



Steel belts have helped drive new levels of productivity across a whole range of industries over the last 100+ years and this versatile, precision-engineered technology is equally relevant to the needs of 21st century processes.

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—STEEL—BELT— TECHNOLOGY—FOR— —21ST—CENTURY —APPLICATIONS—

—PRECISION ENGINEERING MEETS EXPERT CRAFTSMANSHIP

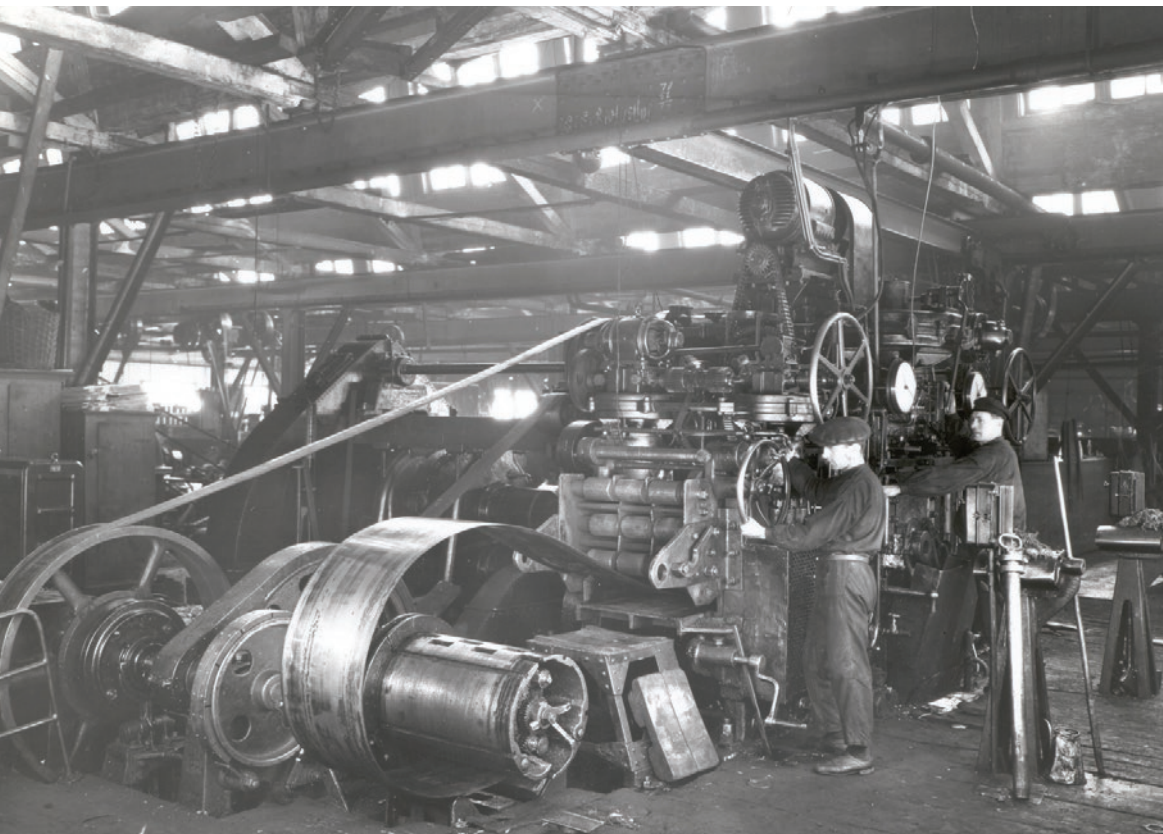
Steel belts were the foundation on which IPCO was built and represent the heart of our business to this day.

From freezer to furnace, from quarry to cleanroom, steel belts have helped to change the world of manufacturing, delivering improvements in hygiene and performance and frequently opening the door to more efficient continuous production processes for the very first time. And for more than 100 years, one company has been at the forefront of this industrial revolution, IPCO.

