

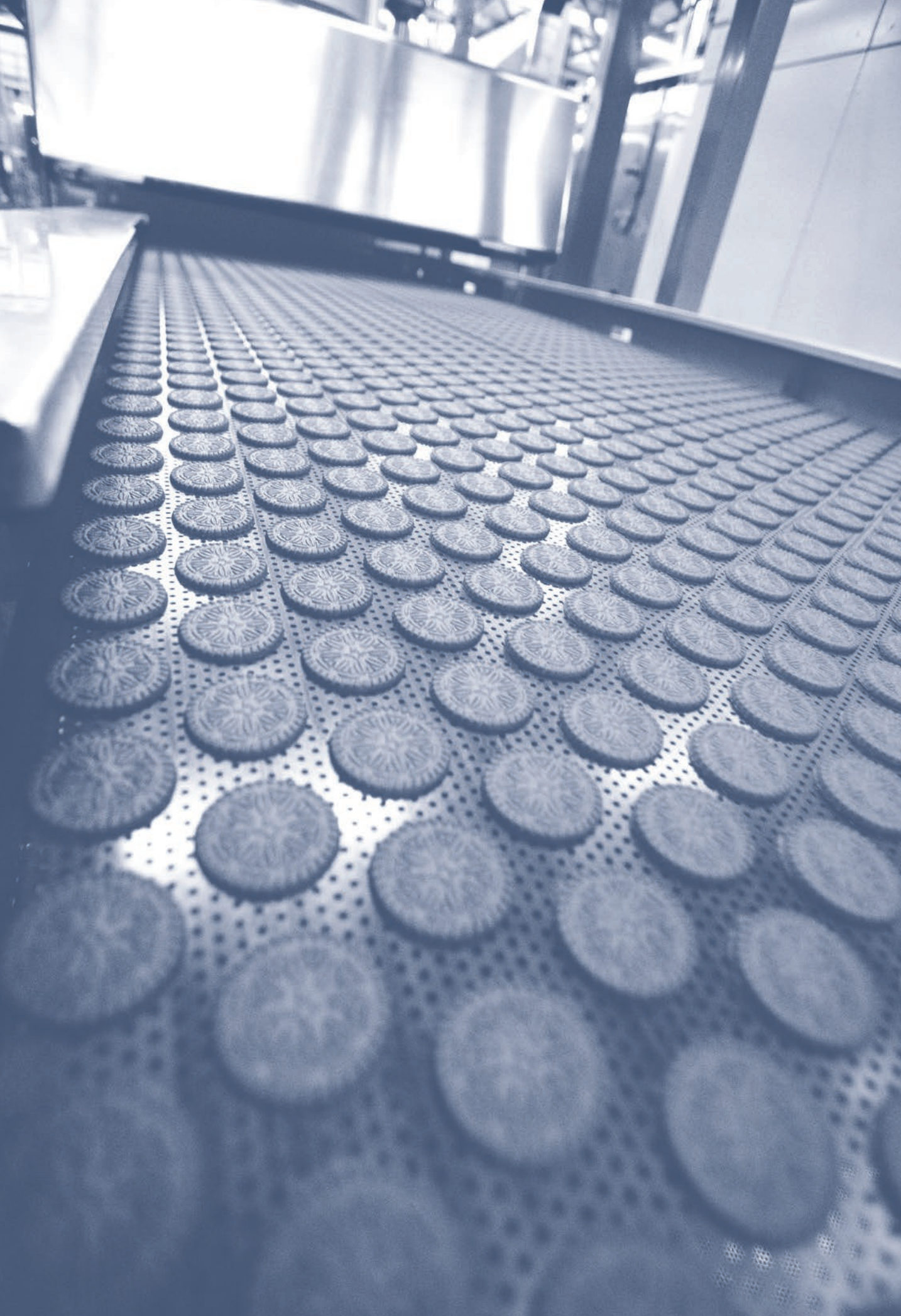


As the world's largest manufacturer of solid and perforated bake oven steel belts, we design and supply versatile, efficient and durable conveying solutions to oven builders and end users, and support them through a global service network.

ipco.com

BAKE—OVEN—BELTS —FOR—HIGH— —QUALITY—BAKING—





—WORLD LEADERS IN SOLID AND PERFORATED BAKE OVEN BELTS

We are the world's largest manufacturer of solid and perforated steel bake oven belts, supplying oven builders and end users around the world.

