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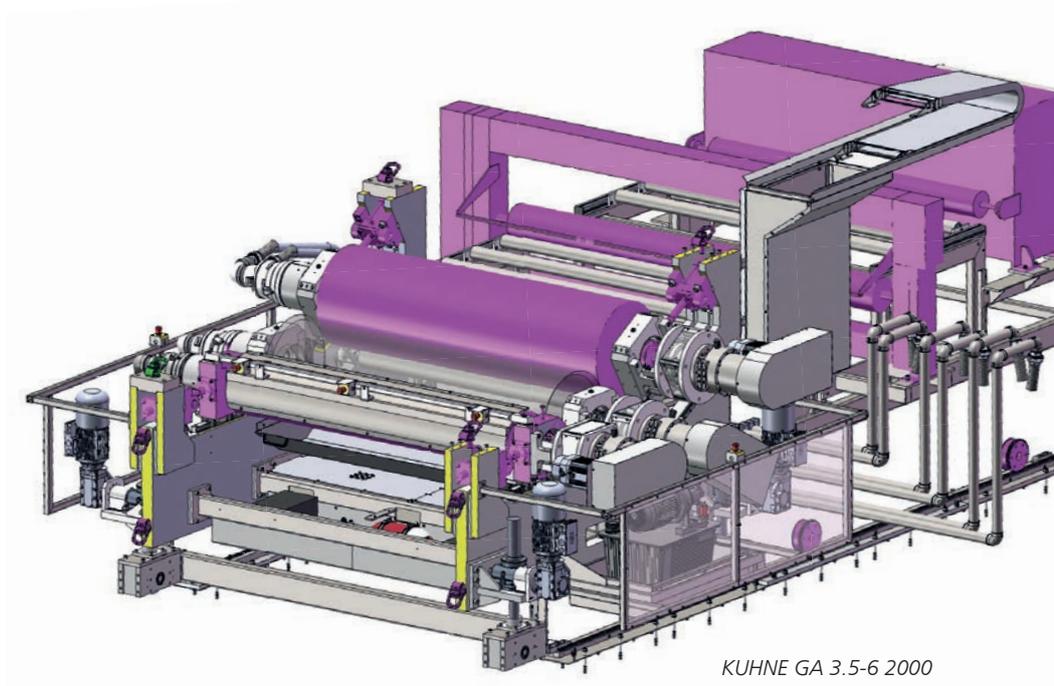
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## From Russia with PET

### KUHNE Smart Sheets® installs another huge project in Russia

There are many different ways of successfully transforming PET material into thermoformable packaging. One of them is the integration of a reactor system into a flat film extrusion line in order to raise the IV value that is chemically degrading, up again. But this is only one of many elements in order to process high percentages of postconsumer and flake material, to spare a pre-drying of the material and at the same time being able to produce extremely thick PET sheets.

In the context of a cooperation of the companies LEISTRITZ Germany, NGR Austria and KUHNE, such a project has just been concluded successfully in Russia. Two twin screw extruders produce 1,500kg per hour with a high percentage

of flake material, followed by a feedblock and die combination responsible for the three-layer structure and a very good distribution on 1,600mm net film width.

The heart of the project is the KUHNE Smart Sheets® roll stack, though. With a working width of 2,000mm and a horizontal design, it has been completely redesigned. The cylinder adjustment is done hydraulic. The third roller is positioned at an angle of 30° to the second one, which allows a better arc of contact and residence time of the film. Furthermore, the roll stack is executed with planetary gearboxes with a power of 13kw for each drive.

*... Read more on page 2*

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All these features enable a production of PET films with a thickness of 1.5mm and more in outstanding quality – by even using 100% bottle flakes material. The potential retrofit of a lamination unit for PE has already been designed and prepared.

In this project, KUHNE is also responsible for the tempering of the rolls, the conveyor, haul off and the thickness measurement and –regulation; meaning the communication between measurement device and automatic die. A both sided silicone application is included, which can be used for line speeds up to 70m/min because of a high-performance drying unit. The line ends with a winding unit from KUHNE.

