



Our experience in working with bitumen forming has led to the development of two highly efficient solidification systems for granulation and block forming.

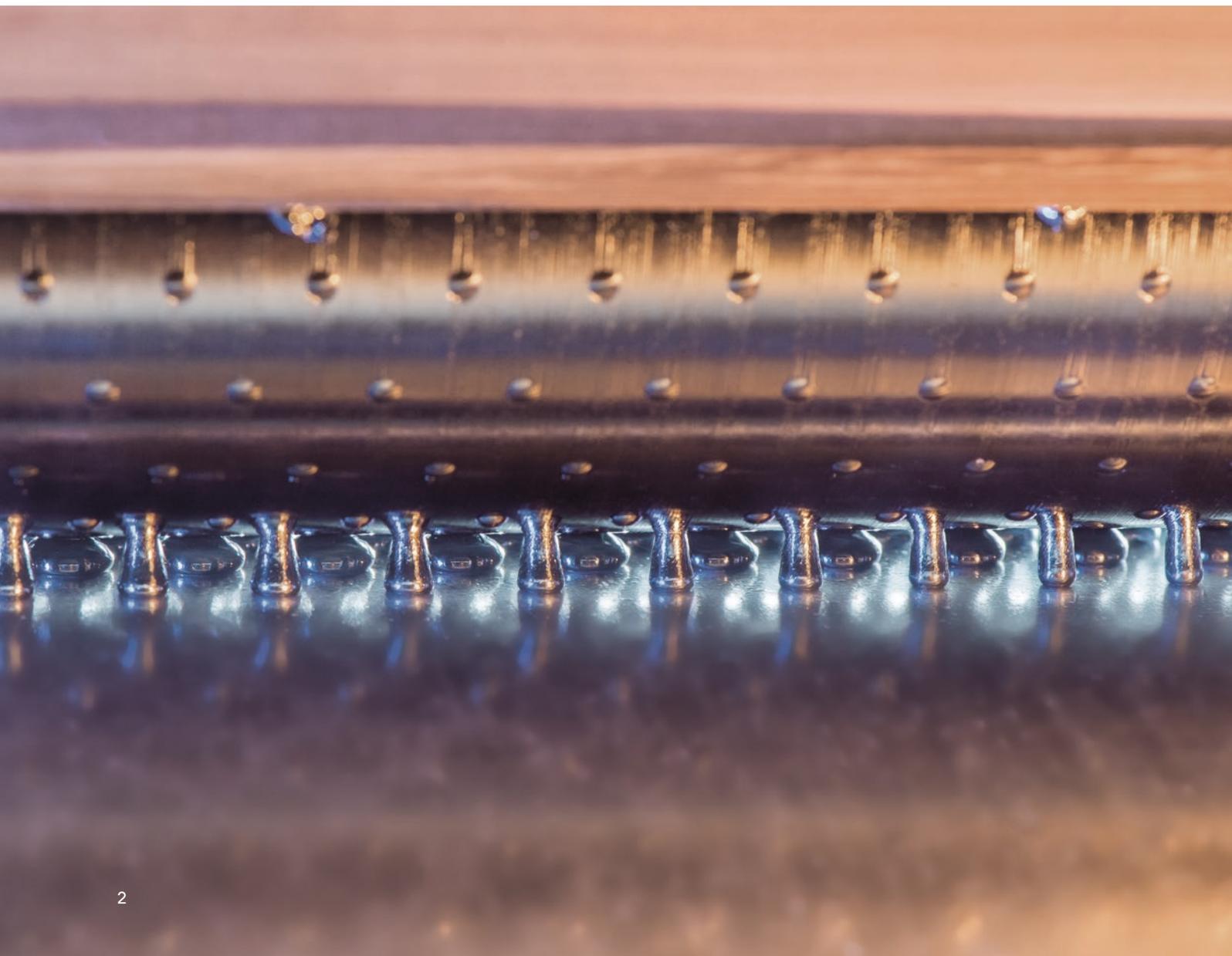
