Chocolate
CHOCOEasy®
The Easy Way to Chocolate

A millennium before the discovery of America by Europeans, cocoa was known to the natives as a luxury food. The name chocolate comes from the Aztec word xocóatl, from xócoc (= sour, tart, spicy) and atl (=water). However, the unsweetened cocoa preparation was not agreeable to European taste. Sweetening the beverage with honey and cane sugar solved this problem and soon cocoa products were distributed all over the world. In the mid-19th century the solid chocolate bar was developed in England and in 1875 Daniel Peter developed a method for adding milk to the chocolate bar.

Today many qualities, shapes and flavors of chocolate are available. The three basic categories for chocolates are dark, milk and white chocolate. The legal requirements for cocoa and chocolate products are delineated in the European Union according to the guideline 2000/36/EG.

The plant concept CHOCOEASY® of NETZSCH-Feinmahltechnik GmbH is a complete process for production of premium chocolate meeting and exceeding commercially available high quality chocolate produced using traditional methods.

From the raw materials cocoa mass, cocoa butter, sugar and if necessary milk powder you can produce your own dark, milk or white chocolate. Due to the simple operation of the compact CHOCOEASY® plants production capacities from 25 - 6000 kg per batch can be produced. You can develop own formulations, flavors, adjust the flavor during the process, adjust viscosity to meet your exact specifications.

There are no limits to your fantasy.
Your Advantages

The flexible CHOCOEASY® process allows you to produce standard chocolates, and is very capable for producing specialities like dietary chocolate or chocolates with other sugar types and additives.

Surprise your customers with own creations.

Savings - CHOCOEASY® has remarkably low energy consumption, cooling water use and space requirements (each with up to 40% savings over traditional systems). Shorter process times for a batch by grinding and liquid conching at the same time allow more productivity from a single machine, plus the semi-automatic operation means unattended operation. This revolution in the chocolate production method may enable a saving of up to 5% cocoa butter.

Individuality - formulations according to individual requirements are easily developed with the simple operation of the compact, enclosed CHOCOEASY® plant. You have a direct influence on type, flavor and quality of the chocolate. Give your fancy full scope.

Quality - with the CHOCOEASY® process you always have reproducibility in a defined, semi-automatic process. The simple, menu controlled operation panel includes temperature control, enabling the exact adjustment of your flavor.

Flexibility - thanks to the modular construction of the plant designed for your present requirement, future expansion of the system to increase output by adding a conche is easily accomplished.

Efficiency - with the CHOCOEASY® the production of small quantities of standard or special chocolates with your own touch is possible (batch sizes of 25 kg).
The ChocoEasy® Process

The ChocoEasy® integrates the conventional process steps, known from classic production processes. Dry conching is the most important step for quality development of chocolate. The dry conching step runs extremely efficiently with the ChocoEasy® process. Using agitator bead mills instead of five roller mills for fine grinding (or refining) of the chocolate, the refining and liquid conching processes run at the same time. Thus, the process times are shorter and produce the same or better quality compared with chocolate from conventional plant.

Pre-grinding
Crystal sugar and milk powder, particle size < 300 µm

Intermediate storing
Storage tank with horizontal agitator shaft and screw discharge

Dry conching
Heatable conching tank with horizontal special agitator shaft

Dosing
Lecithin and possible vanillin

Intermediate storing
Heatable mixing tank with vertical agitator shaft

Liquid conching

Fine grinding

Chocolate
The Process Details

Pre-grinding - the pre-grinding of crystal sugar to a particle size of < 300 µm is made on a NETZSCH CUM universal mill. The transport system from feeding station to the dry mill is completely enclosed and pressure shock resistant up to 10 bar.

Dry conching - after pre-heating, the conche is fed with pre-ground solids and a portion of the liquid components. A specially designed horizontal mixing shaft provides a thorough mixing of the ingredients. The dry conching process of the mass commences with intensive hot air supply (60 - 90 ºC) and a fat content of 15 - 18 %.

Liquid conching - cocoa butter is added after the dry conching process. The conche is adjusted to the requested temperature. Homogenization and liquid conching of the mass follow. Depending on the requirement the formulation is completed by addition of lecithin as well as further components (e.g. vanillin) during the liquid conching.

Fine grinding - wet fine refining occurs simultaneously with the liquid conching. The refining is a circulation operation on an LME agitator bead mill. This high throughput rate circulation operation provides consistent, incremental particle size reduction while maintaining a constant temperature. The key to this trouble-free operation is the patented, high efficiency grinding ball separation system.
Conching as a central process in chocolate production is essential for quality, fine taste and melting behavior of the chocolate. The process control of the ChocoEasy® plants enable the production of standard to very fine, smooth chocolate qualities.

Dry conching is most important for the quality development of the chocolate. The removal of moisture, bitter aromas and flavors (acetic acid and different volatile additives) as well as the flavor development are especially effective due to the intensive air supply. As this process runs in ChocoEasy® plants with lower cocoa butter portion (15 - 18 % instead of 23 - 26 %), a faster and more effective reduction of the moisture is achieved.

The wet fine grinding in circulation operation at the end of the process enables the adjustment of the requested qualities and fineness. The simultaneously running liquid conching and wet fine grinding lead to homogeneous products with narrow particle size distribution. This shows the comparison of chocolate from traditional production methods via five roller mill with the chocolate produced on ChocoEasy®.
The Sizes

<table>
<thead>
<tr>
<th>Type</th>
<th>Batch size [kg]</th>
<th>Space requirement [m²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHOCOEASY® 50</td>
<td>25 - 50</td>
<td>approx. 2 - 4</td>
</tr>
<tr>
<td>CHOCOEASY® 300</td>
<td>150 - 300</td>
<td>approx. 4 - 6</td>
</tr>
<tr>
<td>CHOCOEASY® 750</td>
<td>375 - 750</td>
<td>approx. 40</td>
</tr>
<tr>
<td>CHOCOEASY® 1500</td>
<td>750 - 1500</td>
<td>approx. 60</td>
</tr>
<tr>
<td>CHOCOEASY® 3000</td>
<td>1500 - 3000</td>
<td>approx. 100</td>
</tr>
<tr>
<td>CHOCOEASY® 6000</td>
<td>3000 - 6000</td>
<td>approx. 120</td>
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</tbody>
</table>

Subject to technical changes

The CHOCOEASY® plant can be modularly enlarged (e.g. with one more conches and mill), increasing the production capacity without great expense.
The New Confectionery Series
of the NETZSCH Business Unit Grinding & Dispersing

The easy way from cocoa to complete compound mass or exquisite chocolate

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  - Intensive discussion on the results
  - Scale-up to your production requirements
- Project planning and management / Start up service / After sales support

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