The IPCO Rotoform HT granulation system delivers a continuous processing solution that enables ETANCHAL to solidify up to two tonnes of molten bitumen every hour.

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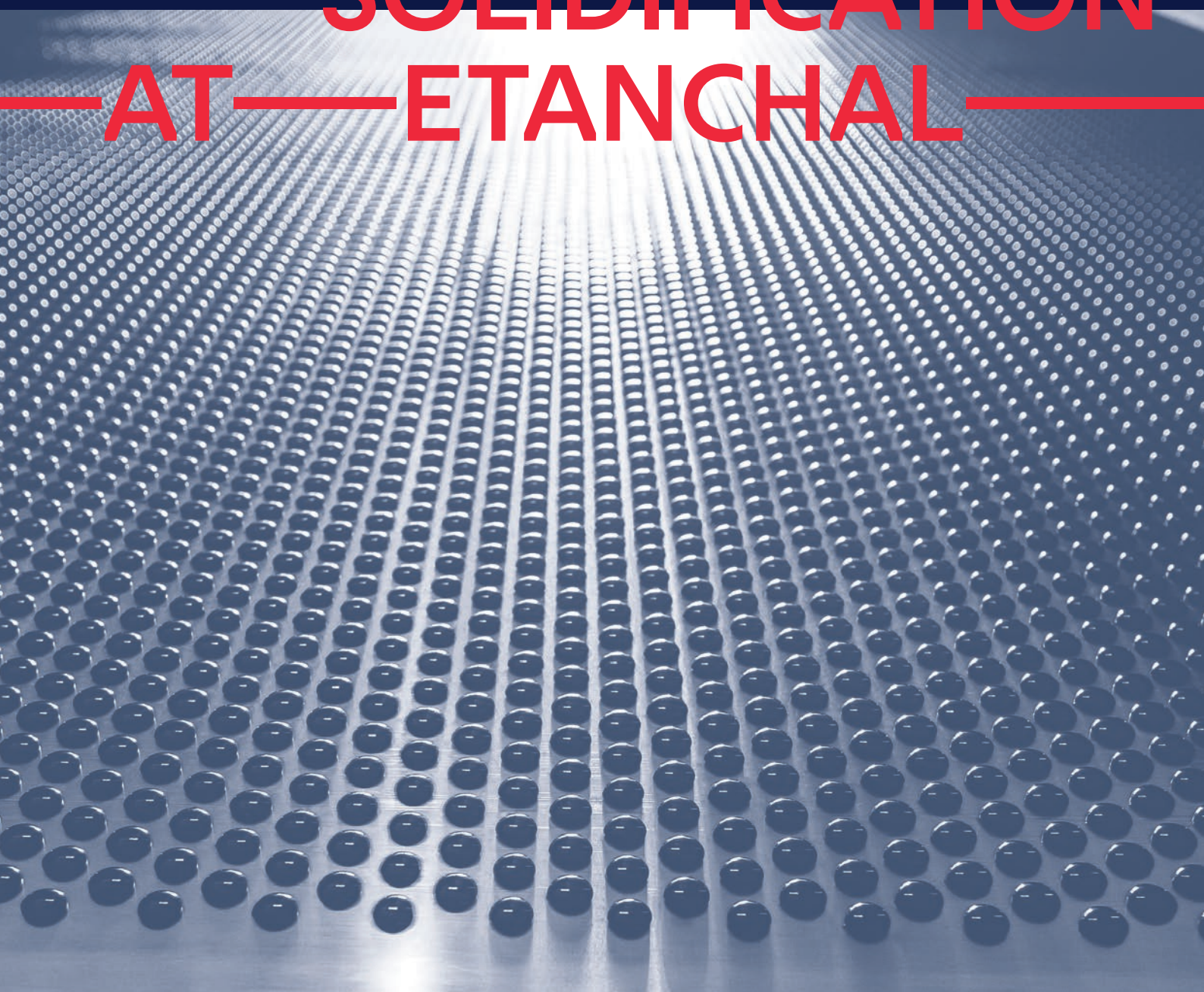
CASE STUDY: BITUMEN SOLIDIFICATION AT ETANCHAL



——ROTOFORM DELIVERS BITUMEN HANDLING SOLUTION FOR ETANCHAL

The installation of an IPCO Rotoform® granulation system has given leading North African waterproof materials manufacturer ETANCHAL Algeria the ability to convert molten bitumen into pastille form for easy packing in 25 kg bags, enabling the company to supply oxidized bitumen to customers outside Algeria.