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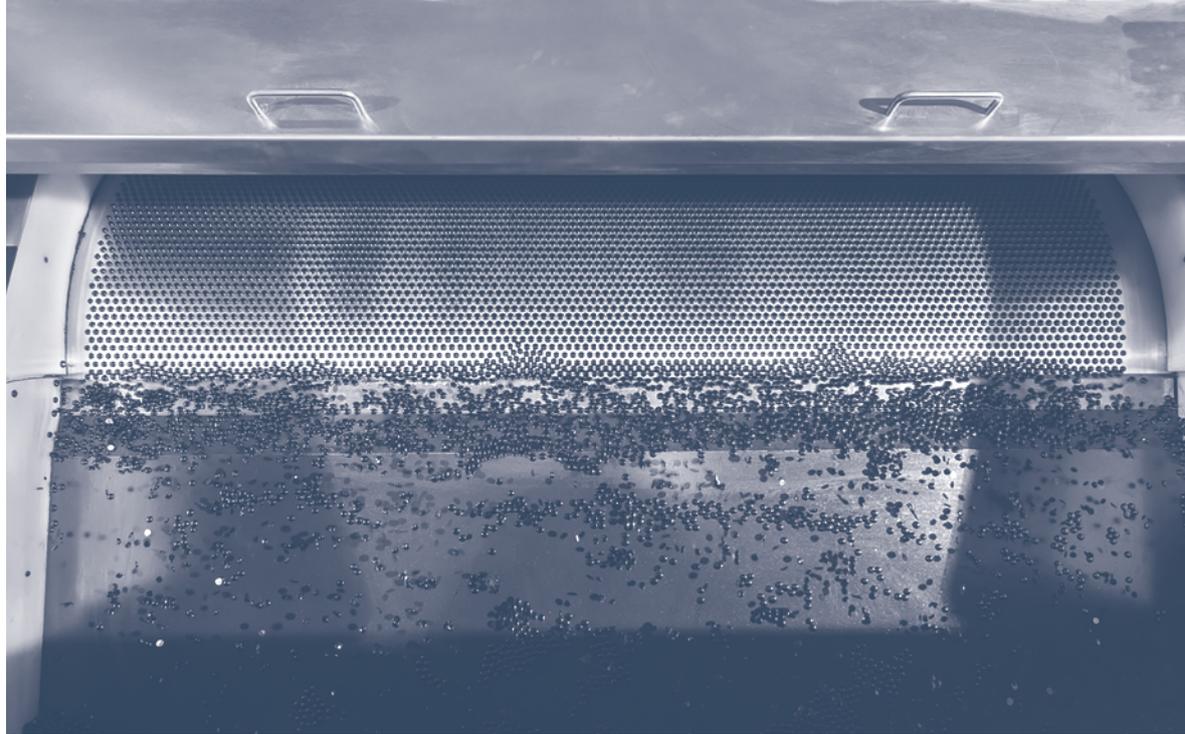
SOLIDIFICATION AND PACKAGING HARD BITUMEN TAR PITCH AND ASPHALTENE