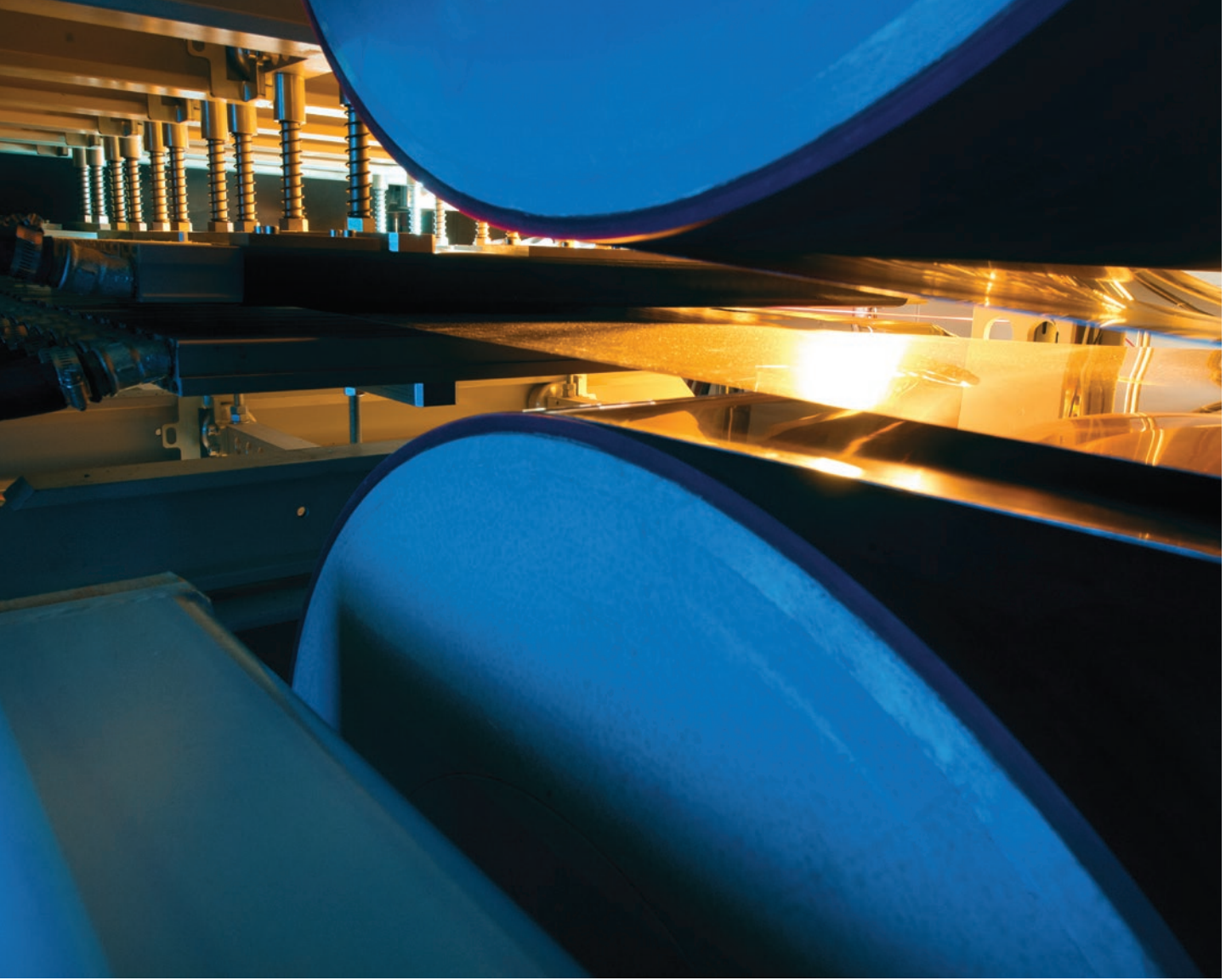
1901 saw the world's first steel belt conveyor - based on one of our belts - enter operation at a Swedish sawmill. Since then, our belts have been used to transport everything from iron ore, vehicle parts and glassware to sugar, ice cream and even people (our Movator passenger conveyors have been installed at rail/air terminals and shopping malls around the world).

