

NETZSCH



RUMBA[®] System

Plants for Chocolate Production



NETZSCH Food & Confectionery – Your Global Partner

Across the globe, NETZSCH provides support for your confectionery mass production projects, from the raw materials all the way through to the finished product. To ensure the success of your investment from the very beginning, we take on the planning and implementation of your new production lines and train your personnel.

NETZSCH Food & Confectionery offers

- Applications support
- Service
- Modern solutions
- Supervision of tests and demonstrations
- Product development and control
- Quality

Your Advantage is Our Focus

- Completely closed system
- Easy cleaning
- Low energy consumption
- Short processing times
- Highest quality
- Space-saving
- Great flexibility

Product Development

Our modern applications laboratory is always state-of-the-art, fulfills your wishes and gives your ideas free rein. Here you can test new recipes or optimize production of your existing products. Visit us and experience our know-how for yourself.

Flexibility

Thanks to the modular design, the plant is laid out in exact accordance with your current needs. Future expansion of the plants is simple. An added advantage: Cleaning is extremely easy, so the formulation can be changed at any time without major effort.

Creativity

In addition to standard chocolates, you can also produce specialties such as diet chocolate or chocolate with different types of sugar and additives. You can also make white chocolate that is true-to-color, fully temperature controlled and with consistent, reproducible quality.

Savings

Compared to other systems, the *RUMBA*[®] process is characterized by reduced requirements for energy, cooling water and space as well as shortened processing times, since the grinding and liquid-conching processes run simultaneously. The *RUMBA*[®] process also allows you to save on cocoa butter and / or lecithin.

Economic Efficiency

Even small batches of standard or special chocolates with their own distinctive characteristics can be produced economically with our plants. All plants are controlled from an operator terminal. This limits manpower requirements to simply filling the plants.