— CONTINUOUS SOLIDIFICATION SYSTEMS FOR CARBON- RICH RESIDUES

As a major supplier of hard bitumen forming systems, our experience in this field has led to the development of two highly efficient solidification systems: one for granulation and one for block forming.





Our granulation solution is based on Rotoform technology, a system first developed in the early 1980s for the solidification of sulphur and other by-products of oil and gas refining. Since then, the IPCO Rotoform has become the standard solution for the solidification of chemicals, with more than 2 000 systems installed to date.

Market-leading granulation and solidification systems for all kinds of hard bitumen, tar pitch and carbon-rich residues.

Our block forming system is part of an automated production process that is used to convert molten bitumen into regularly sized packs complete with polyethylene foil shrink-wrapping.

World-leaders in steel belt cooling technology

Both systems are based on our market-leading cooling technology whereby the heat of the molten product is transferred – via the steel belt – to cooling water sprayed against the underside of the belt.

This indirect cooling method has the important environmental advantage of eliminating any risk of cross contamination between the product and cooling water. And the excellent thermal conductivity of the steel belt means cooling time is short, so very little vapor or gas can get into the atmosphere.

Global support service for maximum productivity

With support operations strategically located around the world, we have the infrastructure necessary to deliver a genuinely global service covering everything from system installation and commissioning to in-house training, repairs and spare parts. We can also provide training for your in-house team, enabling them to carry out essential maintenance and keep unexpected downtime to a minimum.

Rotoform granulation – efficient and cost effective

The high product temperature required for tar pitch, asphaltene and hard bitumen – up to 300 °C – meant that, for many years, the granulation of these products was economically unviable. However, the development of the Rotoform HT (High Temperature) system changed all that, opening the door to the efficient and cost effective solidification of these previously difficult to handle products.

As with all models in the IPCO Rotoform range, the Rotoform HT process produces granules of highly uniform shape, stability and quality.

As a free-flowing, virtually dust-free product with high bulk density and excellent packing qualities, Rotoform pastilles are the ideal form for packaging, storage, feeding and dosing and further processing in end applications such as:

- Electrodes.
- Tire and cable industry.
- Printing inks.
- Roofing and construction.
- Solid fuel.
- Steel manufacturing.
- Special graphites.

How the Rotoform system works

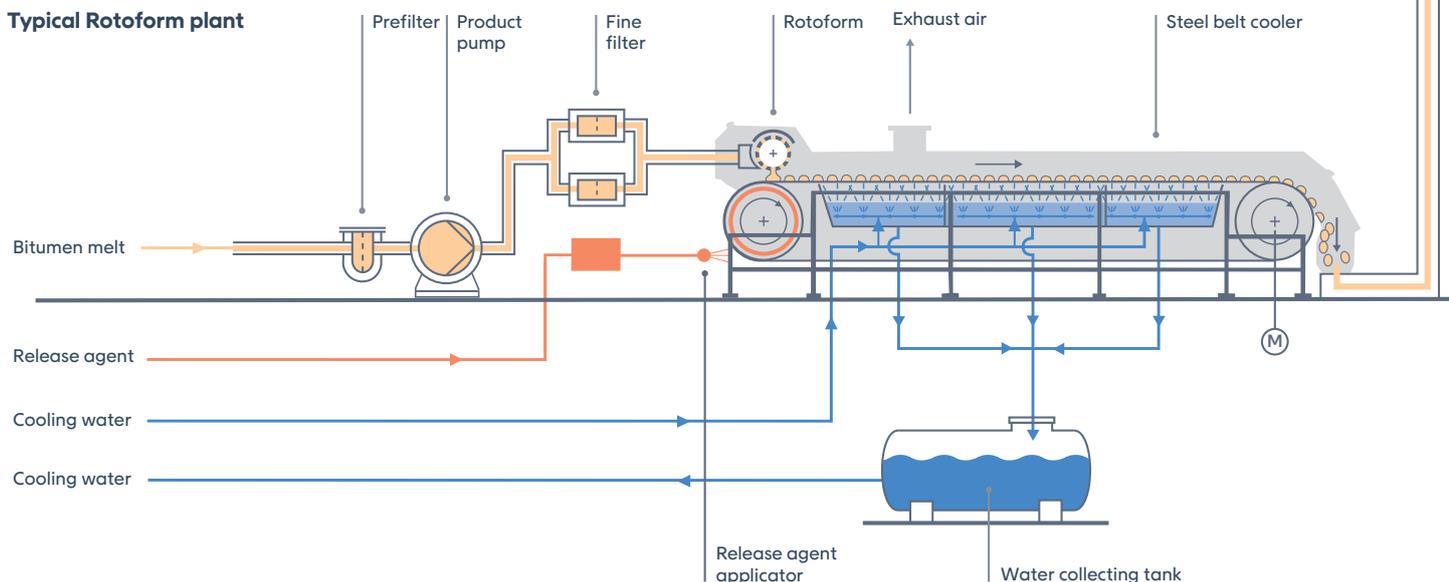
A pump delivers the molten product from a vessel to the Rotoform system via heated piping.

The Rotoform HT itself consists of a heated cylindrical stator – which is supplied with liquid product – and a perforated rotating shell that turns concentrically around the stator. Drops of the product are deposited across the whole operating width of a continuously running stainless steel belt.

