Uncovering the secrets of corn flakes production line technology

Corn flakes (such as breakfast corn flakes, instant corn flakes, etc.) are a common cereal food. Its history not only reflects the development of the food industry, but also is a vivid record of the evolution of health concepts, commercial competition and the spread of food culture.

1. **Origin: The health reform movement in the late 19th century (1894-1906)**

The birth of corn flakes is inseparable from the health reform movement in the United States in the 19th century. At the Battle Creek Sanatorium in Battle Creek, Michigan, doctor John Harvey Kellogg and his brother Will Keith Kellogg were looking for a vegetarian food that met their health concept.

Early features:

(1) Sugar-free formula, emphasizing health attributes

(2) Will Kellogg's signature printed on the packaging as a guarantee of quality

(3) The initial price was 10 cents per box (equivalent to about 3 US dollars today)

II. Commercialization and industrial expansion (1906-1930)

With his excellent business acumen, Will Kellogg transformed corn flakes from a sanatorium food to a mass consumer product. This period witnessed the birth and fierce competition of the breakfast cereal industry.

Process improvement:

(1) Development of large-scale production equipment

(2) Improvement of packaging technology to maintain crispness

(3) Addition of vitamin D in 1928, becoming one of the earliest fortified foods

Social impact:

(1) Changed the American breakfast habit of mainly meat and eggs

(2) Established the concept of "ready-to-eat breakfast"

(3) In 1922, the company was officially renamed "Kellogg Company"

III. Globalization and product diversification (1930-1970)

As the company's strength increased, corn flakes began to go global, and the product line continued to be enriched to meet the needs of different markets.

Globalization process:

1930s: Entered the British and Australian markets

1940s: Spread to Europe and Asia as US military rations during World War II

1950s: Established production bases in Mexico, Japan and other places

1960s: Became the first American food to be advertised on Soviet television

Product evolution:

Frosted Flakes was launched in 1938, endorsed by Tony the Tiger

1950s: Fortified formulas with multiple vitamins and minerals were added

1960s: Fruit flavor, honey flavor and other variants were developed

Cultural symbol formation:

(1) Became a representative product of the American lifestyle

(2) Appeared in many movies and TV series

(3) In 1954, Time magazine called it "the typical American breakfast"

IV. Health controversy and market transformation (1970-2000)

With the development of nutrition and the focus on sugar intake, traditional corn flakes faced challenges, prompting the industry to adjust its development direction

Challenges:

Nutritionists criticized its high sugar content in the 1970s

The organic food movement impacted traditional brands in the 1980s

The rise of fast food culture in the 1990s extruded breakfast cereal market

Industry response:

(1) Launched low-sugar, whole-grain versions

(2) Emphasized dietary fiber and vitamin content

(3) First launched organic certified corn flakes in 1999

Market changes:

(1) Repositioned from children's food to family breakfast option

(2) Developed portable small packages

(3) Expanded new uses such as snacks and baking ingredients

V. Innovation and return in the 21st century (2000 to present)

In the new century, the corn flakes industry faces the dual challenges of healthy eating trends and global competition, showing a development trend of coexistence of tradition and innovation.

Contemporary trends: health, high-end, global adaptation.

Corn flakes are usually made from corn flour or other grains, and are puffed, baked or extruded. Moderate consumption of corn flakes can bring the following health benefits, but be careful to choose low-sugar, low-salt, and low-additive varieties:

1. Providing energy and carbohydrates

(1) Rapid energy supply: Corn flakes are rich in

carbohydrates (mainly starch), which can be quickly converted into glucose, making them suitable as breakfast or energy supplements after exercise.

(2) Low fat: Original corn flakes have a low fat content and are suitable for people who need to control their fat intake.

2. Dietary fiber promotes digestion

(1) Whole grain corn flakes are better: If made from whole corn or whole grains, they are rich in dietary fiber, which helps promote intestinal peristalsis and prevent constipation.

(2) Strong satiety: Fiber can delay gastric emptying, reduce hunger, and assist in weight management (but avoid high-sugar varieties).

3. Vitamins and minerals

(1) B vitamins: Corn flakes are often fortified with thiamine (B1), riboflavin (B2), niacin (B3), etc. to support metabolism and nervous system health.

(2) Iron and zinc: Some products are fortified with minerals, which helps prevent anemia and enhance immunity.

4. Convenience and speed

(1) Ready-to-eat: It can be eaten directly or paired with milk, yogurt, or fruit, which is suitable for a fast-paced life.