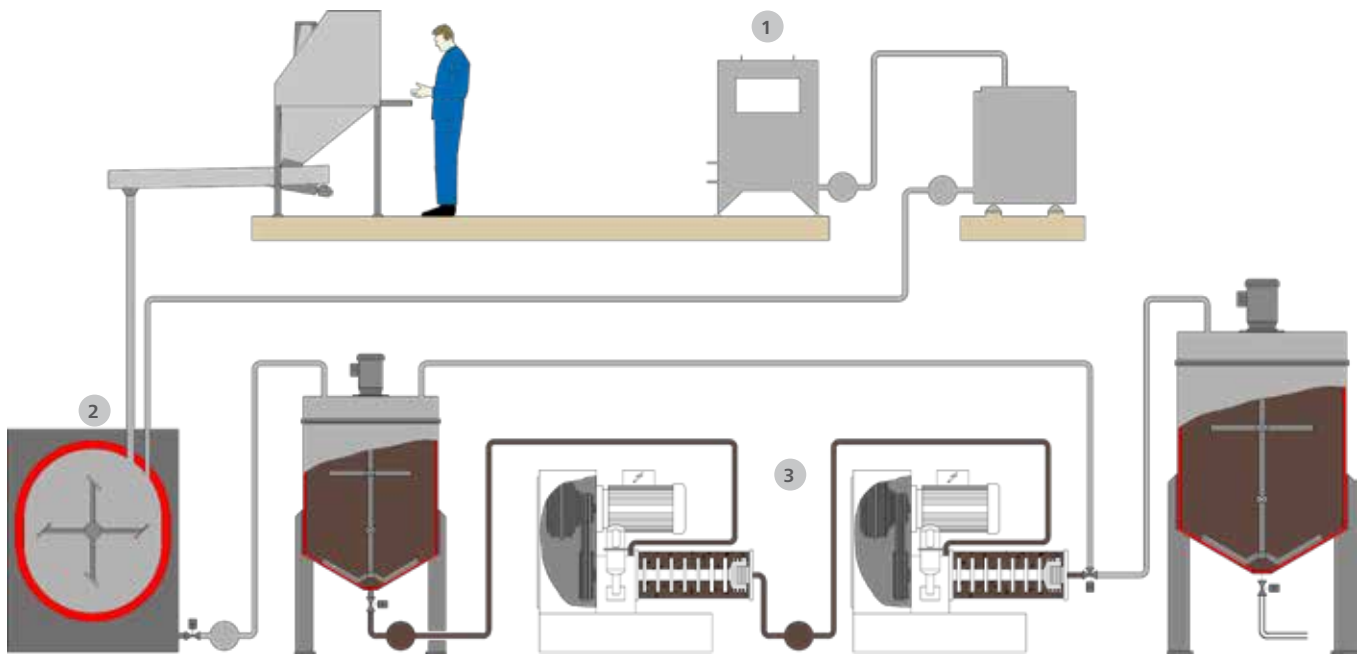
Quality

With the *RUMBA*[®] process you will achieve the best reproducibility in a defined automated process. The simple, menu-guided control concept including temperature control allows precise adjustment for your desired quality, with end finenesses of <18 µm possible.

Process Description

The Process in Detail

The usual processing steps, as known from the classic production processes, are integrated into the *RUMBA*® process. Dry-conching, the most important step in the quality development of the chocolate, is particularly effective in the *RUMBA*® process. By using agitator bead mills rather than five-roll refiners for grinding the chocolate, the processes of grinding and liquid-conching run simultaneously. This considerably reduces processing times, with no difference in quality compared to chocolate from conventional plants.



visualization of the *RUMBA*® process

1 Melting

When the solids are added for dry grinding, cocoa butter and cocoa mass are melted down at the same time. The temporary storage tanks are equipped with an agitator to maintain good homogeneity.

2 Dry and Liquid Conching

As the core process in chocolate production, conching is critical to the quality, refined flavor and melting behavior of the chocolate.

After pre-tempering, the conch is charged with the pre-ground solids and part of the liquid components. A specially-designed, horizontal mixing shaft provides for thorough mixing of the components.

Dry conching is the most important step for the development of the quality of the chocolate. Under

a strong flow of tempered air, the discharge of undesired aromas and flavors is especially effective.

Since this process runs with less cocoa butter content (15-18% rather than 23-26%) than usual in the Rumba® plant, an optimum transfer of the cocoa aroma to the sugar is achieved.

The lower fat content has two decisive advantages: First, there is more free surface area of sugar available, which accelerates the conching process.

Second, the mass is lighter, which is reflected in lower drive power and, thus, lower power consumption during conching.

After the dry-conching process, cocoa butter is added and the conch is set to the desired temperature.

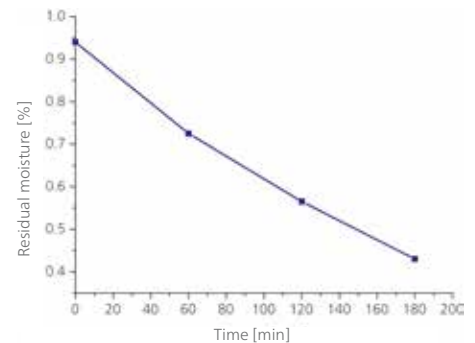
This is followed by homogenization and liquid conching of the mass. During liquid conching, the recipe is completed as needed with the addition of lecithin and other components (e.g. vanilla).



Dry Conching



Liquid Conching



Residual Moisture as a Function of Process Time

3 Fine Grinding

Parallel to the conching process, wet fine grinding is carried out with the *MASTERREFINER* agitator bead mill. Thanks to the effective separator system, trouble-free operation with high throughput and constant temperature is possible.

This means the desired qualities or finenesses can be set easily and you get a homogeneous product with a narrow particle size distribution.



Chocolate Production to Suit Your Taste

Unbounded Flexibility

The *RUMBA*® plant concept from NETZSCH-Feinmahltechnik GmbH is a complete process for the production of high-quality chocolate. From the basic ingredients cocoa mass, cocoa butter, sugar and perhaps milk powder, you can produce your own dark, milk or white chocolate. With very easy operation of the compact, closed *RUMBA*® plant and batch sizes from 150 kg to 6 000 kg per batch, you can develop recipes according to individual needs.

Compared to other systems for the industrial production of chocolate- and confectionery masses, the *RUMBA*® system is characterized by reduced requirements for energy, cooling water and space as well as considerably shortened processing times (dry conching within 3 - 4 hours), since the grinding and liquid-conching processes run simultaneously. The *RUMBA*® system also allows you to save on cocoa butter/fats and/or lecithin.