A system of baffles and internal nozzles built into the stator provides uniform pressure across the whole belt width, providing an even flow through all holes of the perforated rotary shell. This ensures that all pastilles are of uniform size, from one edge of the belt to the other.

The circumferential speed of the Rotoform HT is synchronized with the speed of the belt: drops are therefore deposited without deformation. Heat released during solidification and cooling is transferred via the steel belt to cooling water sprayed underneath. This water is collected in tanks and returned to the water recooling system; at no stage does it come into contact with the product.

Typical Rotoform plant





The highly uniform shape, stability and quality of Rotoform bitumen pastilles makes them ideal for packaging, storage, blending and further processing.

After the drops have been deposited onto the steel belt, some product could stick to the outer shell. A heated refeed bar forces this product back into the Rotoform and keeps the outer shell clean.

At the end of the cooling line, the solid pastilles are removed from the belt and transported to a hopper for bagging/weighing.

Key benefits of Rotoform granulation

- Solidification to defined size directly from the melt – no costly crushing or grinding processes.
- High quality pastille shape – low dust content.
- High capacity due to efficient steel belt cooling.
- Ability to handle product viscosities up to 15 000 mPas.
- Pastilles can be produced in diameters from 4 to 40 mm depending on product viscosity.
- Easy maintenance and cleaning due to smooth steel belt surface.
- Easy changeover to different products or production capacities.
- Environmentally friendly production.

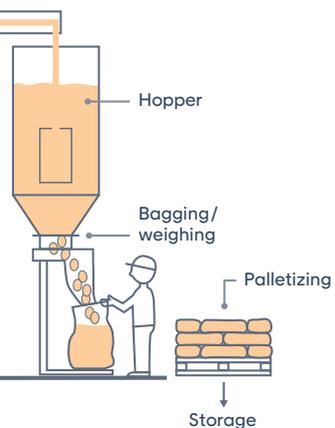
Full turnkey capability including up- and downstream equipment

Our expertise goes far beyond the Rotoform granulator and steel belt cooler that are at the heart of this process; we can engineer, supply, erect and commission the entire system, starting from feed of the molten material, through the granulation process to weighing, bagging, palletizing of the bulk product (20/50 kg or big bags) and storage.

Pilot testing at our productivity center

If you would like to know more about how we could help increase productivity, reliability and product quality at your operation, we'd be delighted to talk to you.

Alternatively, if you'd like to put our systems to the test, we invite you to visit our Productivity Center in Germany where you can assess them in production conditions using your own products.



High speed block forming and packing system

The IPCO oxidized bitumen packaging system is a self-contained system that automatically produces regularly sized packs with little operator attention.

Some end applications are better served by bitumen in block form rather than pastilles and for this we have developed the IPCO bitumen asphalt packaging process. This automated, self-contained system is extremely efficient, producing regularly sized packs – directly from receipt of the molten product – in little more than 15 minutes.

