



PRESS RELEASE

ILLIG Cleantivity® in the thermoforming process: Clean production with increased quality time

Heilbronn, March 2020 – The system provider for thermoforming solutions ILLIG Maschinenbau consistently follows the Cleantivity® concept in the thermoforming process with focus on clean production with increased machine availability. This is how the machine manufacturer selectively responds to market demands and ILLIG consistently pursues the strategy of increased productivity in thermoforming. It is the intent to optimize the thermoformer's quality time, reduce planned standstill times and minimize scrap by clean production. To achieve this, ILLIG already realized numerous technical innovations in the machines.

Cleantivity® – Cleanliness in machine manufacturing with high availability

Derived from the comprehensive experience in hygiene in form, fill and seal lines (FFS lines), ILLIG transferred the technology of cleanliness in the production process to its thermoformers – this is accompanied by higher machine availability. ILLIG calls this concept Cleantivity®. It is our intent to extend operating time, running time and, ultimately, the quality time of thermoforming machine, to achieve a high line output of high quality parts.

Quality is a matter of details and can be calculated

Manufacturers of packaging machines and lines work in accordance with the DIN 8743 machinery standard, in order to establish and optimize operating figures and behavior (performance) of their systems. System-inherent and not inherent loss times are considered for this; such as unused production time of the machine, planned and unplanned standstill times, as well as loss time due to reduced output and also scrap. The mentioned loss times must be optimized in order to extend the quality time and to achieve higher line output of high-quality parts faster.

The two most important variables are machine availability and cleanliness in the production process. ILLIG, the technology leader, has successfully realized numerous measures for machine optimization especially in terms of availability (productivity). Factors which contribute to increased productivity of the systems are as follows: A consistent tool change concept, preventive maintenance measures, test programs, central visualization of diagnosis functions and detection of service-relevant process parameters as well as the „ILLIG Intelligent Control Concept®“. The measures are completed by the fact that a production line can be integrated in the ILLIG NetService.

Cleantivity® – A further step towards more quality time

Cleanliness in the production process is – besides availability – a major criterion for extension of the quality time. ILLIG already realized hygiene demands with respect to machine design according to standard DIN EN ISO 14159 in FFS lines and achieves the top goal, i.e. cleanliness of surfaces which are in direct contact with packaging materials and which are not in direct contact with packaging materials. With the Cleantivity® know-how ILLIG transfers the requirements with respect to cleanliness to the thermoforming process. Clean formed parts reduce the amount of scrap and thus increase the machine's quality time. A soiling analysis in the thermoforming process revealed the critical spots which ILLIG eliminated by employing its technical know-how.

Material transport: ILLIG simplified the design of the material transport. Geometrically optimized profiles reduce wear and tear and – subsequently – impurifying abrasion. The heat and corrosion-proof heater boxes are made of unpainted stainless steel. Cleaning is easy and cleanliness is improved already at the beginning of the material transport.

A much better, new piercing method helps to prevent development of material particles on the piercing marks; they might cause soiling of the parts.

Loss of cooling performance is prevented by cooling which is integrated in the material transport profile and the profiles are cooled in line with demands.

Lubricant feed is performed selectively at the relevant lubrication spots; and in this way lubricant consumption is optimized. As a whole, the improved material transport requires less cleaning and maintenance effort.

Lubricants: ILLIG uses food grade lubricants and oils for the lubrication of the material transport chains and the central lubrication, which meet the hygiene requirements in accordance with DIN EN ISO 14159 and also DIN EN ISO 21469 for „Lubricants with incidental product contact“. These so-called H1 lubricants, in accordance with FDA (US Food and Drug Administration) regulation 21 CFR 178.3570, are lubricants for machines and lines used in the food and animal feed industry.

Bearings: The system supplier achieves improved cleanliness also by using tight sliding bearings with collection of lubricant. Lubricant depots in bearings prevent uncontrolled impurification. Excess, used lubricant is discharged and collected in a tank. A service life of 20,000 hours is achieved in combination with specific slide bearing materials. In areas which are difficult to access where manual relubrication is therefore difficult, relubrication-free bearings with „Solid Oil“ technology are employed. Close osculation between solid oil and rollers and rails reduces ingress of impurification.

Vacuum pump: ILLIG uses the „Mink“ technology in thermoforming systems. The claw vacuum pumps and compressors work oil-free and contact-free. The dry operation prevents impurification of filters and pump surroundings. Neither oil nor any other operating liquids are required for the compression process. Thanks to the contact-free operation these vacuum pumps work to a large extent maintenance-free. They achieve an extremely high efficiency which has a positive effect on energy consumption and performance.

Cooling water in thermoforming process: The temperature control of servo drives, material transport heater covers and steel rule die heating is performed subject to the surrounding temperature. In this way development of condensation water at these spots is prevented and this also adds to energy saving.

Condensation water might develop above the material level and impurify the material by dripping. A dripping protection on the sound absorber for the exhaust air, a draining chute on the upper bridge and a cover sheet on the cam gear collect the condensation water and drain it.

A blow-out device for cooling water of the tool prevents that residual water will accumulate in the tool or dripping water in the forming station. Besides improved cleanliness, this also results in a gain of time during tool changes.

The technical concepts realized in ILLIG thermoformers utilize the high capacity of servo-driven thermoformers to the full extent and extend the quality time of the machines considerably. For seventy years ILLIG has been demonstrating its expertise and pioneering achievement in machine manufacturing, starting with pneumatic machines and servo-driven machines through to cycle speed optimized thermoformers. The sophisticated technology meets more than only all required DIN standards in mechanical engineering. ILLIG systems allow high productivity as well as reproducibility of all process parameters. ILLIG is shaping the technology of tomorrow's high-quality and resource-saving thermoforming process. Productive, clean, energy efficient and sustainable.

About ILLIG Maschinenbau

ILLIG is a leading global supplier of thermoforming systems and tool systems for thermoplastics. The company's product and services portfolio includes the development, design, manufacture, installation and commissioning of complex production lines and components. With the unique 360° packaging development, Pactivity®, and the high-performance packaging systems, ILLIG supplies its customers with resource-friendly and sustainable solutions, designed4recycling. With branches and sales agencies in over 80 countries, ILLIG is locally present in all markets around the globe. For over 70 years, the family business has been serving its customers across the globe as a reliable partner for the cost-effective manufacturing of complex precision thermoplastic parts with innovative technology of unsurpassed quality and comprehensive worldwide after-sales support.

Further information:

Georg Sposny, Corporate Communications, Press and Public Relations
ILLIG Maschinenbau GmbH & Co. KG, Robert-Bosch-Straße 10, D-74081 Heilbronn
Phone: +49 7131 505-784, Fax: -1784, Mail: georg.sposny@illig.de
www.illig-group.com

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Picture 1:

The DIN 8743 standard describes a time and calculation model. This model deduces the quality time from the theoretically usable time of the machine (24 hours per day), the machine time, the operating time and the running time.



Picture 2:

It is our intent to extend the operating time, the running time and, ultimately, the quality time of thermoforming machines by using Cleantivity®, so a high line output of high quality parts can be achieved.