Continuous Conching

Since 1878 when Robert Lindt discovered the improving effects of conching, many conches with different processing technologies have been developed.

With the continuous conche, the industry now offers a technical advance and for the first time, a reliable fully continuous conche.

The conching process is the most expensive and energy intensive step in chocolate technology. But this step is decisive and important for quality of the final chocolate. Research is concentrated on the aims of shortening the conching process, reducing energy consumption and improving the sensory and rheological quality of the final product.

Unfortunately, at present it is very difficult to compare different conching systems objectively, because real "comparative values" are not available.

The idea of a continuous process is very old. However, in the past it was not possible to solve the problem of discontinuous feeding.

Generally, for all different systems the major processes of conching are:

- **External Matter Exchange—** degassing/deacidification/dehumidification (heated air is blown over the particle surface)
- **Internal Matter Exchange**—known as the "Maillard Reaction," the fundamental chemical reactions for flavor formation are mainly unknown.
- **Structural Change**—break up of agglomerates and wetting of particles.

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ENERGY DENSITY

The specific energy density of a conche is one of the most important values for conching. Energy density is measured in kW per ton.

Factors Influencing Energy Density

Equipment influence factors:

- installed power for conching and used power for conching;
- design and efficiency of conche;
- batch capacity
- available time for treatment and used time for treatment.

Technology influence factors:

- water content of refiner flakes;
- free and final fat content of refiner flakes;
- particle size distribution.
- degree of sugar recrystallization

The continuous conche was developed in cooperation with the Technical University Dresden in the 1970s. It has shown a vast improvement over the last few years.

The latest development of continuous conches include these features:

Pasting Station for structural changes and their stabilization, exchange reactions and material changes.

Weighing Station for recipe completion.

Homogenizer for homogenizing and final liquefaction.

PASTING STATION

The pasting station is the heart of the continuous conche. The structural changes which take place here and which greatly influence the rheological and sensorial properties of the chocolate mass are a result of what we call "high shear grade process."

During this treatment the chocolate in the pasting columns is subjected to intensive mechanical stress. The specific energy density in a continuous conche is much higher than in any kind of batch conche.

This is possible because nearly 100 percent of the particles are under treatment at the same time. In batch conches it is closer to 5 percent.

Characteristic features of the "high shear grade process" are:

- High efficiency rate of the energy

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