Bitumen is one of the key components of the company's waterproof membrane products, used for applications such as roofing, basements, tunnels, reservoirs and underground car parks. With as much as two tonnes of molten bitumen arriving from a nearby refinery, ETANCHAL needs a reliable, high capacity solidification solution.

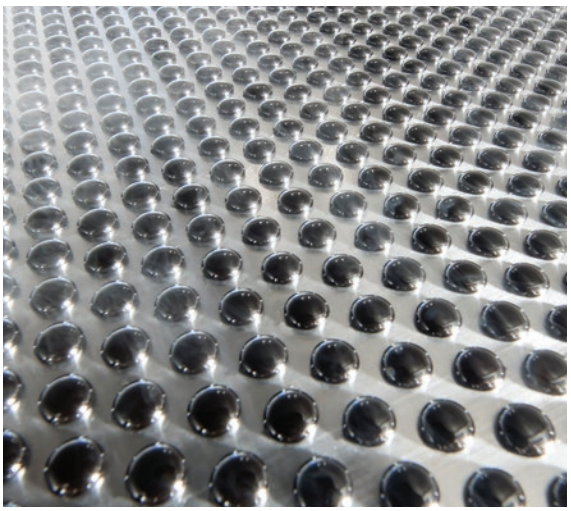
As a supplier of bitumen forming systems for many years, IPCO has considerable expertise in this area and was invited to tender.

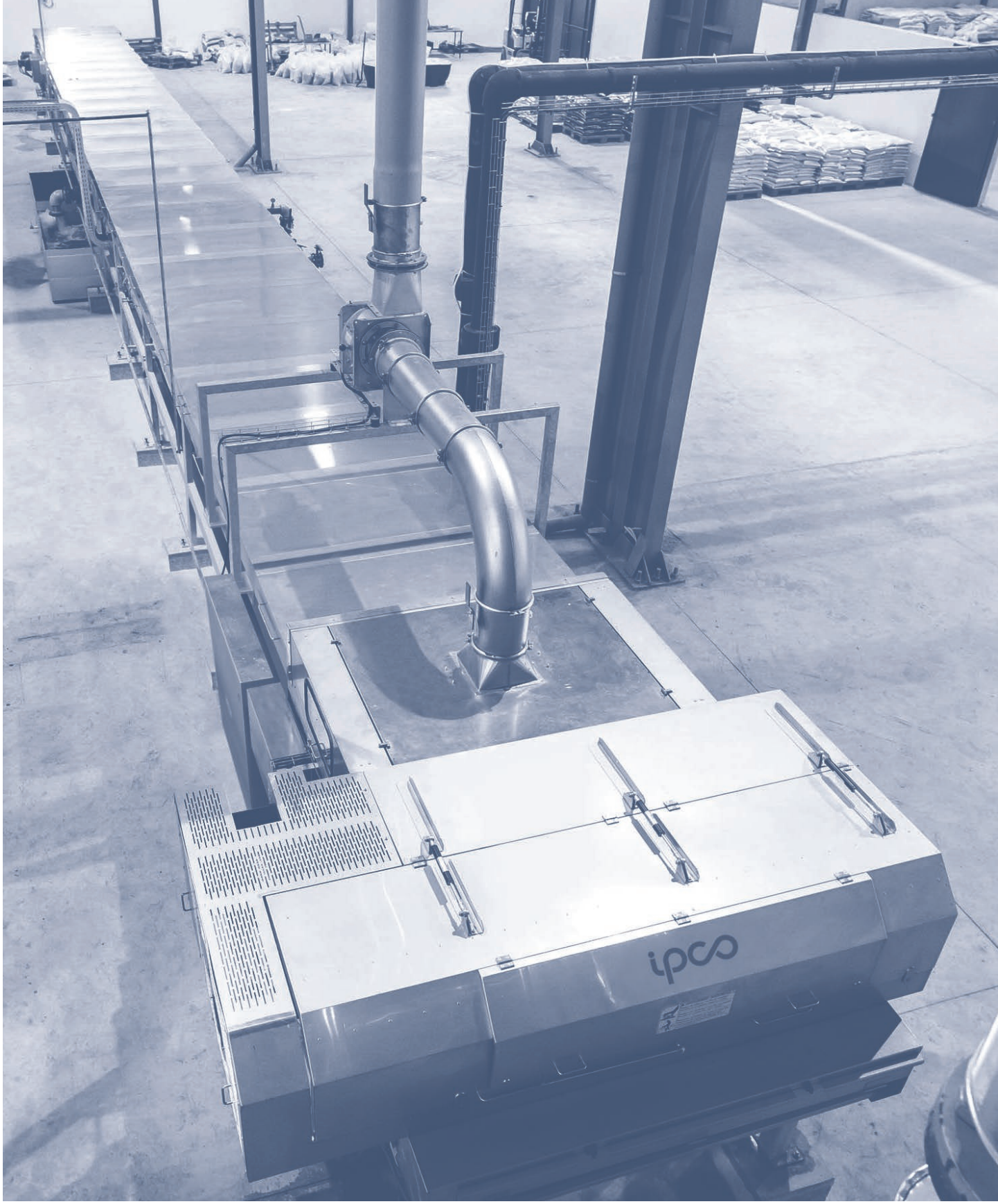
The product to be handled is oxidized bitumen 85/25 with 20% calcium carbonate, a material with a softening range of between 80-90 °C. The required capacity is 2000 kg/h and ETANCHAL needs to be able to automate packaging into 25 kg bags.