Engineering a product capable of such a wide range of applications is not easy. There are numerous unwanted characteristics – camber, unflatness and other defects – that have to be removed from a cold rolled belt before it is capable of even remaining on the conveyor, let alone running smoothly and performing as required. This involves multiple stages of levelling, welding, slitting and, in many cases, precisely controlled heat treatment followed by grinding.

In short, transforming raw, cold rolled steel strip into a functioning conveyor belt requires highly specialised machinery and levels of craftsmanship gained only through years of experience.



Early steel belt manufacturing in Sandviken, Sweden



Steel belts are used to deliver a combination of pressure and heat in double belt press systems.

A process medium for future technologies

Our pioneering role in the development of steel belt technology has seen IPCO steel belts installed in industrial process systems the world over, and a commitment to innovation and long term investment has helped us maintain a position of market leadership.

This approach will also secure a bright future for our business. The qualities of a steel belt – unparalleled flatness and stability and a surface smoothness measured in microns – make it extremely well suited to high precision 21st century production requirements.



Hot or cold, liquid or solid,
industrial or high tech,
there's a steel belt solution
for every application

Steel belt-based process systems open the door to continuous production

While the first applications for our steel belts were confined to transporting goods from A to B, the possibilities enabled by the arrival of this game-changing tool soon opened the door to new markets and within a matter of years, our belts could be found at the heart of an ever-growing range of process systems.

Steel belts boast a unique set of properties, among the most important of which are the ability to operate in challenging environments including extreme temperatures, humidity and pressure, and to conduct heat to and from a product.

In the early part of the last century, this led to IPCO (then operating as Sandvik Process Systems) steel belts being used for applications as diverse as board production (1920), biscuit baking (1925), hay drying (1928) and chemical cooling (1935).

The next milestone was the development of the first stainless steel belt, resulting in rapid adoption of this technology by the food industry with early applications including dehydration (1930), fish filleting (1950), meat cutting (1955) and ice cream freezing (1959).

Today, the properties of IPCO steel belts see them used for hundreds of different products and processes.

- Baking
- Calibration
- Casting
- Conditioning
- Conveying
- Cooling
- Drying
- Forming
- Freezing
- Granulation
- Heating
- Impregnation
- Lamination
- Painting
- Pastillation
- Pressing
- Printing
- Rotary casting
- Separation
- Sintering
- Solidification
- Sorting
- Steaming
- Storage
- Texturing
- Transportation
- Vulcanizing
- Washing





Belts tailor-made for different products and processes

Every IPCO belt is designed to satisfy the needs of a particular project or application and to do this, we have developed a portfolio of steel grades, each with its own set of properties.

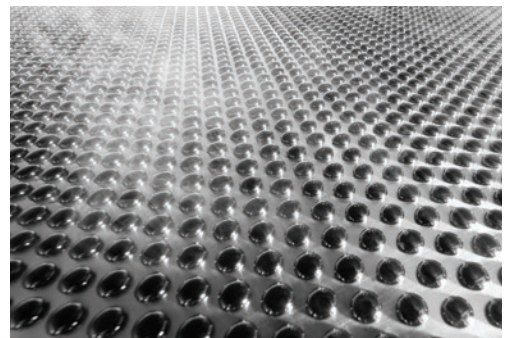
We supply carbon and stainless steel belts; belts with high impact resistance; belts for highly corrosive environments; belts that will deliver 20 or more years' reliable service; and belts suitable for use in high temperature applications – as high as 700 °C.

We can produce belts with special surfaces (e.g. mirror polished, chrome plated) or textures, and belts coated with PTFE. We can supply



them solid or perforated, drilled in almost any size and perforation pattern. And we can manufacture belts in thicknesses from 0.4 to 3.5 mm, in widths from 25 mm up to 8 m and to virtually any length.

