

Bakery Industry

Belting innovation for the biscuits and crackers production



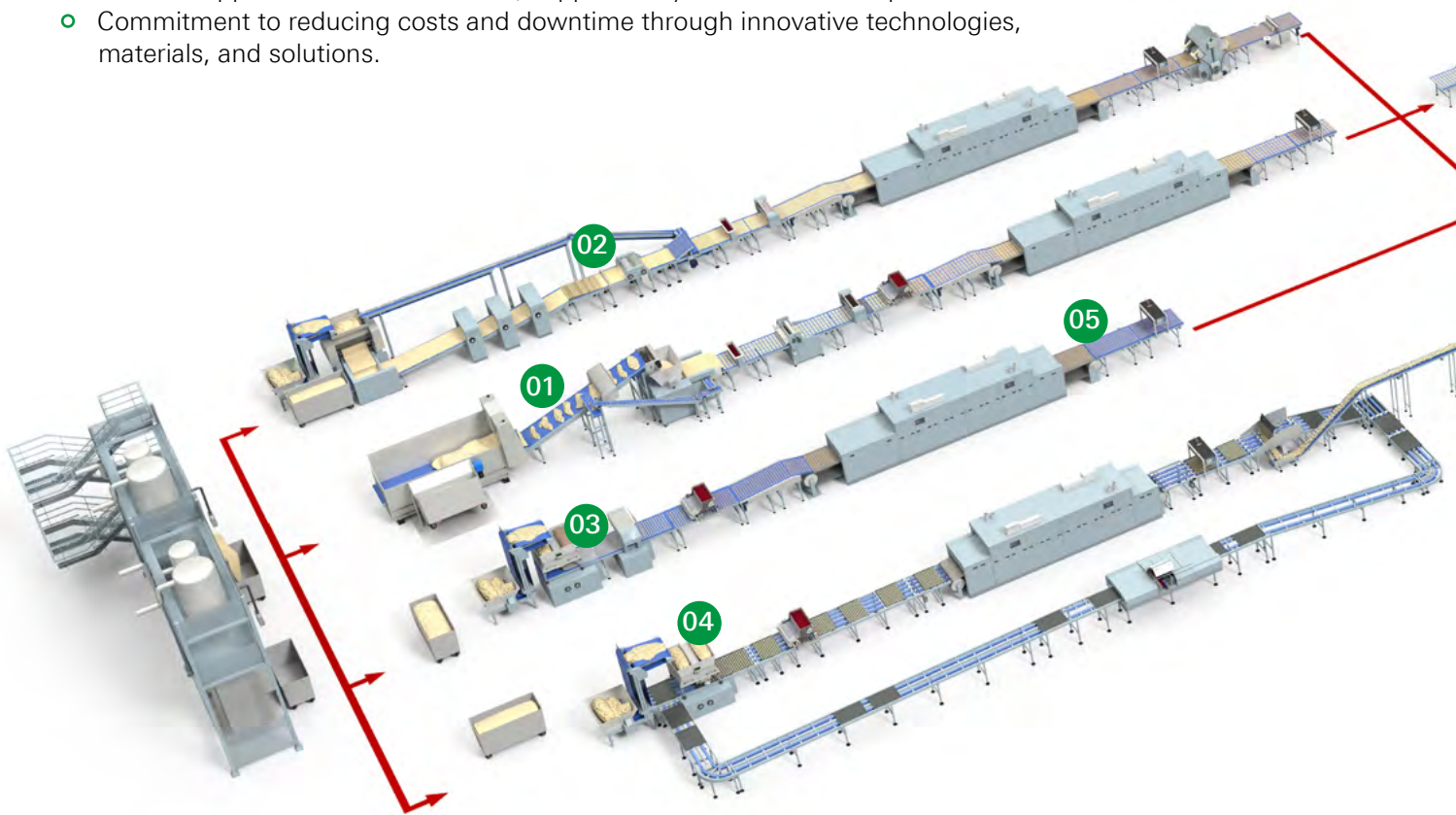
Industry process

Biscuits and crackers processing – understanding the journey

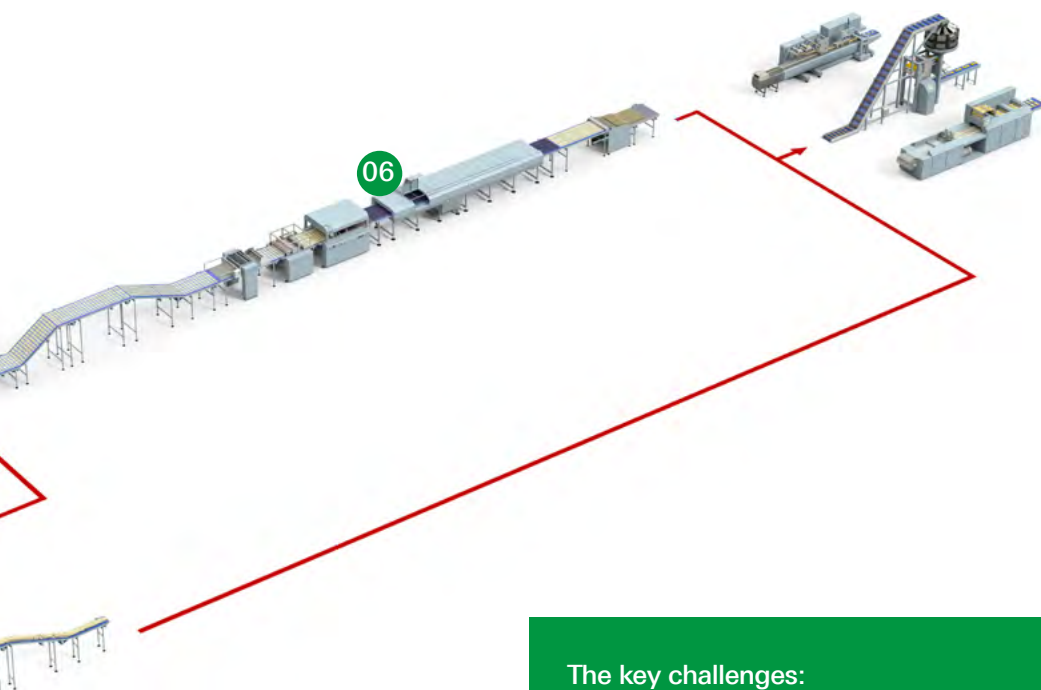
The production of biscuits and crackers follows a detailed and highly controlled process to ensure consistent quality, taste, texture, and safety. While the two products share similarities, there are key differences in formulation and baking that create their distinct characteristics.

Habasit offers solutions that guarantee food safety and high productivity, limiting unscheduled downtime:

- A complete range of belts for all biscuit and cracker production lines.
- Solutions designed to guarantee productivity, safety, and sustainability.
- Service support in over 70 countries, supported by local teams of experts.
- Commitment to reducing costs and downtime through innovative technologies, materials, and solutions.



- 01 Feeding conveyor
- 02 Rotary cutter
- 03 Rotary molder
- 04 Extruded, wire-cutter and depositor
- 05 Oven outfeed
- 06 Cooling conveyor



The key challenges:



Consumer demand for healthier products: less sugar, salt and fat with products rich in fiber or protein. This poses challenges for reformulation, changing recipes without compromising taste, texture or shelf lifetime.



Differentiation, innovation and operational efficiency: The saturation of a mature market forces constant product innovation with different flavors and formats, while maintaining maximum operational efficiency.



Ensuring food safety: Biscuits and crackers lines must follow strict safety standards to prevent contamination, maintain product integrity, and protect consumer health, avoiding recalls and regulatory issues.