End-to-end process from liquid feed to block wrapping and palletizing

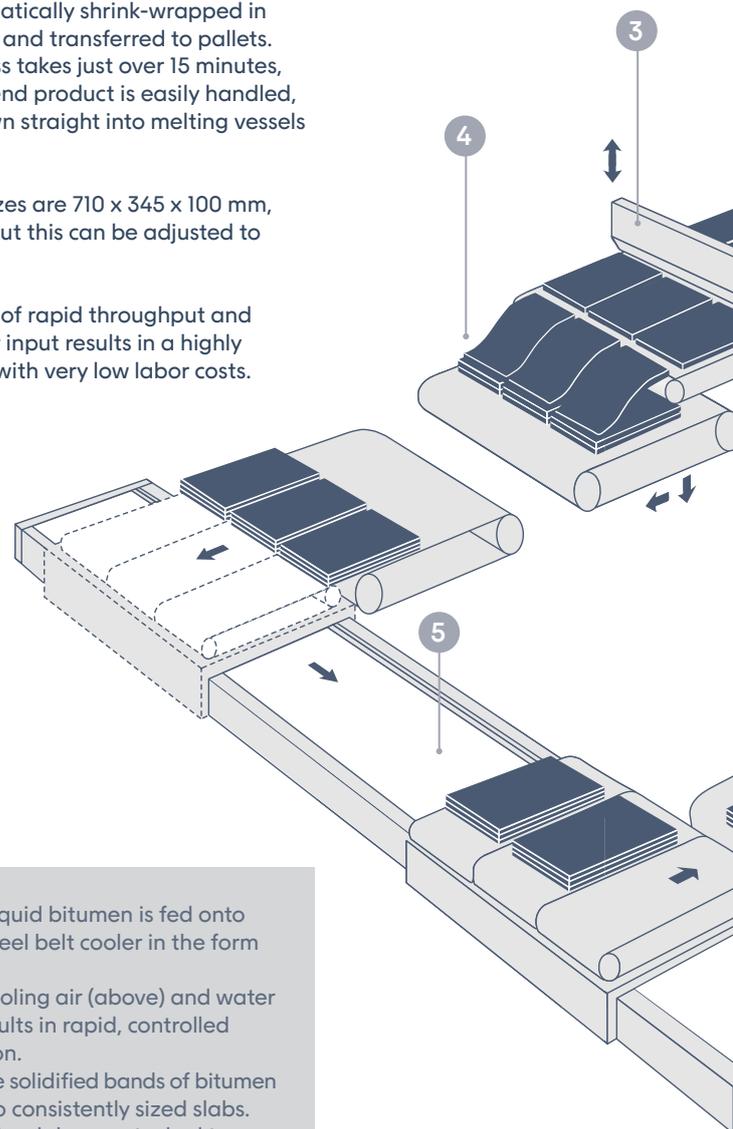
Hot liquid bitumen is fed onto the IPCO steel belt cooler in the form of bands created by dividers running the full length of the cooling line. Chilled water is sprayed on the underside of the belt, and air is blown from above. The smooth, durable surface of the IPCO steel belt provides an ideal surface for the temperatures and loadings involved.

As the melt travels along the system, the heat is transferred to the air above and – via the steel belt – to the water below, resulting in quick, controlled solidification.