Bake oven belts have to be able to withstand extraordinary stresses. They are tensioned, tracked, heated up, cooled down, and turned around rollers thousands of times a day. And every single steel belt includes a welded or riveted joint that has to be just as capable of withstanding this treatment as the belt material itself.

We have the technical knowledge and engineering skills to supply the best possible solution for any bakery application, from initial design and steel grade selection, through the manufacturing process, to installation and service.

For some customers, we simply supply the steel belt; for others we deliver a complete conveyor package including roller drums, skid bars and tracking solutions.

Whatever you're looking to achieve, whatever the challenge, we can manufacture, supply, install and service the steel belt product that's right for your needs.



IPCO bake oven belts – durable, versatile and efficient

The unique benefits of a steel bake oven belt lie in its physical form: no other material can compete when it comes to a steel belt's baking qualities. Not only does it deliver reliable operation in applications where temperatures can reach as high as 400 °C, but it does so with outstanding reliability.

At IPCO, the world's No.1 supplier of steel belts to the food industry, we offer a range of high performance steel grades and belt sizes to meet the different production requirements of products as varied as:

- Bread (part baked).
- Biscuits.
- Brownies.
- Choux pastry.
- Cookies.
- Crackers/crispbread.
- Gingerbread.
- Granola bars.
- Meringue.
- Macaroons.
- Patisserie.
- Pies.
- Sponge cake.
- Pan pizzas.

Long life, low maintenance

Good tension and tracking characteristics – and resistance to stretching too – result in low maintenance requirements. And exceptional durability means a working life of 20+ years is far from unusual.

Exceptional baking performance

Solid steel bake oven belts deliver exceptional performance in terms of bake quality. Much of this is due to the excellent heat transfer and thermal conductivity of the belt, but its stability is also key: a solid or perforated steel belt keeps its shape and stays flat as it passes through the intense heat of the oven, resulting in consistent product quality. A flat, smooth surface also ensures easy discharge.

Energy efficient baking

Solid steel belts are lighter than wire mesh – perforated steel belts lighter still – so cost up to 30% less to heat. Each time the belt exits the baking chamber, it begins to cool and has to be heated up again so the savings are continuous. As much of 25% of an oven's energy consumption is needed to heat the belt, so the savings can be considerable.

This weight advantage also means less energy is needed to 'drive' the belt through the oven.

IPCO bake oven belts can be supplied in widths from 800 to 3 500 mm, and in virtually any length.





A solid steel belt delivers the crisp base essential to products such as American-style butter-based cookies – a fact that has driven increasing demand for this highly versatile conveying medium.

Hygienic and easy to clean

As a conveying medium that's completely flat and smooth, a solid steel belt has the major advantage of having no gaps, recesses or crevices in which carbon deposits could collect. And this flatness also means that cleaning operations are simpler, faster and therefore more economical than for other materials.

Wide belts for maximum productivity

Our ability to produce belts in widths from 800 mm to 3 500 mm makes it possible to achieve significant improvements in productivity without having to invest in factory extensions or new facilities. An oven with a 1 500 mm wide belt offers almost twice the productivity of one with an 800 mm belt without any increase in the line length. Upgrade to an oven with a 3 200mm belt or larger and throughput is increased by a factor of four.

