common spare parts for overnight shipment to our North American customers”.

KUHNE's sheet technology can process all thermoplastics in thickness ranges from 0.005" to 2.0" and widths in excess of 28 feet. KUHNE has numerous significant technical advantages in proces-



David Citron – Vice President Flat Film & Sheet KUHNE

sing thick olefin sheet, geomembrane liners, specialty coating applications, high speed extruders for thermoformed packaging, and PET sheet. KUHNE offers PET lines using conventional single screw extruders, traditional co-rotating twin screw extruders, as well as conical, counter-rotating extruders. In addition to that, KUHNE has successfully collaborated with EREMA offering their Vacurema system, where a pre-drying of the material is also not required.

For KUHNE ANLAGENBAU and all air- or water-cooled blown films; Mr. Adolfo

Edgar is the person to contact. For some years, Adolfo is appointed Vice-President for our customers and partners.

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## Water quenching improves output of blown film lines by at least 30 percent

High transparency and puncture resistance as well as optimal thermoformability can be best achieved with a Cool Bubble® line when it comes to thick films up to 800 microns. With nearly 100 installed Cool Bubble® lines, KUHNE ANLAGENBAU GmbH located in Sankt Augustin, Germany, is the leader in this technology. KUHNE has been successfully manufacturing Cool Bubble® lines for more than 20 years for films up to 13-layers. „Our Cool Bubble® lines achieve particularly high cooling rates and, accordingly, very high performance,“ states Managing Director Jürgen Schiffmann as the reason for the success of his company.

Compared to air cooling used in conventional blown film lines, water quenching has a higher cooling rate of approximately 50% greater efficiency. The shock-like water quenching of the hot bubble yields an amorphous polymer structure that provides superb transparency and improved mechanical properties to the final product. Films which require this particularly high cooling rate and are therefore manufactured on Cool Bubble® lines include infusion and dialysis bags. These medical products are on one hand very thick, at 200 microns (0.008”), but on the other hand must still be soft, highly transparent and, for safety reasons, provide a high puncture resistance.

All of these requirements can be cost-effectively achieved with a Cool Bubble® line. The Cool Bubble® lines of KUHNE ANLAGENBAU are unique in that they utilize a vacuum calibration unit which supports the bubble and the cooling process. In the closed vacuum chamber, a larger amount of cooling water is available compared to the cooling systems of competitors' lines. „Our Cool Bubble® lines achieve a 30 to 50 % higher quenching rate than competitive systems and thus a 30 to 50 % higher output, which



„Cool Bubble®“ line from KUHNE ANLAGENBAU – more efficient cooling, better transparency

makes the equipment very economical,“ says Schiffmann.

At the same time the haze values of films produced on KUHNE ANLAGENBAU lines are less than half of that produced on competitor's lines. If one examines typical 7-layer-barrier film of a PE, PA and EVOH structure produced on a conventional air cooled line, a haze value of about 15% is typical. By comparison, the haze value of a water-quenched film produced on our competitor's lines is significantly lower at 7 to 10 %. „With our Cool Bubble® technology, Kuhne achieves haze values of 3 to 5 % for the same film, which is significantly better than our competitors,“ says a pleased Schiffmann.

This high level of transparency is also much desired for thermoformable films of PE-PA structures, which are increa-

singly used in the food industry for packaging of sausages, cheese and bacon. „Films that have been produced on a Cool Bubble® line can be thermoformed 30% to 50% deeper or, alternatively, with the same thermoforming depth can be processed at a 30% lower thermoforming temperature, which gives our customers a significant cost, price, and/or profit margin advantage,“ says Schiffmann, based on the feedback from many customers.

Thanks to its enormous expertise in the design and manufacturing of Cool Bubble® lines, KUHNE ANLAGENBAU can not only provide process technology advice for each individual product, but also offers the complete mechanical and electrical engineering solution from design to installation, from material dosing up to the slitter and winder, all from a single source.

KUHNE in all places:

## The German expert for machinery underlines its global aspiration with fair attendances on four continents



*KUHNE Group at NPE, USA*

Dubai, Moscow and Kielce; Orlando, Casablanca and Milano; Guangzhou and Istanbul. What could be mistaken to be travel destinations out of a Jules Verne novel: "Around The world In Eighty Days", are city names in which The KUHNE Group has and will have trade-fair appearances in 2015.

Almost every continent is represented, but this selection is far from being random:

Dubai represents the middle-east region where KUHNE MASCHINENBAU anticipates developing new customer partnerships before the end of 2015.

Russia remains, despite the political situation, a successful trading partner. Poland represents in its development an EU success-story where KUHNE has delivered more than 30 extrusion lines within the last decade.

In Northern America (USA/Canada) The KUHNE Group recently installed two experienced agencies providing technical and commercial competence in all blown film and sheet processes.

Morocco, Tunisia and Algeria are examples of three politically stable and strongly developing regions in Northern Africa and the Plast Milano is always an event not to be missed for leading European machine manufacturers, including The Kuhne Group. In late May this year, the CHINAPLAS took place in Guangzhou. As a member of the German pavilion, KUHNE emphasized its intensified activities in Asia. The attendance at the fair 2016 in Shanghai is already now confirmed.