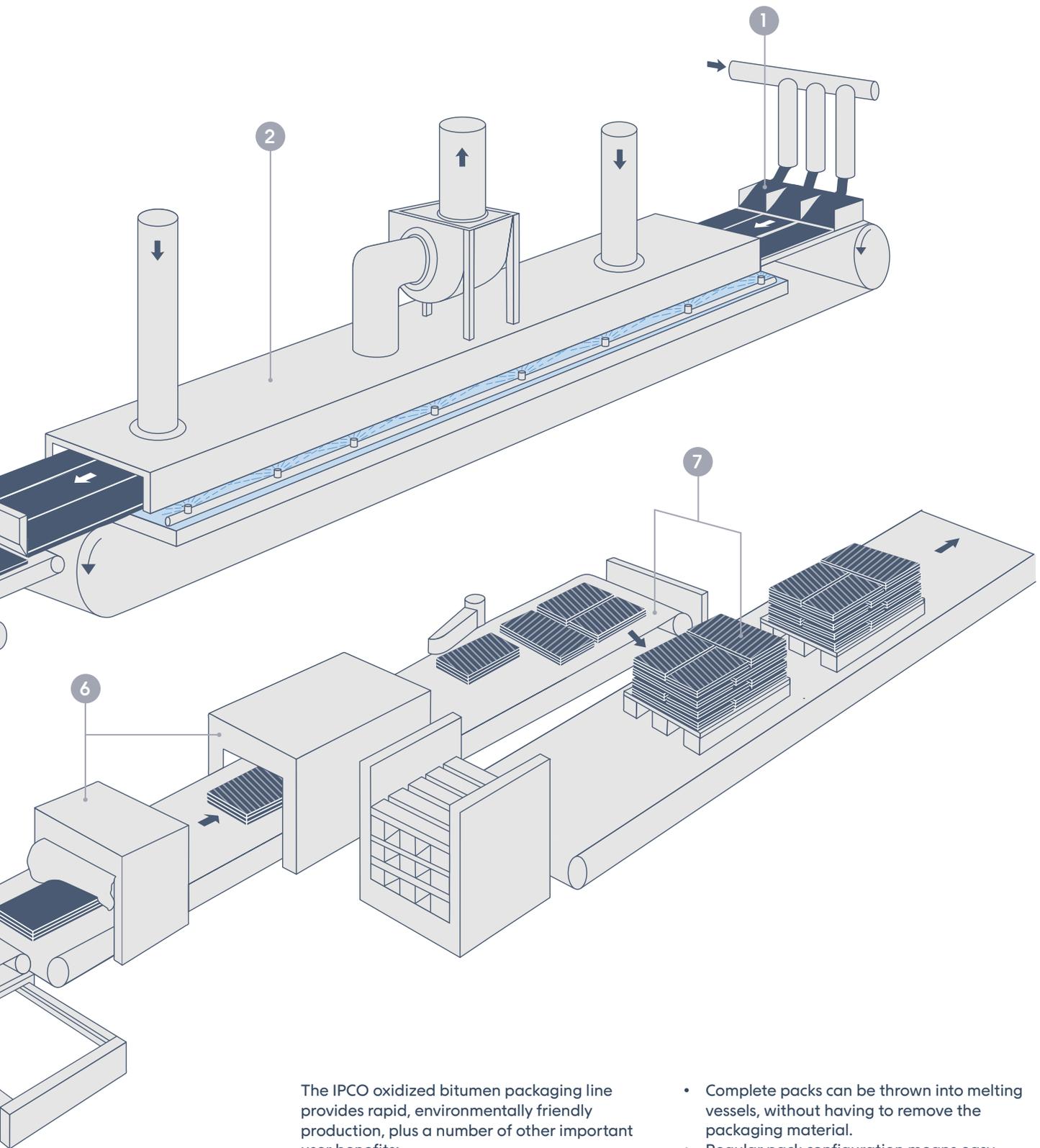
At the end of the belt the solidified asphalt bands are cut into consistently sized slabs that are then stacked to form blocks. These in turn are automatically shrink-wrapped in polyethylene foil, and transferred to pallets. The whole process takes just over 15 minutes, and the packed end product is easily handled, and can be thrown straight into melting vessels on site.

Standard pack sizes are 710 x 345 x 100 mm, weighing 25 kg, but this can be adjusted to individual needs.

The combination of rapid throughput and minimal operator input results in a highly efficient process with very low labor costs.



1. **Feeding.** Liquid bitumen is fed onto the IPCO steel belt cooler in the form of bands.
2. **Cooling.** Cooling air (above) and water (below) results in rapid, controlled solidification.
3. **Cutting.** The solidified bands of bitumen are cut into consistently sized slabs.
4. **Stacking.** The slabs are stacked to form 25 kg blocks.
5. **Transport.** The stacks are conveyed to the wrapping station.
6. **Shrink-wrapping.** The stacks are wrapped in polyethylene (this can be remelted with the bitumen, no need for unwrapping). Less than 2% by weight of the bitumen.
7. **Palletizing.** Wrapped blocks are loaded onto pallets ready for shipping.



The IPCO oxidized bitumen packaging line provides rapid, environmentally friendly production, plus a number of other important user benefits:

- Continuous automatic operation means low labor costs: a plant producing 10 000 tonnes per year can be operated by two workers.
- High system productivity: total time from liquid bitumen to palletized packages of little over 15 minutes.
- Low costs also result from the polyethylene packaging – far cheaper than alternative materials.
- Flexible production: packs can be produced to specific, consistent sizes.

- Complete packs can be thrown into melting vessels, without having to remove the packaging material.
- Regular pack configuration means easy loading and unloading, with packs designed to match standard pallet sizes, and optimum use of storage space.
- Process suitable for all parts of the world including warmer climates.

The indirect cooling process is environmentally friendly, with low noise, and fumes easily removed from above the system. The whole process is quick and easy to start up at the beginning of a shift, and to shut down at the end.

TAR PITCH
ASPHALTENE
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