Let your imagination run wild!

RUMBA® Sizes

Depending on the size of the closed, space-saving modules, product batches up to 6 000 kg can be processed. Typical production output of the RUMBA® 750 compact module is in the range of 375 kg to 750 kg, while it is possible to process batches ranging from 3 t to 6 t with the largest module.

Model	Batch size [kg]	Space requirement [m ²]
RUMBA® 300	150 - 300	approx. 10
RUMBA® 750	375 - 750	approx. 40
RUMBA® 1500	750 - 1500	approx. 60
RUMBA® 3000	1500 - 3000	approx. 100
RUMBA® 6000	3000 - 6000	approx. 120



RUMBA® Model 6000 Production Plant

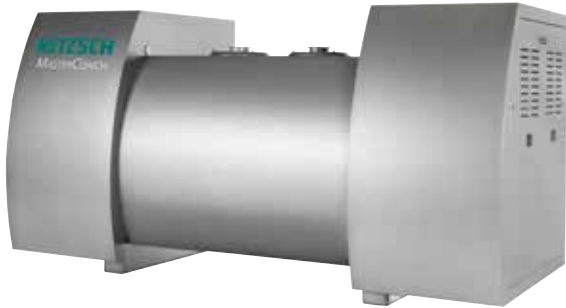
RUMBA® Model 3000 Production Plant



- 1 Melting station for cocoa butter and cocoa mass
- 2 Storage tanks for cocoa butter and cocoa mass
- 3 Solids feed station for sugar, milk powder, etc.
- 4 Dry and liquid conching in a heated conch with horizontal special agitator
- 5 Intermediate storage tank
- 6 Wet fine grinding follows with our *MASTERREFINER* agitator bead mills
- 7 Storage tank for final production