(2) Long storage time: The drying process makes it less likely to deteriorate and easy to carry.

5. Gluten-free options (some products)

Suitable for those with gluten intolerance: Pure corn flakes do not contain wheat gluten and are a safe choice for people with celiac disease or gluten sensitivity (label confirmation required).

Potential issues to note

1. High sugar risk: Many corn flakes have added sugar (such as honey flavor, chocolate coating), and excessive intake may increase the risk of obesity and diabetes.

2. High salt problem: Salty corn flakes have a high sodium content, which is not conducive to blood pressure control.

3. Processing loss: Refined corn flakes may lose some of the original nutrients of corn (such as vitamin E in the germ).

4. High glycemic index (GI): Refined corn flakes have a high GI value, and diabetics should eat them in small quantities or choose high-fiber varieties.

Healthy eating suggestions

1. Prefer products with simple ingredients: corn or whole grains should be the first on the ingredient list, and avoid sugar, salt, and trans fats (such as hydrogenated oil) ranking high.

2. Pair with protein and fiber: such as milk, Greek yogurt, nuts or fresh fruits to balance nutrition and reduce blood sugar fluctuations.

3. Control the portion size: It is recommended to consume about 30g (a small bowl) at a time to avoid overeating.

As a popular snack food and breakfast cereal, corn flakes have a growing market demand. Its crispy texture and diverse flavors make it an important category in the global snack market. The technical level of corn flake production lines directly affects product quality, production efficiency and market competitiveness.

Corn flakes production line flow chart

Mixer ? Screw conveyor? Double-screw Extruder ? Cooling Conveyor? Air Conveyor ? Flaking Machine ? Air Conveyor ? Dryer ? Elevator ? Vibrating Feeder ? Baking machine? Elevator ? Sugar pan ? Sugar Spray System ? Oven? Cooling Conveyor

These corn flakes equipment have reasonable structural design, special material selection, easy operation and precise parameters. The corn flakes products finally produced are crispy and delicious, and are very popular in the market.

The function of Corn flakes Making Machine

1. Mixer: Mixer makes the raw material adding to water and other chemical additive fully mixed.
2. Screw Conveyor: Screw conveyor is advantage is suit for powder item that is bad fluidity. In food processing

industry, it is for conveying flour, powder additives, seasoning powder ect. Here is used to elevate the mixed raw materials to extruder.

3. Twin Screw Extruder: The powder is mixed with other ingredients to create a homogeneous blend. The mixing process is important to ensure that the powder has a consistent nutrient profile, texture, and flavor.
4. Vibrating Feeder: Use vibration to separate the product and cooling.
5. Flaking machine: Corn flakes thickness adjustment: hydraulic control, precise and convenient. Corn flakes thickness adjustment range?1mm-5mm. Pressure roller scraper: The scraper can adjust the tension, and the tension can be adjusted according to the actual work product needs.
6. Air Conveyor: Used to carry products to the next machine.
7. Oven: This machine is used to dry the snacks food. The heating temperature and the drying speed can be adjust. It can be used to bake and dry the food. The oven can bake all kinds of the inflating food, pet food, TVP/TSP food, peanut, nut, chew nut and so on. The temperature can be controlled willfully and designed according to the need.
8. Hoister: elevate products to flavoring machine
9. Baking Machine: Keep the moisture below 3%. The operating speed of the oven is controlled by frequency conversion, smooth operation and long-term use. The temperature is controllable, and precise temperature probes are installed in heating zones during heating to ensure that the temperature error is small and affect

the product.

10. Sugar pan: Used to melt sugar
11. Sugar spray system: To flavoring the corn flake /cereal with sugar on surface
12. Cooling Machine: Cool the products to room temperature

Technical specifications of corn flakes making machine

Model	Installed power	Power consumption	Output	Size(L*W*H)(mm)
LY65	140kw	90kw	120-150 kg/h	39000*1200*2200
LY70	160kw	120kw	180-220 kg/h	41000*1500*2200
KING75	190kw	140kw	300-500 kg/h	43000*3500*4300
KING95	240kw	190kw	800-1000kg/h	65000*5000*4300

Voltage	Three phase 380V 50HZ (can customized)
Standard	The Motor Can Choose Siemens, Delixi Or Delta Combine With Good Brand Electrcity Parts
Machine materials	Contact food SS 304, cover SS 201 Frame: carbon steel

	Screw of extruder: 38CrMoAi Cutter and dies: carbon steel Barrel: 45# steel/A101 alloy
Products:	The corn flakes making machine adopts corn flour, rice flour, and other starched as the main raw materials to produce various shapes such as rings,balls , flowers, numbers etc, after dried and seasoned, its crispy taste. Different shapes can be made by adjusting the dies from extruder

Layout for the corn flakes making machine

Our machines can be flexibly arranged according to the size and dimensions of the factory. We can also customize the size of the machine according to the data you provide.

