

Micrometer Precision

The production of automated thermoforming equipment and associated molding dies requires extreme precision while working with 1 micrometer thick films. Rohde Maschinenbau, a thermoforming equipment manufacturer in Eutin, Germany, uses STAHLWERK Premium Line machine tools to meet these stringent requirements.



Thermoforming Automation for America

“Our machines process PP, PP-EVOH-PP, PS or APET plastic films that are fed direct from rolls,” explained Founder and Chief Executive Officer, Norbert Rohde. Since 1996 his business designs and manufacturers automated thermoforming equipment in series production. “The film is automatically fed into the thermoformer, where it is heated. Using compressed air and the appropriate die, the heated film will then be pressed into its final shape.” After a cool-down phase, the forms are punched out of the surrounding film and stacked for transportation to the next stage. For their international customers, Rohde and his team produce perfectly fitted dies that meet the exact requirements of

the final beakers, dishes or lids. About eight machines with up to 20 different thermoforming dies are sent from this plant in the Northern German Schleswig-Holstein region in various countries of the world. A big demand for these machines exists in South and Central America, and increasingly in the USA and Canada. “Our portfolio is a good match for North American markets,” added Norbert Rhode.

Heat the film, shape it, and cool it – it seems to be very easy to make beakers and dishes for the food industry. However, the technology behind it is very complex and working with film thicknesses between 100 micrometer and 0.118” requires extreme precision. The lasting functionality of thermoforming systems can only be guaranteed, if this extreme precision is integrated during their construction.



Reliability and Quality

Rohde takes advantage of this increasing demand for its continued, paced growth. Recently, the company invested 500,000 Euro to build a new production room and to purchase the new Lupus 700 Machining Center from KNUTH's STAHLWERK Premium Line. While looking for a heavy-duty machine that could handle workpiece dimensions up to 52" x 25" and weights up to 550 lbs., Rohde met with KNUTH Machine Tools, owner of the renowned STAHLWERK Premium Line brand. "We have been using a VBZ 760 from KNUTH for 21 years. So it came natural that we turned to KNUTH, where we can expect the same great reliability. An added advantage is the close

distance between Eutin and KNUTH's headquarters in Wasbek, simplifying service requests or replacement part orders," said Rohde. Their most important requirements: The machine must work with maximum precision in the 5 micrometer range, even during high throughput speeds and maximum chip removal rates.



Precision to the μ

Rohde emphasized that “Customer requirements are becoming increasingly more demanding. For contouring and curvature of the forming tools an exacting precision in the range of 1 to 5 micrometers is mandatory.” After their initial visit, Rohde and STAHLWERK milling experts met several more times in Eutin. Rohde remembers, “we had in-depth talks, exchanged thoughts and ideas, and discussed the requirements, solutions and their feasibility.” After an in-depth analysis, STAHLWERK recommended the LUPUS 700 as the solution for Rohde’s machining requirements. This CNC Vertical Machining Center is equipped with a powerful Heidenhain iTNC 530 HSCI control and can handle large steel parts and dies in dimensions up to 60.” It features a premium, heavy-duty C-frame made of Meehanite casting, rigid linear guides

with a 6-section roller conveyor, and a high-performance spindle. Michael Schaaf, STAHLWERK Premium Line Manager, added that “this design ensures maximum stability of the LUPUS 700 even at high feed rates up to 157 feet/min.” “For maximum precision during machining of alloyed steel, we added Super-S high-precision class C3 preloaded ball screws on three axes plus Heidenhain glass scales.”



Machine Performance and Superior Service - the Final Deciding Factors

Rohde visited KNUTH at their headquarters in Wasbek to try out the powerful LUPUS 700 performance. "For this test run, we were able to use our own materials to produce cut parts. The measurably higher precision and the high throughput definitely convinced us," said Rohde. He stated he was sure that: "KNUTH is taking the right path with their new STAHLWERK Premium Line." He added that his decision also was influenced by KNUTH's custom tailored services and the personal engagement of company owner, Karsten Knuth. "It ensured us that we would have a reliable and competent business partner at our side," said Rohde. All schedules and agreements were met, and the operator training for Rohde employees was customized to meet their individual needs.

"Today, the Lupus 700 has successfully been in operation for over one year, and it has proven itself just as the superior preventive maintenance service provided by KNUTH. When an electronic part in the control cabinet had to be replaced, KNUTH was there with prompt and uncomplicated service", said Rohde. "I definitely would buy the LUPUS 700 again and I highly recommend STAHLWERK machines.."

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