Sustainability and ESG expectations:

- **Environmental:** Reducing plastic packaging, lowering oven energy use, sustainable palm oil.
- **Social:** Ensuring safe working conditions in factories and fair labor in raw material sourcing.
- **Governance:** Transparent labeling, ethical sourcing policies, food safety compliance, audits.

Process details

01 Feeding conveyor

Pain points:

- Processing sticky dough. Depending on its hydration level, dough can become very sticky.
- The oily, fatty dough requires the conveyor, including the belt, to be cleaned constantly and thoroughly
- Ineffective cleaning of the conveyor/belt causes tracking problems with consequent mechanical interference, which can lead to risky contamination.



Solution:

There are various feeding systems available, depending on the conveyor configuration and the type of dough to be processed. Inadequate cleaning or deterioration of the belt material can lead to cross-contamination or foreign body contamination. The use of easily cleanable, fabric-free solutions, such as the Cleandrive range or Frayless belts, ensures food safety and high performance. Accessories such as the TPU scraper bar or the Hygienic Scraper Unit facilitates and supports efficient cleaning of belt surfaces.

Benefits for customers:

- Easy release
- Improved cleanability
- Reduced risk of product contamination

Find out more on our website:



Habasit® Cleandrive

Recommended solutions:

Key feature	Family	Product	Material	Min. Diam.	Frayless	TPU Scraper Compatibility	Belt Surface
Improved cleanability	Monolithic (fabric free)	CD.P25-A-UC	TPU	60.1 mm	x	●	Glossy
		CD.P40-A-UC	TPU	101.6 mm	x	●	Glossy
		CD.P50-A-UC	TPU	80.8 mm	x	●	Glossy
	Fabric	FNB-5EZCH-P1	TPU	4 mm	●	●	Matt
		FNB-5EZWH-P1	TPU	4 mm	●	●	Matt
		FMB-8EZCH-P1	TPU	8 mm	●	●	Matt
		TT12 Frayless	TPU	8 mm	●	●	Glossy

02 Rotary cutter

Pain points:

- Frequent wear. The rotating cutting roller and small knife edges, essential for smoothly transferring biscuits or crackers to the next conveyor, apply continuous pressure to the belt. This mechanical stress leads to frequent wear of the belt structure.
- Compatibility of surfaces and structure of process belts. The surfaces of the belts used in rotary cutters must be compatible with most doughs in order to obtain a uniform cut and a long belt lifetime.
- Risk of contamination from fraying. The bare belt surface (cotton/ polyester) may fray due to the impact of the cutting roller and the metal scraper.



Solution:

Habasit belts for rotary cutters are designed to withstand impact and work with small diameter knife edges to facilitate perfect product transfer to the next conveyor. Cotton/polyester surfaces for medium-fat laminated dough or soft polyurethane for dry laminated dough are the ideal solutions in terms of performance and lifetime.

Benefits for customers:

- High performance with different laminated doughs
- Precise and even cutting of the dough sheet
- Long lifetime

Find out more on our website:



FAB-5E

Recommended solutions:

Key feature	Family	Product	Belt surface	Knife edge Ømin	Thickness mm
Easy release	Polyurethane cover	ST10/U	Glossy TPU	6 mm	1.1 mm
		FAB-5E	Glossy TPU	6 mm	1.3 mm
		T15PX	Glossy TPU	8 mm	1.35 mm
		FMB-5EMCT-W2	Matt TPU	4 mm	1.25 mm
		FMB-5EMWT-W2	Matt TPU	4 mm	1.25 mm
	Bare surface	TC13/NM-T	Cotton/Polyester	8 mm	1.3 mm
		212TCW	Cotton/Polyester	8 mm	1.5 mm

03 Rotary molder

Pain points:

- Extraction performance from the engraved roller and release of biscuits to the next conveyor without deformation, with different types of dough and a single type of belt
- Lifetime of belts due to high mechanical stress
- Risk of contamination due to fraying of belts

Solution:

Habasit Rotary Molder HRM belts are endless woven belts specifically designed for accurate extraction of biscuits and easy release to the next conveyor without deformation. The HRM range handles a wide variety of doughs, shapes, and thicknesses, all while ensuring consistently high performance. Alternatively, Habasit offers standard fabric belts with joining, which can be used for medium-performance equipment or equipment used in small-scale production.