The benefits of IPCO steel belts

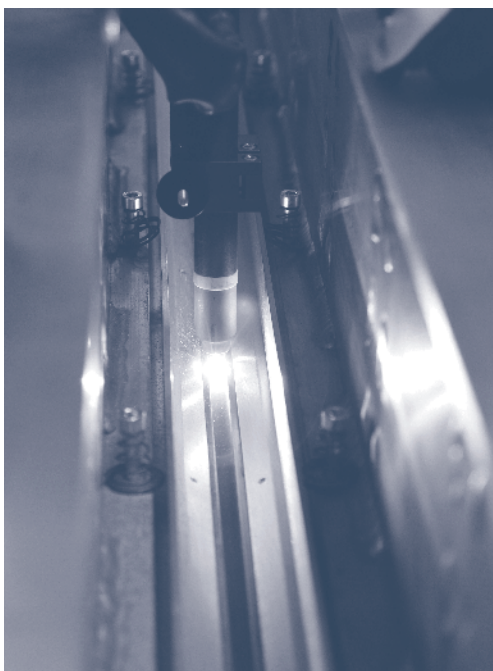
- A working life of 20+ years is not unusual.
- Excellent product support for a wide range of baked products – biscuits, pastries, sponges and bread.
- Hard smooth surface for clean product release.
- Hygienic and more easily cleaned than wire mesh belts means less down time.
- Excellent heat transfer.
- Excellent thermal conductivity for good baking performance and consistent product quality.
- Faster belt speeds increase production output.
- No stretching, good tension and tracking characteristics mean lower maintenance vs wire mesh belts.
- Less energy needed than heavier wire mesh belts, lowering production costs.
- Easy cleaning for minimal downtime.
- Wide belts up to 3 500 mm for maximum productivity.





Global service for reliable installation and support

We understand the importance of maximizing productivity by ensuring that downtime is kept to the absolute minimum, and we can help you achieve this through a combination of planned maintenance and fast efficient repairs.



Choose IPCO as your belt partner and you benefit from a technical service organisation that covers the world and is geared up to delivering a prompt response wherever and whenever it's needed.

Our engineers have a wealth of experience in supporting the bakery industry so whatever your requirement – a new installation, an upgrade to an existing facility or simply a replacement belt – we can help. Similarly, if you're a bake oven manufacturer looking to develop a new bake oven system, our help and advice is readily available.

- Worldwide service capability.
- New installations and belt replacements.
- Upgrades from wire mesh to solid or perforated belts.
- Consultancy on all aspects of bake oven belt design.
- Preventative checks and recommendations.
- QuickTools for fast and efficient repairs.
- Expertise in belt riveting and rivet joint training.

We work hand in hand with oven builders to ensure the best possible solution for new machines, replacement belts or oven upgrades.

World-class manufacturing capability

IPCO steel belts are the result of more than 100 years' manufacturing experience. Every bake oven belt is manufactured to precise specifications to ensure that it delivers the performance, durability and reliability of service associated with our name.

We produce belts of all sizes in different grades to suit different processes. They can be supplied in carbon or stainless steel, and in either solid or perforated form, depending on the needs of the product to be processed. We work continuously to improve the tolerances we can offer – thickness deviation, flatness and straightness – and our ability to meet demanding delivery schedules.

Quality and environmental management

We aim to consistently meet customer expectations and requirements for all products and services, and to minimize our impact on the environment. We do this by implementing stringent quality controls throughout the manufacturing process, from selection of raw materials, through production systems and technologies, to rigorous checking of the final product. We are certified to ISO 9001, ISO 14001 and OHSAS 18001.

Steel bake oven belts or complete conveyor systems

Our experience in designing and installing steel belt-based conveying systems means we can provide the precise level of service required, from belt-only to system design and provision of all ancillary equipment including:

Conveyor end stations

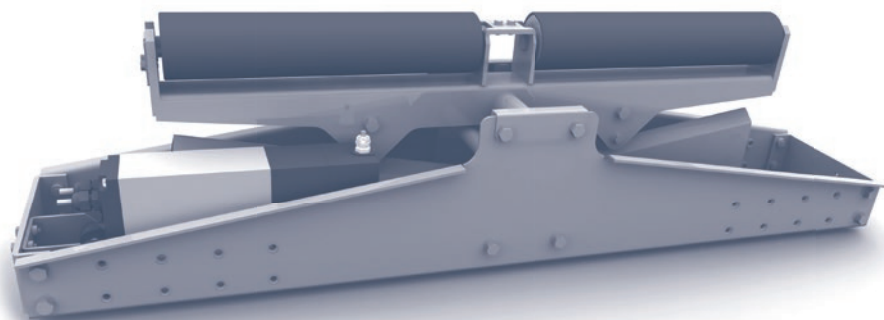
A full range of components including bearings, conveyor break points, drive and tension shafts up to 1 500 mm, and sheaves for short or low loaded conveyors.