The capacity of the accumulator has been adapted to the high line speed, friction winding shafts allow to wind up four webs simultaneously. The machine is operated and controlled with the KEC (KUHNE Extrusion Control) TIA HMI software system.

An additional feature in the project has been the first ever use of the KUHNE data remote lense within a complete line startup (pls. see the remote lense article on page 7). In excellent cooperation between all involved parties, the startup from a distance was managed smoothly – which is even more amazing considering the complexity of the machine configuration.

KUHNE continues to offer various PET line concepts – always focusing on individual customer requirements and wishes.

## Advantageous production of full PO films

### KUHNE Anlagenbau presents its proven Triple Bubble® technology for recyclable barrier films

**M**ono material structure film' is the name of the modern solution for all packaging applications that require both high performance and environmental friendliness. However, the production of full PO films poses challenges for plastics processors: They have to adapt and expand their manufacturing equipment and meet all the requirements of the food industry. With its Triple Bubble® technology, KUHNE Anlagenbau GmbH from St. Augustin, Germany, now offers an ideal solution to all film manufacturers for the high-quality and cost-effective production of uniformly stretched and directly sealable mono-material laminated films.

"We have been building Triple Bubble® blown film lines for over 20 years and thus have an enormous wealth of experience both in terms of machine technology and formulation development," emphasizes Jürgen Schiffmann, Managing Director of KUHNE Anlagenbau GmbH. "We have now transferred this know-how advantage to five-layer full polyolefin film structures and are thus offering an alternative that has many advantages over conventional blown film lines with MDO stretching units".

KUHNE Anlagenbau carried out these developments in its in-house technical center, which has a modern but small 13-layer Triple Bubble® R&D line with an output of around 250 - 300 kg/h for a maximum double film width of 900 mm. During the extensive tests, the machine technology

for manufacturing the five-layer structures was optimized and suitable formulations were tried out. The result is a uniformly oriented film, optionally as a full PE or full PP barrier film structure. The main advantages of these film structures are their sealability and waste-free, therefore more efficient and environmentally friendly production.

Nowadays there are only a few packaging solutions without a barrier function, especially when it comes to the packaging of food or pet food. "The term 'mono-material structures' is somehow misleading," explains Jürgen Schiffmann, "because all commercially available full PO films contain up to five percent foreign material in order to achieve the desired barrier properties."

In detail, this is how the KUHNE solution looks like: The sealing layer consists of commercially available sealing materials such as metallocene PE or plastomers, the inner EVOH barrier layer is capsuled by two PE-based tie layers and a HDPE blend is used for the outer layer. "With the same line configuration, we can also produce a mono PP film without any modification," underlines Jürgen Schiffmann. The technology is just as flexible in terms of the film thickness, which can vary between 15 and 150 µm, as for the film properties. Film shrinkage is also adjustable, depending on whether the film is to be used for stand-up pouches, coffee and snack packaging, which require non-shrinkable films or for lid films, which require slightly

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shrinkable films. For bottom web film in the food packaging sector, the films can also be designed to be thermoformable and even deep-drawable and shrinkable for form-shrink applications.

Since the films are produced using the Triple Bubble® technology, they have the same properties and thickness over the entire circumference so that neither a neck-in nor an edge trim occur. In the first bubble the film tube is rapidly quenched with water in order to achieve ideal amorphous properties, in the second

bubble simultaneous biaxial orientation is imparted and in the third bubble the annealing takes place.

A very ecological solution! The solution from KUHNE Anlagenbau also eliminates the need to laminate a MDO film with a sealing layer, which is usually necessary. "Our films are directly sealable and can be processed further," says Jürgen Schiffmann, adding another economic and ecological argument for the production of mono-material film structures with Triple Bubble® technology.

*Highly transparent 100% PO  
barrier film after thermal fixation  
in Triple Bubble® Line*



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



## The performance is insane: **KUHNE goes Geomembrane!** Multiple major projects about to be delivered at once

**K**UHNE Maschinenbau has successfully been placing turnkey lines for the production of Geomembranes into the international market since the 80s. Since the year 2012, that business unit has been risen rapidly, which led to a present climax with multiple major projects at once.