Reliable, high capacity granulation with advanced process control

IPCO's specialists offered two potential solutions: a high output block-forming process, and the purpose-designed Rotoform® HT (High Temperature) granulation system. ETANCHAL decided on Rotoform pastillation for a number of reasons:

- Fast, controlled cooling – from liquid to solid in 1.4 minutes.
- Predictable size, constant bulk density – no screening, recycling or remelting required.
- 24 hour operation without supervision – automated cooling process.
- Precise dosing for packaging into 25 kg PEBD bags.
- Environmentally friendly production – all emissions within legal limits.





IPCO's expertise in bitumen forming systems extends back over decades – the development of the purpose-designed Rotoform® HT (High Temperature) system has delivered new levels of efficiency

Continuous, controlled solidification with no risk of contamination

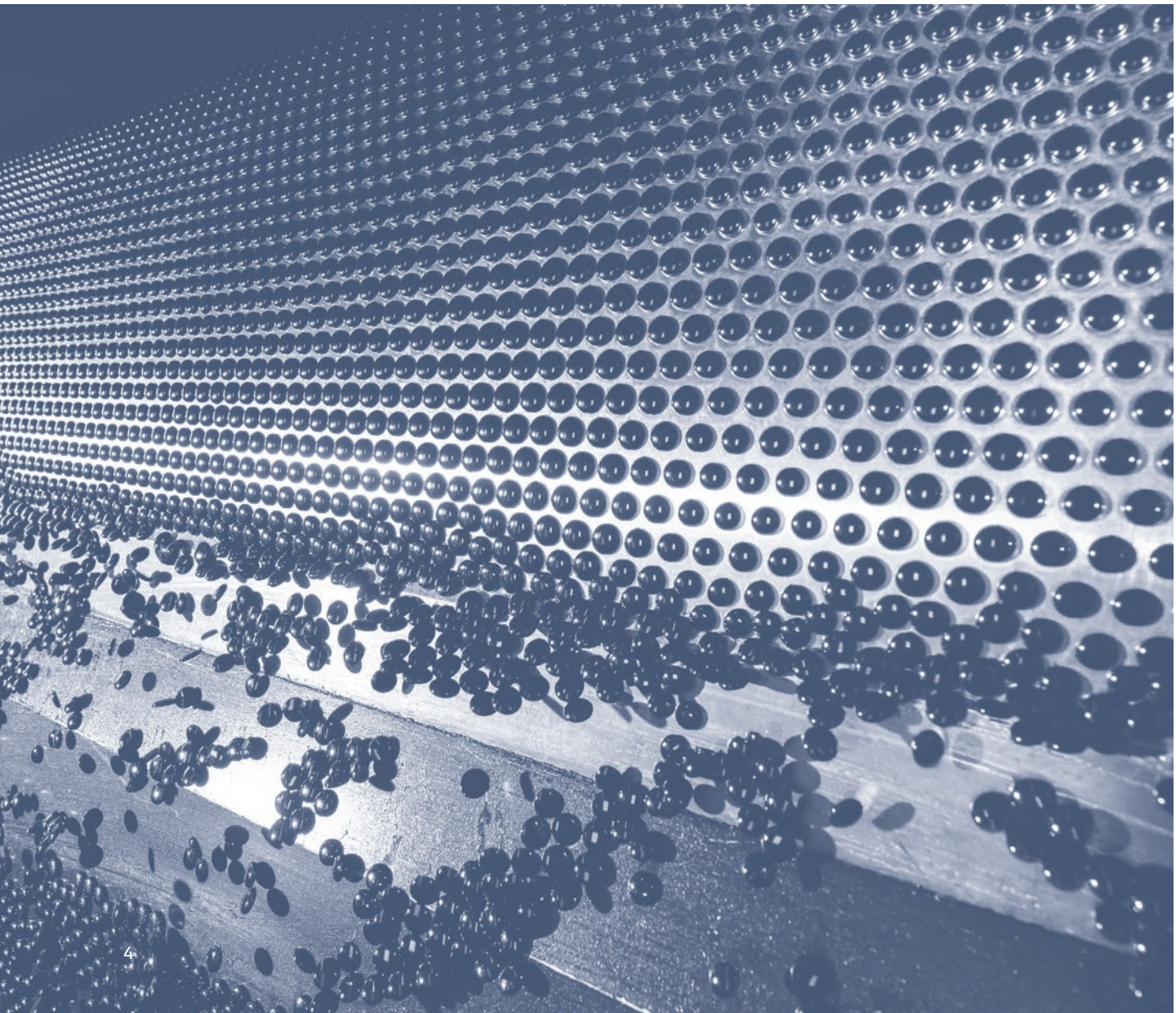
"The Rotoform system's automated dry forming process delivers a 100% quality, consistently sized product," says Mr. Boucif, ETANCHAL General Manager. "Its robust design also ensures a high degree of reliability and productivity.