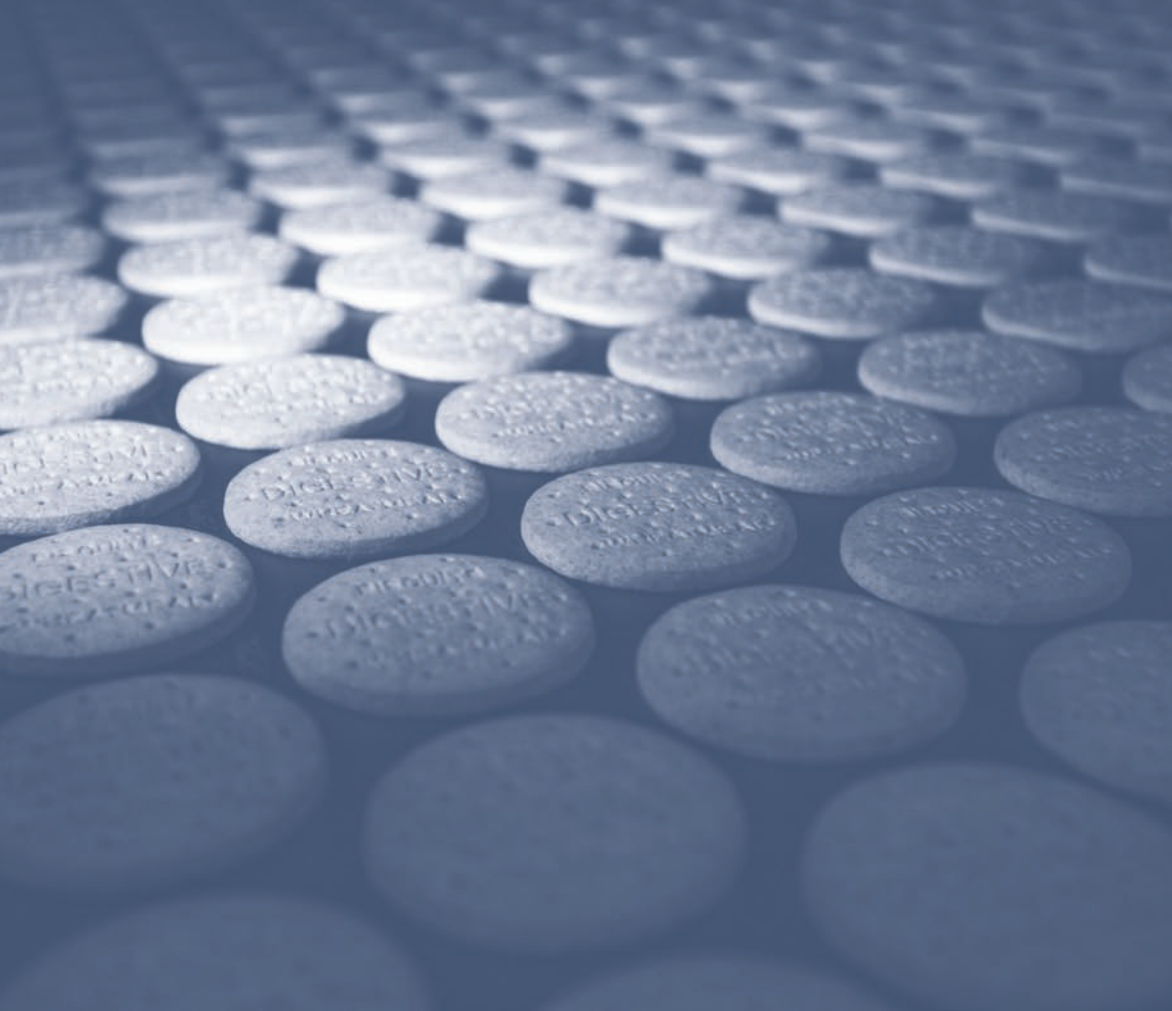
Conveyor skid bars

Special cast iron skid bars that support the bake oven belt. For optimum belt performance and reliability, we recommend that a minimum of 10% of the skid bars should be graphite.