In the early months of 2020, KUHNE Smart Sheets® could convince three new customers at once of their worldwide unique competence in Geomembrane extrusion lines. This includes the engineering of the machine, the individual fitting

into local conditions of the customers and the design and static and electric concept as well. In addition to that, KUHNE offers the process engineering, especially for key elements such as the extruders, the die, the roll stack and the winding unit. And in the end, many tons of steel have to be packed, transported, erected and put into operation.

KUHNEs many years of experience become even more important considering that those lines have working widths of more than eight meters, where only one calander roll weighs more than 20 tons.

Geomembrane films out of PE are mainly used to isolate or separate elements from one another. They are deployed in the mining industry (especially more and more for heap bleaching), for fracking, for dams, water ponds, tunneling or landfills. The films often have a huge width, which is related to the fact that they are sealed outside on location (at the construction site) to hundreds of meter wide tracks. Each sealing process requires time and work and represents a potential risk regarding leakage. A very good and precise thickness tolerance is also crucial, as international high standards are required.



top left: A machine in the making, top right: Extruder K180-36D & K125-33D, bottom left: At the construction site, bottom right: Ready for shipment

KUHNE is capable of manufacturing very wide lines with a high output and in the same time outstanding thickness tolerances. Automatic regulation systems working between die and thickness measurement come into use, which make manual interference unnecessary.

That would require time and work, especially when it comes down to a nine meters wide die, and is much more susceptible than a technical automatic system.

That Geomembrane die is a key element and completely designed and manufactured by K-TOOL, a subsidiary of KUHNE

Group. The Geomembrane extrusion lines reach an output of up to four tons per hour, a net width of 8,500mm and a thickness tolerance of one percent. The one- or two sided embossing of the films with the so called 'Spikes' brings also more reliable results with the flat film technology: In accordance with the customer, KUHNE designs a drilling pattern which is depicted on one or several embossing rollers.

As expectations for film adhesion to the underground – often soil – become more demanding, this solution is better than

random embossing patterns created by gas injection in blown film lines.

The mentioned requirements on one side and the constantly growing experience and expertise of KUHNE on the other one lead to the fact that less and less Geomembrane lines on the market are being produced with blown film technology. The three huge projects will be dispatched end of 2020 and in the first quarter of 2021 to Asia and Middle East. For KUHNE, they represent an intermediate goal, but certainly not the end of the successful road to a global market leader.

## Education counts: The IHK – KUHNE training ambassadors

Johanna Schwippert is 21 years young and passing through a 42 month training program at KUHNE Group. The committed woman wants to become a technical product designer. Product designers are involved in the development of technical products and work on the design of articles for daily use. They create three dimensional data models and technical documentations for construction units and components. But Johanna is much more than 'just' an apprentice; she is KUHNE's first ever training ambassador.

The IHK (chamber of industry and commerce) training ambassadors offer students of general education schools from the 9<sup>th</sup> grade onwards career orientation. This happens at eye level, as the ambassadors are always students themselves. The main goal is to inform and inspire as many young people as possible in schools about the dual vocational education. The ambassadors are sharing their view with students about the daily life of their education in company and school, the training content, application process, dual education and career opportunities. Therefore, the ambassadors are prepared and trained themselves at the chamber of commerce and industry.

At the end of that training and their completed assignment, they receive a certificate together with their company.

Since starting the project in 2016, more than 6,000 students in the Region of Bonn / Rhein-Sieg were contacted and the feedback received was extremely positive from students, but also companies and instructors. Three to four training ambassadors from different occupations and companies present the dual education system and the various jobs during

such a classroom visit. The ambassadors are of course released from their duties in the company during that time. Some of the participating companies have even already seen positive effects in terms of the incoming number of job applications; KUHNE is among these.

"Students are much more likely to be inspired by their peers than by parents or teachers," says Johanna Schwippert. "This applies for trending tracks in the music charts as well as for the later working life. This is how and why we as training ambassadors are so convincing."