In short, we can supply an IPCO steel belt for every known application. And when a new application arises, we have the technical expertise to rise to the challenge.



Steel belts for today's industries – and for tomorrow's too

Steel belts have been driving many of the world's manufacturing processes for over 100 years, and this precision-engineered technology is just as relevant to the industrial needs of the 21st century.

First employed as a rugged, reliable means of transporting materials from one place to another, the IPCO steel belt has evolved to become an extraordinarily versatile tool, one capable of applying heat, cold, pressure and/or surface finish across a whole range of continuous production processes.

A technology and a company fit for the future

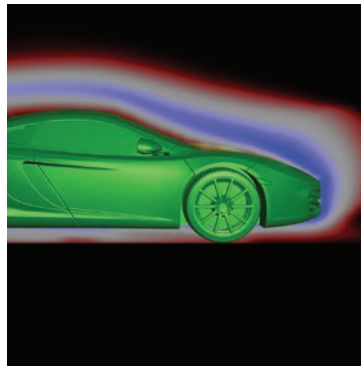
The steel belt story stretches from the steam age, through the era of science and mass production to the digital age, and the next chapters are already being written.



The following pages offer a taste of how steel belts are already being employed in the industries that will shape the 21st century, as well as suggesting how this picture could evolve over the coming decades. Whatever the future holds, one thing's for certain: the same focus on innovation, engineering excellence and customer service that has brought us this far will secure our place as market leaders as we move forward.

Film casting

Super mirror polished steel belts are used to cast specialty films for LCD displays, PCB films, filter membranes and plastic films. Other end products include li-ion battery film and ceramic foil for semiconductors, fuel cells and solar cells. Might a similar process one day be used to produce graphene or even materials that have yet to be discovered?



Main image: Recycling
Top: Solar cells
Above:
Digital printing, Wind tunnel testing.
Right:
Technical textiles, Drying systems.





Digital printing

The stability and flatness of our steel belts enables improved print accuracy and faster print speeds on digital inkjet presses. Could the same principle be applied to the printing of circuit boards? Or high volume 3D printing?

Technical textiles

Our steel belts are used in the production of technical textiles such as military/protective fabrics and geotextiles used for filtration and drainage. These are still relatively young markets with huge potential for growth through product innovation.

Drying systems

Biogas production leaves behind a nutrient-rich slurry with the potential to be used as fertilizer or burnt for energy. Both applications require this residue or 'digestate' to be dried, which can be carried out on a drying system based on a perforated stainless steel belt.

Recycling

It doesn't take a crystal ball to know that recycling will be critical to the world's health over the coming decades. From sorting systems to the forming of new materials from shredded waste (e.g. rubber tires, polyolefines, fibers), the potential applications for steel belts are enormous.

Wind tunnel testing

Vehicle fuel efficiency – be it the internal combustion engine or battery power – remains a key goal of all car manufacturers and body design is an important factor in terms of minimizing drag. IPCO belts have been used in wind tunnel testing by F1 teams for this very purpose.

Pharmaceutical production

Pharmaceutical production requires a clean environment and stainless steel process belts have an important role to play. Easy to clean and sterilize, IPCO belts are used in a number of such installations, and are compliant with GMP (Good Manufacturing Practice) standards.



Chemical granulation

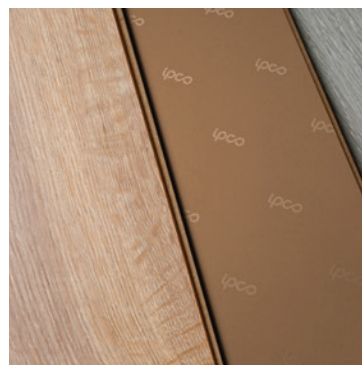
Cooling systems based on IPCO steel belts are used in the granulation of a huge range of different chemical types, including PET, the base material for plastic bottles. The development of bio-based, degradable alternatives should present new opportunities and applications.