Last but not least, the Plasteurasia show in Istanbul in December has been attended by KUHNE for more than six years in a row and now, for the first time with our new experienced Turkish agency, ALTECH/ALMAK. Over the years, KUHNE has placed various lines from its wide range of offerings at the Bosphorus since 2005: Sheet, Film, Foil, and Thermoforming lines.



*KUHNE Group booth on the PLAST in Milano, Italy*



## KUHNE MASCHINENBAU bridges the gap: The K 200-36D Extruder

Almost 10 years ago, we successfully introduced our K 180-36 L/D (7") extruder followed shortly thereafter by the K 150-36L/D (6") size extruder. Now – with the implementation of the new K 200-36L/D (8") extruder, the gap towards our biggest extruder, the K 230 (9"), has been closed.

The extruder K 200-36D has a grooved feeding section and a two-stage barrier screw. The drive size is 850 kW (over 1130 HP) and the output up to 2,400 kg/h (5,280 lb/hr) – depending on the process and resin.

Two of these extruders have recently been delivered by KUHNE to a well known European producer of HPDE pipes.



*The K 200-36D Extruder*

## KUHNE MASCHINENBAU confirms new agency in Turkey

Effective February 2015, KUHNE MASCHINENBAU has started a new collaboration in the Turkish market.

The locally well known company ALTECH (& sister company ALMAK) took over the representation of KUHNE

in the economically fast growing country. English and even the German language is no problem for the new agency, having been involved with the German market for some time.

From now on KUHNE can also offer meeting rooms and presentation facilities to its customers in Istanbul.

At the Plasteurasia show in Istanbul in December 2015, both companies will share a booth (Hall 3) for the first time.

The first success story of this new cooperation can already be seen: Recently a new customer from Istanbul confirmed their order for a 7-layer-barrier sheet line. The machine with 5 extruders will be delivered by the end of 2015.



*Turkish - German cooperation: KUHNE with new partner at the Bospurus*

## Most comprehensive blown film line portfolio under one roof

„We are the only company in the world offering all known types of blown film technology for the production of high-quality films with our Smart Bubble®, Cool Bubble® and Triple Bubble® lines,“ explained Jürgen Schiffmann, Managing Director, as he summarized the portfolio of KUHNE ANLAGENBAU GmbH from Sankt Augustin, Germany.

Among the wide variety of different machine layouts, co-extrusion systems up to 17 layers are the core competence of the company. “Meanwhile, more than 50% of all lines that we produce are 11-layer systems,“ added Schiffmann, „so we supply more than twice as many 11-layer-lines than all of our competitors combined.“ Founded in 1979, KUHNE ANLAGENBAU GmbH was initially known for small Triple Bubble® lines for the production

of biaxially oriented films used primarily for sausage casings. These are still part of the machine manufacturer’s portfolio, but no longer comprise the lion’s share. Though Triple Bubble® lines are still the main source of revenue for the company, with a share of about 50%, the machine manufacturer’s portfolio includes much more than small systems for sausage casings. Larger Triple Bubble® lines are the only available option in applications where films with controlled shrinkage, superior barrier properties, outstanding optics and excellent sealability are required.

KUHNE ANLAGENBAU supplies blown film lines from mono-layer to 17-layers for film widths up to 2400 mm (95”), film thicknesses between 15 microns (0.0006”) and 80 microns (0.0032”) and

outputs of up to 1,000 kg/h (2,200 lb/hr). These are used in applications such as shrink bags and high barrier films for the food industry.

In addition to Triple Bubble® lines, the Cool Bubble® lines contribute around 15 % of KUHNE ANLAGENBAU’s turnover. Thanks to their unique water-quenching principle, Cool Bubble® lines produce films with exceptional optical properties and produce extremely high output rates. Co-extruded 3 to 13-layer-systems are available for film widths up to 2,400 mm (95”), film thickness from 40 microns (0.0016”) to 800 microns (0.032”) and outputs up to 2,500 kg/h (5,500 lb/hr). Major applications of these systems are thermoformable films for the food industry used for the production of meat and cheese packaging, as well as for intravenous bags in the medical market. Medical IV bags need to be soft and transparent, and have outstanding puncture resistance.

More than two years ago, on January 1, 2013, the “Blown Film” business unit of KUHNE GmbH was integrated into KUHNE ANLAGENBAU GmbH at the same premises in Sankt Augustin. Consequently, the Smart Bubble® conventional blown film lines are now part of its machine portfolio, which make up about a third of the turnover.

Just as with the other two types of lines, almost all thermoplastic materials can be processed on Smart Bubble® lines and of course, many different layer structures can be produced. Single layer to 13 layer lines for film widths up to 3,600 mm (142”), film thickness between 5 microns (0.0002”) and 250 microns (0.010”) and capacities of up to 1,200 kg/h (2,640 lb/hr) are available. Synergies in development and manufacturing make KUHNE a competent partner for innovative projects.

By 2016, the specialist for multilayer film machinery will impressively demonstrate its motto „Always a layer ahead“ by installing a 13-layer-Triple Bubble® line at its R&D facility, available for customer testing and product development.



The team of KUHNE ANLAGENBAU – on the first step: General Manager Jürgen Schiffmann

[www.kuhne-anlagenbau.de](http://www.kuhne-anlagenbau.de)