Conveyor tracking solutions

We offer a range of active and passive belt alignment solutions including belt edge detectors, guide rollers and compact/automatic tracking devices.





We supplied our first bake oven belt in 1925 and our close partnership with the industry continues to this day.

Steel bake oven belt specifications

IPCO solid and perforated steel belts are the ideal medium for conveying all kinds of baked products. The tough, hard-wearing surface guarantees product quality and delivers years of excellent and predictable service with a belt that stays flat, keeps its shape and maximises production output.

Manufactured from hardened and tempered carbon steel, IPCO steel belts can be supplied in an almost unlimited combination of widths and lengths.

Our bake oven belts are produced in steel grade IPCO 1100C. This offers:

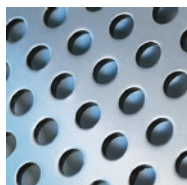
- Hard smooth surface for easy cleaning.
- Good flatness.
- Good static strength.
- Very good fatigue strength.
- Very good thermal properties.
- Excellent wear resistance.
- Good repairability.
- Benefits over wire mesh belts.
- Low risk of corrosion.

Technical data (at room temperature, approx. figures)

| | IPCO 1100C |
|--|---------------|
| Proof strength, MPa, (ksi) | 1 100 (159) |
| Tensile strength, MPa, (ksi) | 1 200 (174) |
| Density, kg/m ³ , (lb/in ³) | 7 850 (0.284) |
| Modulus of elasticity, MPa, (ksi) ×10 ³ | 196 (28.38) |
| Thermal expansion, 1/ °C (1/ °F) ×10 ⁻⁶ 20–100 °C (68–212 °F) | 10.4 (5.8) |
| Thermal conductivity, W/m °C (Btu/ft h °F) | 39 (22) |
| Specific heat capacity, kJ/kg °C (Btu/lb °F) 20–100 °C (68–212 °F) | 0.46 (0.11) |

Perforated steel belts – the best of both worlds

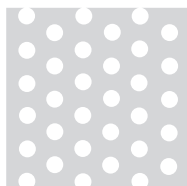
Standard perforation patterns



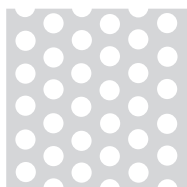
Hole diameter
mm (in)
Triangular pitch
mm (in)
Open area %



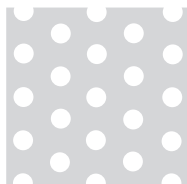
2.0 (0.079)
3.5 (0.138)
29.6



2.5 (0.098)
5.0 (0.197)
22.7



3.0 (0.118)
5.0 (0.197)
32.6



3.0 (0.118)
6.5 (0.256)
19.3



5.5 (0.217)
9.5 (0.374)
30.4

As well as our solid steel belts, we also supply perforated steel belts, a highly flexible, universal bake oven belt solution that opens up the possibility of baking both mesh and solid belt products on the same line.

By using a perforated belt, air circulation within the oven can be improved, heating costs can be reduced and, perhaps most important of all, a better quality end product can be produced.

Perforated belts offer all the benefits of a solid belt – hygiene, ease of cleaning, smooth service and excellent thermal properties – with the added advantage of being lighter than both wire mesh and solid belts.

IPCO perforated steel belts are currently in operation in bake ovens around the world, delivering a range of benefits including:

Durability

Equal to that of our solid steel belts, i.e. typically more than 20 years. This compares favourably with the average lifetime of a wire mesh belt, which is generally 4–5 years.

Quality

Easy cleaning ensures even baking for a high quality end product, while the smooth surface of the belt ensures easy removal with breakages.

Productivity

Perforated steel belts offer a number of key advantages vs. mesh including outstanding resistance to stretching and deformation, and excellent tensioning and tracking characteristics, resulting in low maintenance requirements and maximum uptime.

Standard perforation patterns

IPCO perforated belts are available in five standard perforation patterns covering most requirements. A wide range of other patterns, with a minimum hole diameter of 0.8 mm (0.03 in) and different spacing, can be provided to suit specific applications.