Benefits for customers:

- Consistent biscuit quality in thickness and shape
- Easier operation of the rotary molder
- Seamless belt reduces risk of downtime

Find out more on our website:



Habasit Rotary Molder Belts

Recommended solutions:

Key feature	Family	Product	Weave	Material	Knife edge Ømin	Thickness mm
Easy release	Seamless woven	HRM-160CPLP	Plain	Cotton/Nylon	4 mm	1.6 mm
		HRM-180 CPLP-WM1	Plain	Cotton/Nylon	4 mm	1.8 mm
		HRM-200 CPLP	Plain	Cotton/Nylon	4 mm	2.0 mm
		HRM-240 CPLBH	Cross Twill	Cotton/Nylon	4 mm	2.4 mm
		HRM-240 CPLH	Herringbone	Cotton/Nylon	4 mm	2.4 mm
	Bare surface	212TCW	Plain	Cotton/Polyester	8 mm	1.5 mm
		FNT-5MRWH-P1	Plain	Cotton/Nylon	8 mm	1.3 mm
		FNT-5P	Plain	Nylon	8 mm	1.05 mm

04 Extruded, wire-cutter and depositor

Pain points:

- The biscuit dough is very rich in fat to achieve the correct consistency
- Sticky dough handling
- Cleaning equipment, including belts, is not always easy

Solution:

In order to work with very oily and fatty dough, processing belts with excellent resistance to oils and fats are required. The high-quality materials in the TPU Premium range, along with the new "low wicking" fabrics, help limit the penetration of oils and fats that can cause deformation, shortening, or cracking of the cover. Hydrolysis and chemical resistance allow frequent washing, even with steam, which is commonly used to clean and sanitize very oily belts



Benefits for customers:

- Resistance to oil and fat
- Improved food safety with frayless range

Find out more on our website:



Habasit Premium TPU Belts

Recommended solutions:

Key feature	Family	Product	Material	Knife edge Ømin	Thickness mm	Belt surface	Frayless
Resistance to oil and fat	Fabric	FNB-5EZCH-P1	TPU	4 mm	1.25 mm	Matt	●
		FNB-5EZWH-P1	TPU	4 mm	1.25 mm	Matt	●
		FMB-8EZCH-P1	TPU	8 mm	1.5 mm	Matt	●
		FMB-8EZWH-P1	TPU	8 mm	1.5 mm	Matt	●
		TT12 Matt Blue Frayless	TPU	8 mm	1.3 mm	Matt	●
		TT12 Matt White Frayless	TPU	8 mm	1.3 mm	Matt	●

05 Oven outfeed

Pain points:

- High temperatures. The belt operates right at the oven exit, often exposed to radiant heat from the oven. Conventional belts can degrade or deform if not heat-resistant.
- Mechanical stresses given by knife edge, failure of joining and aging of materials caused by heat and biscuits' oils and fats.
- Risks of unscheduled downtime and frequent belt replacement.

Solution:

Many factors affect the criticality of an oven exit process belt, including the conveyor's position relative to the oven, the type and size of the biscuits or crackers, line speed, belt size, use of a knife edge, and other parameters. Choosing the right belt is essential for reliable performance, as failure in this area can cause costly plant downtime. The TPU Premium range has been designed to meet all the necessary parameters and ensure maximum performance and reliability, thanks to its continuous resistance up to 120 °C, resistance to oils and greases, and excellent flexibility that allows the use of knife edges as small as 4 mm in diameter for easier passage of the biscuits to the next stage.