Sample of corn flakes making machine

Made with advanced puffing technology, it has a crispy texture and is non-fried and healthier.

What are the advantages of corn flakes production process?

1. Twin-screw extruder can not only make corn flakes, but also produce other types of food.

2. Our machine adopts advanced frequency conversion

control technology, which greatly reduces the consumption of electricity and labor.

3. We have well-known partners such as Siemens.

4. Our machine materials are food-grade stainless steel, carbon steel, etc.

5. The control system of the twin screw extruder has three frequency converters, and the speed of rotary cutting, screw speed and feeding speed can be adjusted. It can save energy, adjust speed, protect, improve process level and quality, and extend the service life of equipment.

What other production lines can it be used on?

1. The production line can heat and extrude the raw materials.

2. Twin-screw extruders can be widely used in many food production lines, such as extruded snacks, dog food, cat food, bird feed, fish feed, nutritional powder, etc.

3. However, it should be noted that the bone meal in the raw materials of pet food has a strong smell. If it is made into feed and then made into puffed food for human consumption, it may have a cross-flavor and affect the taste.

About packaging and after-sales service

Packing: Plastic Film Suitable For Ocean Carriage

Technical Support: The customer can inform machine related problems to us via telephone, email or fax. All information will be recorded and will be reported to the After-sale Service team. Meanwhile, the sales person will be tracking the case until problem solved.

Service Team:We have a professional After-sale Service team including10 professional engineers with at least 6 years working experience. They can handle technical consultation about manufacturing process, maintenance, fault diagnosis and troubleshooting, etc.

After-sale Service available :1.Check & test before delivery 2.Instruction for installation 3.On site commissioning 4.Repair & maintenance

After the receipt the advanced payment, we will provide allocation chart at the buyer’s request. When effect the shipment, we’ll provide operation manual, etc. in English.

Recommended Company

Shandong Loyal Industrial Co.,Ltd. Is a Manufacturer Of Snacks Extruder Machine , Industrial Microwave Oven , Corn Flakes Production Line , And a Standing Director Of China Food And Drying Equipment Industry Association.

The Self-developed Twin-screw Extruder And Single-screw Equipment of Shandong Loyal Machinery Have Been Used In Production: Puffed Snack Food, Breakfast Cereal Corn Flakes, Fried Pasta, Bread Crumbs, Fruit Chips, Baby Food, Textured Soy Protein (tsp) Food, Fish Feed And Pet Food. a Variety of Snack Production Line Supporting Products.at The Same Time, The Batching, Drying, Flaking, Baking, Frying And Spraying Equipment Matching The Twin-screw Extrusion System Have All Achieved Independent Design And Production.

Our Extrusion System Is Widely Used In: Puffed Snack Foods, Breakfast Cereals, Vegetable Protein Meat Products, Soy Based Nutrition Bars, Reconstituted Rice, Grain Nutrition Powder, Modified Starch, Starch-based Sticky Music Children's Educational Toys, Degradable Starch-based Packaging Filling Materials, Bread Crumbs And Other Food Additives, Pet Food, Aquatic Feed, Biology And Chemical Industries.

Customer-specific Food Processing Plant Project Solutions

As one of the leading manufacturers of food processing equipment, we are always searching for new solutions that benefit our snack food customers. Our experienced frying engineers always find the optimal solution for your industrial batch and continuous frying system line application. That's why we also develop, design and produce custom fried snack production line.

Close collaboration with our customer is important to us even in the early development phase. No matter what the special requirements of instant noodles production line, snack food extruder machine, pasta production line application, we can develop a custom made food processing equipment to match your needs.

Loyal have a unique and efficient industrial continuous frying equipment for snack food extruder machine that provides the right crunch and desired moisture level.

The Industrial Microwave Sterilization Defrosting Drying Machine can be designed as a dry powder dosing system and a wet slurry dosing system as required.

Some snacks can also be fried according to taste requirements, and we also provide Fried Snack Production Line for the processing and packaging of fried extruded snacks.

Loyal Food Production Line meet the needs of customers to obtain snack food that meet the needs.

In ovens or drying units, electric or gas can be used as heating sources.

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