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Machinery for the Chocolate and Packing Industry
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Technology of Coating with Chocolate

Chocolate Dragees are en vogue

The automatization of the production for chocolate dragees has grown strongly during the last decade. One no longer works with the conventional pans but with belt coaters or with fully automatic extensive plants.

Isolated pans are still in operation, particularly for polishing. Belt coaters represent a good alternative for flexible operating, especially in small or medium-sized workshops. Computer controlled extensive plants are daily in operation for the cost-effective production of mass articles.

The production of dragees has developed in the last decade: from the original handmade, therefore expensive product to a mass article.

The latest demands of modern technology have risen strongly in relation to the daily output and the quality. The new coating technique was to partially automatize the coating procedure.

No alteration has been made to the actual procedure of coating, nevertheless the coating machines are variable. As in the past, a discontinuous charge system still applies to all types of machines. The coating mass is mainly stored in large tanks connected with the necessary pumps and then distributed onto the product by means of an automatic dosing system. Loading und unloading has also been considerably simplified.

Chocolate coating

There are three fundamental types of coating: the sugar coating, chocolate coating and film coating. The focus of this contribution is the chocolate coating under the operation of so-called belt coaters or cabins. With these machines, the melted chocolate mass is distributed smoothly onto the rotating product and then subsequently cooled down to congeal with sufficient cold air. On the contrary, the hard sugar coating involves a drying procedure since water is deprived.

Coating Pan

The following Coating Pans are in operation: from size 10 kg (laboratory) to 250 kg nominal contents . These pans are mainly produced today in stainless steel, previously in copper. The rotating pans are still in use today for coating and glazing of the chocolate coated product. The conventional inclined pan lens, pear or onion shaped was the beginning of development.



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The chocolate and /or polishing was partially made by hand or by using a tiltable spraying system or pouring device. Due to the inclination of the pans axial a good mixture of the product is reached to qualify for an even distribution of the covering mass. Loading and unloading was either made by hand using a suitable container or the entire pan was automatically tilted. Power was achieved with an electronic speed regulated motor in order to adjust the speed of the pan according to the diameter of the core.

Due to constructive demands, an increase in the capacity of the conventional pan is only achieved, if the diameter of the core is increased. This would increase the core bed and then lead to a strong mechanical load/strain on the input. In addition to this, areas where rotation hardly occurred would be relatively large and the injected cold air would be poor and subsequently, result in substantial distribution and cooling down periods.

Comfortable way of life – the belt coaters

This inadequacy was solved at the end of the sixties when the so-called belt coaters – or coating cabins were developed. These machines show distinctively a number of positive advantages compared with the conventional pans

Due to their construction the belt coaters are considerably more efficient as the coating pan and offer the most possible flexibility with regard to a variety of products at a relative low rate of investment costs. This particular fact made the machines to the most sought after worldwide, especially for small and medium sized manufacturers of chocolate dragees. The belt coater represents an efficient and economic alternative in comparison to the conventional pan.

Capacities of up to approx. 1500 Kg of covered goods can be reached in a daily 8 h shift when using a standard product.

Technical specifications of the belt coaters

The technical specifications of the belt coater are defined as follows:

a continuous rotating steel grid conveyor, limited on its side and led by two disc wheels forms a coating trough. The trough is provided with a steplessly adjustable speed enabling the product to roll smooth and careful over the entire width of the conveyor. This is very important for sensitive articles e.g. soft centres and fruit pieces.

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All kinds of centres can be coated in the belt coaters e.g. nuts, almonds, raisins, fruit slices, fondant, jellies, marzipan, or coconut - with all thinkable fat masses - e.g. milk, dark, white, yoghurt and compound. Even sharp cornered and flat products e.g. almonds get a particular smooth coating. If necessary, one can top coat the core and if required, cover with intermediate layers.

Tempered chocolate may slightly shorten the coating time but is not a necessity and therefore not used today due to the intensive costs.

Supply of Chocolate

In order to operate at a flexible rate, a continual supply of chocolate is achieved either by using a specially constructed mouth piece with drill holes and a built-in pneumatic controlled cleaning mechanism or by using a relevant spraying system equipped with 3-4 nozzles.

The heated mouth piece is mainly used for standard products and the spraying system for very light extruded cores. In all cases, one works with a low pressure of 3 bar at the maximum, in order to treat the chocolate with the most possible care.

The conveyor belt runs in reverse for emptying of the product into available trays or similar suitable containers.

Important: Cold and dried air

An equivalent cold air supply must be available during the coating procedure. Due to the slits in the steel grid conveyor, an effective and sufficient supply of cold air is guaranteed both for the product and machine enabling a considerable shortening of the coating procedure. Due to the mechanical stable construction of the steel grid conveyor, the chocolate residues left on the conveyor can be removed if required with the built-in cleaning device.

All coating machines.e.g. belt coaters, pans, drums have to be operated with cold air. The air-conditioning of the cold air is of great importance and contributes to a decisive rapid covering of the mass without any problems.

The most important factor is not the absolute temperatur but the relative humidity of the injected cold air. This should not exceed 55% rel. humidity.

The temperatur of the air lies between 8° and 14 °C depending on the product and chocolate. Compound masses require a slightly higher temperatur. To meet the demands for a relevant preparation for the supply of air depends on the installation conditions and the influence on our environment.



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Normally the belt coater is operated by a skilled person. One can also automatize the machine by installing electronic equipment. Here, measuring cells weigh the product and the actual chocolate covering. Pneumatic gears control the valves for an efficient flow of the chocolate mass and for the current of cold air. The product can either be emptied directly on to a belt conveyor or into feed hoppers to the floor beneath for vertical sequential production. Nearly all experts recommend to store the goods after coating in a suitable cold room for 24 hours, to let the chocolate crystallize

The glazing and polishing may be made in the circular pans as well as in the cabin. If one intends to install a complete dragee production line, a polishing cabin would be of advantage. It is recommended, however to use this machine just for the polishing procedure! The parameter efficiency and price must be taken into consideration before a decision is made. The simple filling and automatic emptying of the polishing cabin represents here an important factor. The product is emptied carefully and the finished product is not damaged.

Large-scale machines:

In order to increase the capacity, especially for production of mass articles, extensive plants have been built with 4 m of horizontal stored drums. The present plants on the market have a capacity upto 2000 Kg. The drums have the disadvantage, that the mass is not thoroughly mixed along the complete length of the drums. For this reason, mixture shovels were installed. Apart from this and of significance is that an even covering with the chocolate mass and a sufficient feeding of cold air must be reached when using the horizontal stored

drums. One was forced to develop a special spraying device with arms to guarantee an even covering along the entire length of the coating bed. These extensive plant are equipped with a menu-process controller including a visual display terminal, receipt administrator and documentation. Parameters such as mass flow, temperatur, volumn of cold air, speed of drum as well as loading

and unloading are fully automatically controlled by the process controller. CIP-Cleaning systems have been integrated in the drums and spraying arm.

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