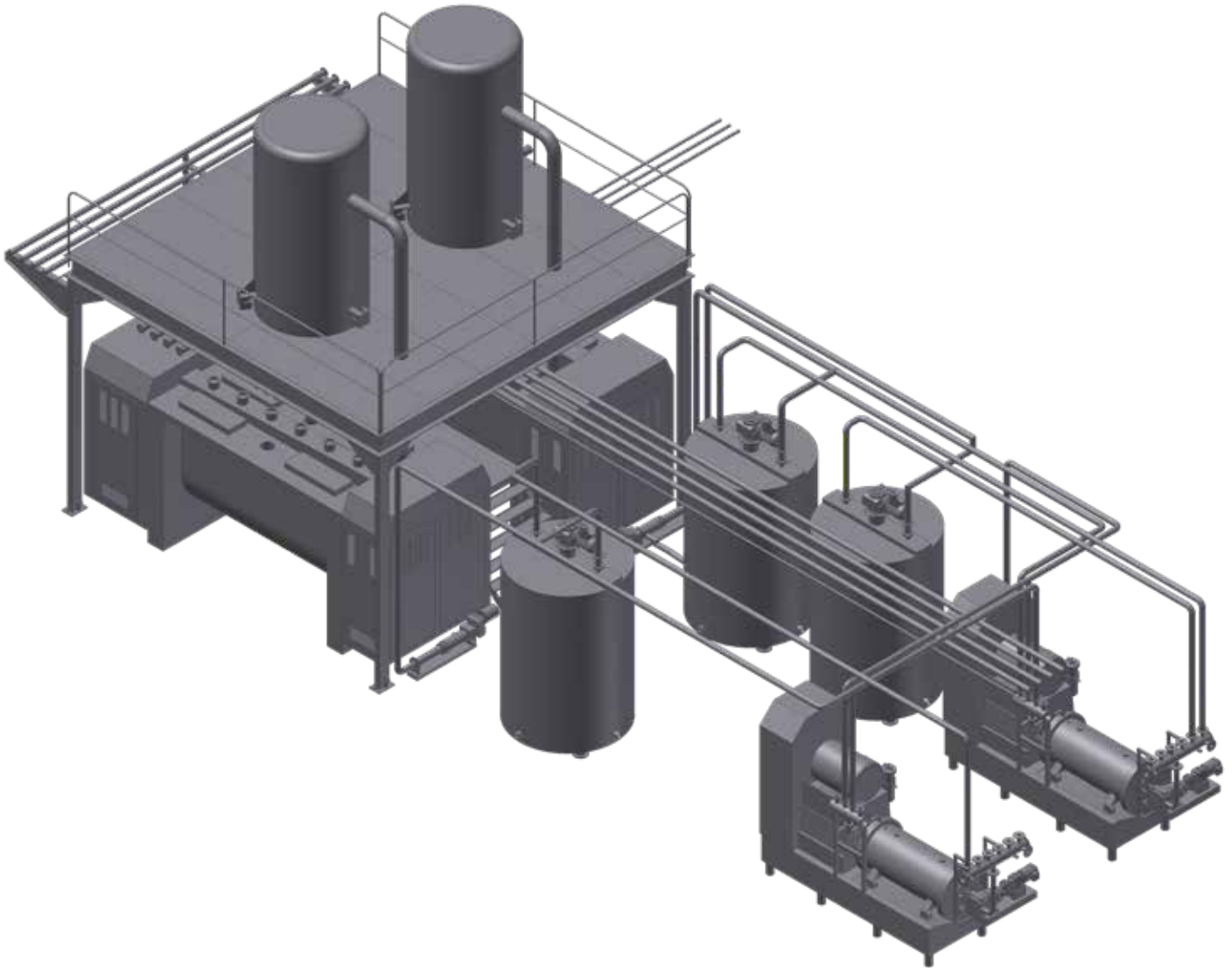


MASTERREFINER agitator bead mill



MASTERCONCH

RUMBA® Model 6000-II Production Plant



- Equipped with two U-conches and mills for the production of approx. 60 t/d in 24-hour production
- Achievable quality: typically 18 μm to 35 μm
- Fat content: 27% to 50%

Capacity expansion

Modular expansion of the RUMBA® plants is unproblematic (for example, with an additional conch and mill), so production output can be increased at any time without great effort.

Compact and Powerful Our Laboratory and Pilot Plants!

The *RUMBA*® 50 and *RUMBA*® 300 combine all steps of the process in one module. With the ease of operation of the compact, self-contained *RUMBA*® plants, you can develop recipes to suit your needs. As a result, you can have a direct influence on the type and quality of the chocolate – be creative and original.

Model	Batch size [kg]	Space requirement [m ²]
<i>RUMBA</i> ® 50	25 - 50	approx. 2 - 4
<i>RUMBA</i> ® 300	150 - 300	approx. 4 - 6



RUMBA® 50

NETZSCH Food & Confectionery

Service and Competence

Your Global Partner for the Production of Confectionery Masses

Our Technical Center in Selb/Bavaria is specifically furnished and equipped and hygienically designed for testing food and confectionery applications. After clarification of the technical details, you can unleash your creativity when it comes to the recipe. Our team in the Applications Laboratory is fully committed to ensuring that the tests lead to the anticipated result.

Machines and plants for varied applications and tasks:

- *MASTERREFINER 6* – feasibility tests and recipe development
- *MASTERCONCH 300* / *MasterRefiner 30* – scale-up and toll grinding
- *MASTERCREAM 10* for pre-crushing various products (nuts, etc.) and processing rework
- *MASTERNIBS 100* for grinding cocoa nibs to cocoa mass
- *GAMMAVITA* for the preparation of suspensions, solutions and emulsions

On-site quality control with modern analytical instruments:

- Mastersizer 3000 for definition of the particle size distribution using laser diffraction
- Haake Mars II for determination of yield point and viscosity with coaxial cylinder system
- Spectra Star quantitative determination of ingredients such as sugar, fat and protein using near infrared spectroscopy

After every test, a test report is prepared with the machine parameters and analysis results and promptly forwarded to the customer.

NETZSCH Service

- Applications lab
- Product development
- Process-specific support
- Scale-up to your production requirements
- Project planning and management / commissioning / customer service / on-site service
- Training at NETZSCH and on site



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The NETZSCH Group is a mid-sized, family-owned German company engaging in the manufacture of machinery and instrumentation with worldwide production, sales, and service branches.

The three Business Units – Analyzing & Testing, Grinding & Dispersing and Pumps & Systems – provide tailored solutions for highest-level needs. Over 3400 employees at 210 sales and production centers in 35 countries across the globe guarantee that expert service is never far from our customers.



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