Steel belts for greater production versatility

Products as varied as biscuits, pizza bases, granola bars, cakes, macaroons and brownies can all be baked on a solid steel belt. The flat surface provides a crisp base that cannot be achieved on any other conveying medium, and its hard, smooth quality delivers a clean product release.

These qualities make the solid steel belt ideal for the production of American-style cookies. As these products use real butter, and often chocolate chips too, they need to be baked on a solid belt to eliminate the risk of melted product dripping and causing a fire, or simply drying out. And the excellent heat transfer and thermal conductivity of the belt delivers the desirable combination of a crisp base and rich, buttery cookie.

The global appetite for real butter cookies has led a growing number of large players in the bakery industry to convert existing wire mesh lines to run on IPCO steel belts. While this isn't quite as straightforward as simply swapping out one type of belt for another (the conveyor components also need replacing), it is far more economical – and faster – than having to invest in completely new lines.

Upgrading from mesh to a solid steel belt

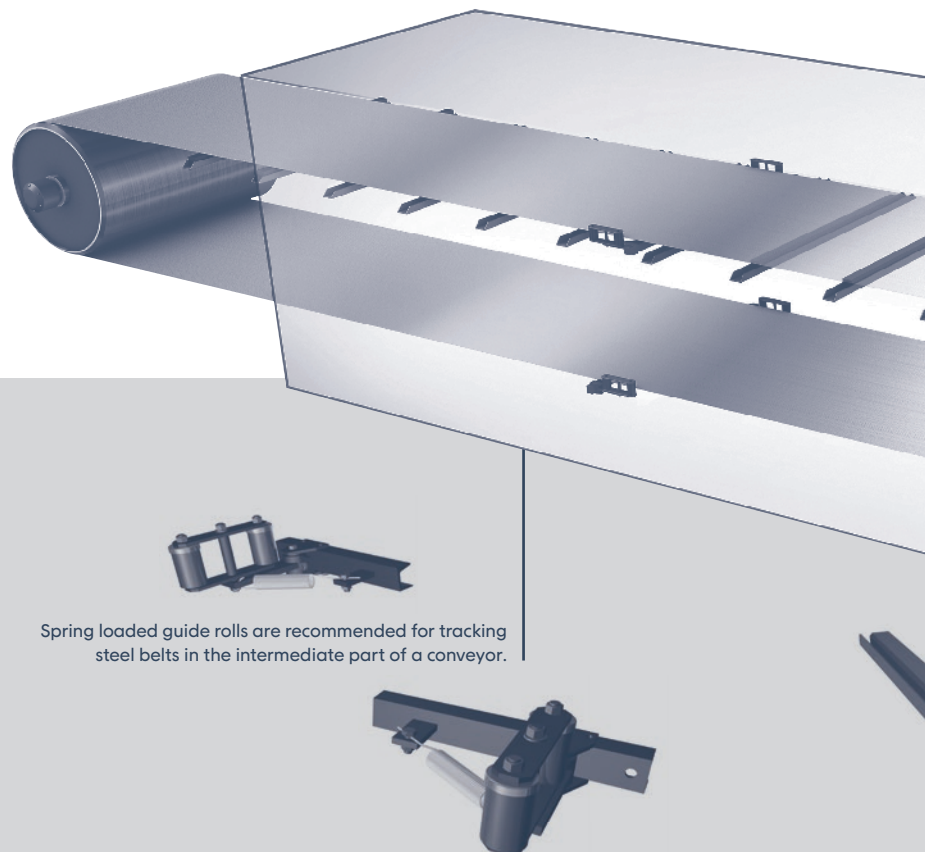
We have successfully completed a number of upgrade projects around the world, enabling customers to broaden their ranges and enter new markets. This case study of a Chinese customer is typical.