The ambassadors should be open and

communicative. They bond trainees to their companies, as employees feeling valued stick with their company. Employers are also advertising for themselves when talking to students.

KUHNE is one of 44 participating companies in the region. Johanna, as first ever KUHNE ambassador, having already managed a lot of school assignments, is about to take her exam in 2022 and she will certainly not be the last. In order to set the course for human resources for the upcoming years, the German machine manufacturer is relying on youth to act successfully on the international market.



*From left to right: MBA Jürgen Hindenberg – Managing director Vocational training IHK Bonn/Rhein-Sieg, Kerstin Reineck – Human Resources KUHNE, Johanna Schwippert – KUHNE Education Ambassador, Ruth van den Elzen – Vice President IHK Bonn/Rhein-Sieg*

## Let's do it online!

Virtual shows  
& exhibitions,  
Online Open House  
& workshops at  
KUHNE



**The worldwide digitalization is not to be stopped already for long. In addition to that, the Covid-19 Pandemic has put the focus on many topics and by that updated them. That applies also for our daily, online life.**

To personally meet customers, suppliers and partner-companies has been an essential part of the KUHNE Group DNA for decades.

Precisely because our business are machines, cables and steel, direct talks and visits are important. To look your counterpart straight in the eyes and being able to directly communicate has always been elemental and still is.

At the same time some business trips can certainly be spared, even in the – hopefully near – COVID-free future.

When there will be no more viruses flying through the air, why should we do that inflationary? So KUHNE Group did use the time well and has made virtual meetings and shows to one of its new business elements. That includes two Online Open House events, the participation

on a virtual show for Africa or successful line startups from the distance with only support of phone and a data lense (see related article below).

That is how a mosaic of possibilities has emerged to meet customers and partners and communicate with them. We will gladly present that to you also personally in the near future – our hand on it! ☺

**Keeping clear sight:**

## The KUHNE data remote lense – the direct path to the solution

Extrusionlines keep becoming more and more complex, especially when it comes to electrical details. Problems and questions can occur at every machine, even being a KUHNE. Especially in times like these, where direct support on location may be difficult due to travel re-

strictions, but also in general, an Online-Service can solve a lot of challenges quite easy:

- Connect your operator directly via Remote Lens with our experts at KUHNE
- Seeing the problem and showing it at the same time
- Complicated descriptions and unnecessary interventions can be avoided
- Dialogue is translated simultaneously in multiple languages or can be held in our written chat
- The active suppression of noise allows for very clear communication without disturbing background noise

- The exchange of data such as pictures, videos or electric drawings works easily in both ways
- With available WIFI, a transmission in HD quality is possible
- After only one saved technician deployment, the glasses have already paid for themselves



**Be free to contact us anytime:**  
[service@kuhne.de](mailto:service@kuhne.de)

## The Master of all converters retires: KUHNE says goodbye to Manfred Hanke

A lot of things happened in February of 1980: The rock opera "The Wall" from Pink Floyd had its premiere in Los Angeles, the state of Israel announced to change the name of their currency from pound to shekel and the XI. Olympic Winter Games were opened in Lake Placid, New York.

On top of all that, a young man named Manfred Hanke, 23 years old back then, started his career at KUHNE. He began in the electrical workshop, where by the way KUHNE continues to build all of its cabinets until the present day. At the same time, Hanke visited evening school, where he completed his studies shortly after to become an engineer.

In 1982, he jumped at the chance to become head of the electric engineering department and workshop. Manfred Hanke presided over that department with steady, firm and humorous hand.

From 2010 on, Hanks path led to the



*40 years under power: Manfred Hanke*

KUHNE Group service, but that could not stop his passion for everything with a plug. He could program converters by phone, read and understand circuit diagrams in ten foreign languages and assemble electric cabinets with only two fingers. That is how he could support in

countless customers all over the world. In the autumn of 2020, after more than four decades in the Group as a loyal KUHNIANER, Manfred Hanke said goodbye and headed towards well deserved retirement. He did that as he was always known: smiling.

## Let it granulate

Merry christmas and a happy, peaceful and healthy new year 2021

See you in 2021!

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