Modular housing

Rapid population growth, migration and environmental issues often create the need for cheap, light and easy to deploy accommodation. Our belts are used in the production of boards that form the basis of low cost accommodation pods or modules.



Main image: Chemical granulation.
Top: Pharmaceutical production.
Above:
Bio-based materials, Modular housing.
Right:
Oil skimming, Textured materials.
Far right: Non-wovens.





Textured materials

The perfectly smooth surface of a steel belt is usually a key quality but we can also produce belts with patterns or textures. Potential applications for this include branding (e.g. on the reverse of boards or baked goods), anti-slip materials, or zoned areas on belts for product sorting.

Bio-based materials

Natural materials such as lignin and cellulose – typically obtained from wood pulp – have an extraordinary range of potential uses, from an extremely strong alternative to man-made plastics to use in paper, food, pharmaceutical and biomedical applications. Many of these require the material to be cast in film form, a process for which steel belts are already well proven.

Oil skimming

Oil adheres to the surface of a steel belt and this quality enables it to be used to collect and separate oil from engineering coolants, wastewater and seawater. Steel belt-based oil skimmers are widely used to clean up after oil leaks and spills.

Non-wovens

Nonwovens fabrics produced on steel belt-based presses have applications across the automotive and aerospace industries, offering a strong but lightweight alternative to other materials and enabling significant improvements in fuel efficiency.



Choose sustainability, choose steel

Sustainability is now a key consideration in every responsible organisation's purchasing decisions so it's important to understand why choosing a solid or perforated steel belt is very often the 'greenest' choice compared with other materials.

100% recyclable

Stainless steel is 100% recyclable without any reduction in quality. There's no need for burning, no need for landfill; every IPCO steel belt has the potential to be turned into another IPCO steel belt. According to the Stainless Steel Industry of North America (SSINA), 92% of stainless steel used in industrial equipment is recaptured at end-of-life for use in new stainless or carbon steel.

Long lasting

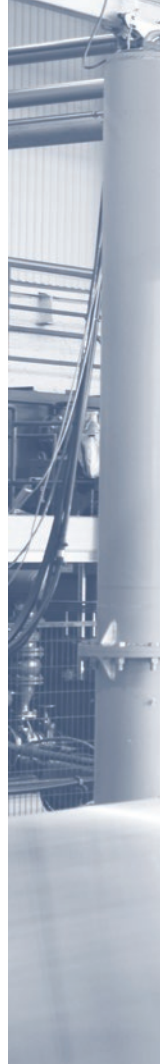
The working life of a steel belt is significantly greater than that of any other material; as long as 20 or 30 years in some industries. As well as often making it the 'least cost' option when total life cycle costs are considered, this also saves resources in terms of replacement belts.

High strength-to-weight

Our broad range of steel belt grades includes materials with excellent strength characteristics, enabling reduced material thickness without compromising performance.



Every steel belt can be recycled for use in new steel material.





IPCO steel belts are engineered to deliver a long, reliable and energy efficient working life.

Lighter than mesh

IPCO solid steel belts are widely used in bake ovens and enable significant energy savings compared with mesh belts. Every time the belt exits the baking chamber, it begins to cool and has to be heated again. Solid steel bake oven belts are lighter than wire mesh products so require up to 30% less energy to heat. And perforated steel belts are lighter still. This weight advantage also means less energy is needed to actually 'drive' the belt through the oven.

No risk of micro plastics

Awareness of the dangers posed by micro plastics is growing and many processors, particularly in the food industry, are now choosing steel over plastic. While this is primarily for reasons of safety – metal detection technology can miss fragments of plastic – it also eliminates the risk of plastic particles getting into the wider environment.



With fast, easy sanitizing and no risk of microplastic contamination, steel belts are the safe choice for food processing

Fast and easy to sanitize

The inherent cleanability of stainless steel is what makes it the default choice for food handling and processing equipment. It also means that cleaning is much faster and more efficient than for other materials, which means savings in water and energy used in heating, and lower use of detergents and other cleaning chemicals.



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