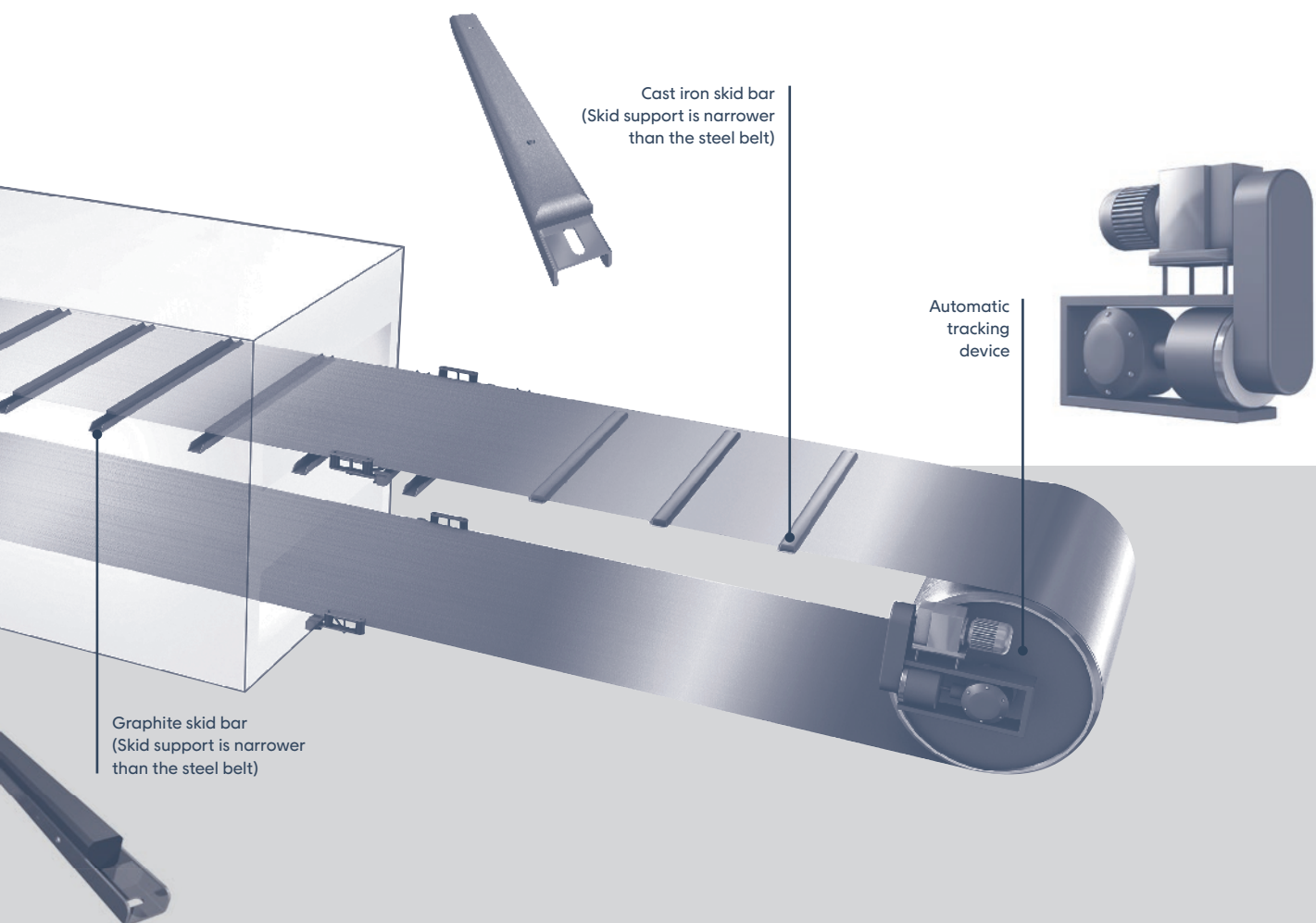
This particular customer was producing thin crackers on a mesh belt but wanted to increase output and extend production capability to include biscuits and cakes.

We supplied and installed a solid steel belt, 1 000 mm wide, 1.2 mm thick and 170 m long, complete with new drums, scraper, spring loaded guiding rolls, automatic tracking device, graphite skid bars and cast iron skid bars.

Our role in the commissioning process revealed unwanted variations in temperature across the belt during the heating-up stage, resulting in tracking issues. The oven heating system was checked and rectified, and the problem solved.

The customer achieved the goals of increasing productivity and introducing new products of a consistently high quality – all within a short payback period.







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