Benefits for customers:

- Resistance to oil and fat
- Improved food safety with frayless range
- Heat resistance up to 120 °C

Find out more on our website:



Habasit Premium TPU Belts

Recommended solutions:

Key feature	Family	Product	Material	Knife edge Ømin	Thickness mm	Belt surface	Max Temp.
Heat resistance	Fabric	FNB-5EZCH-P1	TPU	4 mm	1.25 mm	Matt	120 °C
		FNB-5EZWH-P1	TPU	4 mm	1.25 mm	Matt	120 °C
		FAB-5EIWH	TPU	6 mm	1.3 mm	Matt	120 °C
		FMB-8EZWH-P1	TPU	8 mm	1.5 mm	Matt	120 °C
		FMB-8EZCH-P1	TPU	8 mm	1.5 mm	Matt	120 °C
		FNT-5MRWH-P1	TPU	8 mm	1.3 mm	Fabric	110 °C

06 Cooling conveyor

Pain points:

- Conveyor belt tracking. Due to the size of the conveyors, belts can experience misalignment and fraying caused by contact or mechanical interference with the conveyor structure.
- Product alignment on incline conveyors can be challenging, as biscuits or crackers may slip during transport.
- Difficult maintenance due to conveyor size and limited accessibility in space-saving layouts.



Solution:

Operating temperatures up to 120 °C, conveyor inclines, their layout, and the type of biscuits or crackers being cooled all influence the choice of the most suitable belt solution.

- For inclines greater than 16°, uncovered belts are recommended, as they provide superior grip, prevent products from slipping, and maintain correct alignment.
- For inclines up to 16°, covered belts are preferred, ensuring easy cleaning and maximum hygiene.

The TPU Premium and TT12 belt ranges deliver the best performance in terms of long belt lifetime and food safety.

Benefits for customers:

- Correct alignment of biscuits or crackers for incline conveyors
- Resistance to oil and fat
- Frayless to prevent contamination issues

Find out more on our website:



TT12 Frayless Belts

Recommended solutions:

Key feature	Family	Product	Material	Knife edge Ømin	Thickness mm	Belt surface	Max Temp.
Resistance to oil and fat	Fabric	FAB-5EZCH-P1	TPU	4 mm	1.25 mm	Glossy	120 °C
		FAB-5EZWH-P1	TPU	4 mm	1.25 mm	Glossy	120 °C
		TT12 Matt Blue Frayless	TPU	8 mm	1.3 mm	Matt	120 °C
		TT12 Matt White Frayless	TPU	8 mm	1.3 mm	Matt	120 °C
		FNT-5MRWH-P1	TPU	8 mm	1.3 mm	Fabric	110 °C
		FNR-5RIW	PVC	30 mm	2.0 mm	Fabric	90 °C



Need conveyor components to enhance the your process performances?

Explore our diverse range of premium conveyor components, including sprockets, belt scrapers, HabiPLAST guides, and more, to further enhance performance and reliability.

Is keeping biscuits aligned in a long, incline

biscuit cooling conveyor a problem?

Initial product setup: Belt with soft polyurethane cover from another brand

Application: Biscuit cooling conveyor, inclination of 16°, belt dimensions 1350 x 140 000 mm. The conveyor receives the biscuits at a temperature of approximately 100 °C and they must all remain aligned to be processed correctly in the next stage. Misalignment of the biscuits leads to major product handling problems and consequent waste.

Challenge: Despite the excellent grip of the adhesive surfaces of the TPU or PVC belts, given the slight vibrations caused by the movement of the belt, the biscuits gradually tend to lose their original position and become misaligned.

Proposed solution: TT12 Matt White Frayless

Results: Thanks to the “Matt” surface of the belt, the biscuits remain in the same position from the beginning to the end of the cooling process. The Matt profile is easy to clean, so the customer can process different types of biscuits without any risk of cross-contamination. Frayless fabrics that minimize the risk of contamination, rcombined with resistance to oils, fats, and temperatures up to 100 °C, make the TT12 Matt White Frayless belt the most efficient and reliable solution.

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