

## Innovative Process- and Depositing Technology

# How do you fill a jelly bear?

*Besides the remarkable trend for deposited hard candies, gummy and jelly products still enjoy the customers' favour. Whether they are licourice, jelly-, Agar-Agar-, marshmallow products or jelly bears, which are popular, all can be produced safely and efficiently on mogul plants.*



For the manufacturing of low boiled sugar products like gelatine-, Agar-Agar-, gum arabic and starch products or a mixture of those components Robert Bosch prefers to use pressure dissolving technology, which has been in use for more than 20 years. All ingredients for the basic mass recipe are exactly weighed and mixed using a batching process in the Gravomat weighing vessel. This is then heated continuously in the pressure dissolver with a throughput of up to 6000 kg/h. The dwell time in the optimized heat exchanger is well defined.

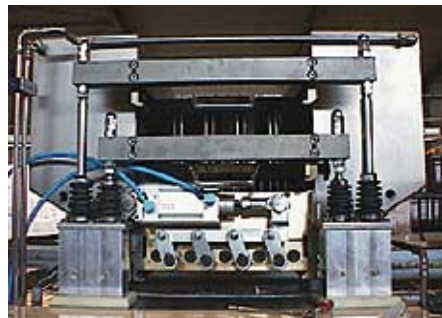
With this technology, which combines all advantages, all sugar crystals and starch are going to be solved completely, this is achieved by an overpressure, which is synchronised to the movement of the boiling line. This solving procedure occurs in an area of high unsaturation within a short time and following a vacuumizing process a clear, transparent and bubble free depositing mass is transferred to the colouring- and flavouring station.

Due to the amount of added water in the Gravomat and the vacuum chamber, which is related to the water content of the final product, the dry substance and the depositing temperature of the mass are adjusted without any cooking process.

### THE MOGUL PLANT

The mogul plant itself consists of several of functioning groups. The destacker feeds the starch trays, filled with powder and products, from a pallet. The transport of the trays is via a new (Roto Step) system. The movements of this intermittent linear system (walking beam) are controlled by servo motors.

In the starch station the tray is turned by 180 ° so that product and powder fall onto the infeed of the sieve drum, where product and starch are separated. The powder is transported by screw conveyors into the sieving station. After the sieving process the powder is fed into the starch dryer/-cooler or directly into the filling station, where the reconditioned starch is filled into the trays. The product is cleaned in the sieve drums by spe-



Center in shell depositor. Photos (2): works

cial brushes and/or pressurised air and then reaches the product conveyor.

Height adjustable blow rotors complete the final cleaning of the product so as to prepare them for the next production steps, once completed a second tray is fed in so the cycle can start again.

The empty tray is now transported into the filling station and into the printing station. Here the product form is printed into the powder by means of printing boards, the starch tray is ready for the next cycles.

### THE ROTARY VALVE DEPOSITING SYSTEM

The heart of a mogul plant is the fixed rotary valve depositing system. In standard application it is PLC-controlled, combined with a servo motor controlled pump system, however if required it is also available mechanically. For the manufacturing of filled products the rotary valve depositing system is applied in center in shell application, which is PLC- and servo controlled anyhow.

To avoid the problem of collapsing powder bridges between neighbouring powder prints because of tray acceleration and shocks Makat Candy Technology has developed a depositing system, which is fixed and fills a whole starch tray in just one stroke.

Due to this system a complete stationary phase can be used for one pump stroke. Compared to other systems, which fill a tray

with two or more pump strokes there is double or more time available for sucking, depositing and resucking of the mass. The filling rate of the tray can be optimised due to the careful transporting movements.

In the rotary valve pump system all moving parts are machined high precisely. Due to this the valves are O-ring sealed without any pre tension, thus ensuring that friction and wearing of the moving parts are mostly avoided. This is also the reason why water lubrication, which is needed for conventional pump systems, is not necessary so the danger of contamination of the tray sides by the water can be avoided.

### FILLED PRODUCTS

For the manufacturing of filled products the center in shell depositing system is equipped with two independently driven piston- and rotary valve groups. One piston group deposits the centermass, the other group the shell mass. Independent drives for the two rotary valve groups and the two piston groups allow adjustments to the piston movement for sucking, depositing and resucking according to the products specific needs. This ensures that size and position of center inside the product can be controlled.

If a confection without filling is produced with this pump system the same mass is filled into the two different installed depositing vessels. This depositing system, which is equipped with up to 800 pistons, can produce up to 400 filled or up to 800 unfilled products within one starch tray. This gives you the opportunity to produce innovative products, combined with a high flexibility of the depositing line and a high line efficiency because of a high filling rate of the trays.

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