"Another important factor for us is IPCO's local service presence, something many other suppliers are unable to provide, and their clear commitment to on-going support."

Efficient, controlled solidification on a steel belt cooler

IPCO's bitumen granulation process combines a Rotoform drop depositor with a continuously running steel belt, cooled from the underside by spraying water through nozzles.

The pastillation process starts with pumps that supply the liquid bitumen – at a feed temperature of 150 °C – to the Rotoform. This consists of a heated, cylindrical stator and a perforated rotating shell that turns concentrically around the stator depositing bitumen in the form of consistently-sized droplets across the full width of a 1500 mm wide steel belt. The circumferential speed of the Rotoform is synchronized with the speed of the steel belt cooler so the drops are deposited without deformation, producing regular pastilles with an optimum shape.



Release agent spraying system ensures easy release of pastilles from the belt

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Mr. Boucif, ETANCHAL General Manager

Just ahead of the depositor, a spray system applies a release agent consisting of 20% liquid soap in water to ensure easy release of the solid pastilles at the discharge end.

The heat of the pastilles is transferred to cooling water sprayed against the underside of the steel belt as they are transported through the system, resulting in controlled solidification. The excellent thermal conductivity of the steel belt means cooling time is short, so very little vapour or gas can get into the atmosphere and little oxygen can penetrate the product.

The cooling water drops into collecting tanks below the belt, and is returned to the re-cooling plant. At no stage can the cooling water come into contact with the bitumen, ensuring no risk of cross-contamination.

At the cooler end, the formed pastilles – now at a constant discharge temperature of 20 °C or less – are removed by means of a knife and pass via a chute to a collecting belt for bagging.

- No risk of contamination (no contact between product and cooling water).
- No water consumption; no waste water treatment.
- Low energy consumption.
- Minimal cleaning requirement – 1-2 hours/week.
- Low production and maintenance costs.
- Installation on a single floor.

High degree of uniformity for optimal handling and storage properties

While the final form isn't important to ETANCHAL, the Rotoform pastille offers a number of advantages in terms of its handling qualities. Granules are of a highly uniform shape and size, making them ideal for dosing into 25 kg bags, and their high stability means virtually no dust is produced. Their predictable, high bulk density means better packing properties compared with flakes, and their free flowing form makes them ideal for blending, storage and further processing.

High capacity production of a uniform quality end product

The IPCO Rotoform HT granulation system delivers a continuous processing solution that enables ETANCHAL to solidify up to two tonnes of molten bitumen every hour.

The outstanding thermal conductivity of the steel belt enables the heat of the melt to be transferred to cooling water sprayed against the underside of the belt in a quick and controlled manner, resulting in solidification in less than 90 seconds.

From start to finish, the entire process has been designed for maximum reliability, productivity and ease of operation.

Cooling

FEED TEMPERATURE	150 °C
DISCHARGE TEMPERATURE	20 °C

High capacity

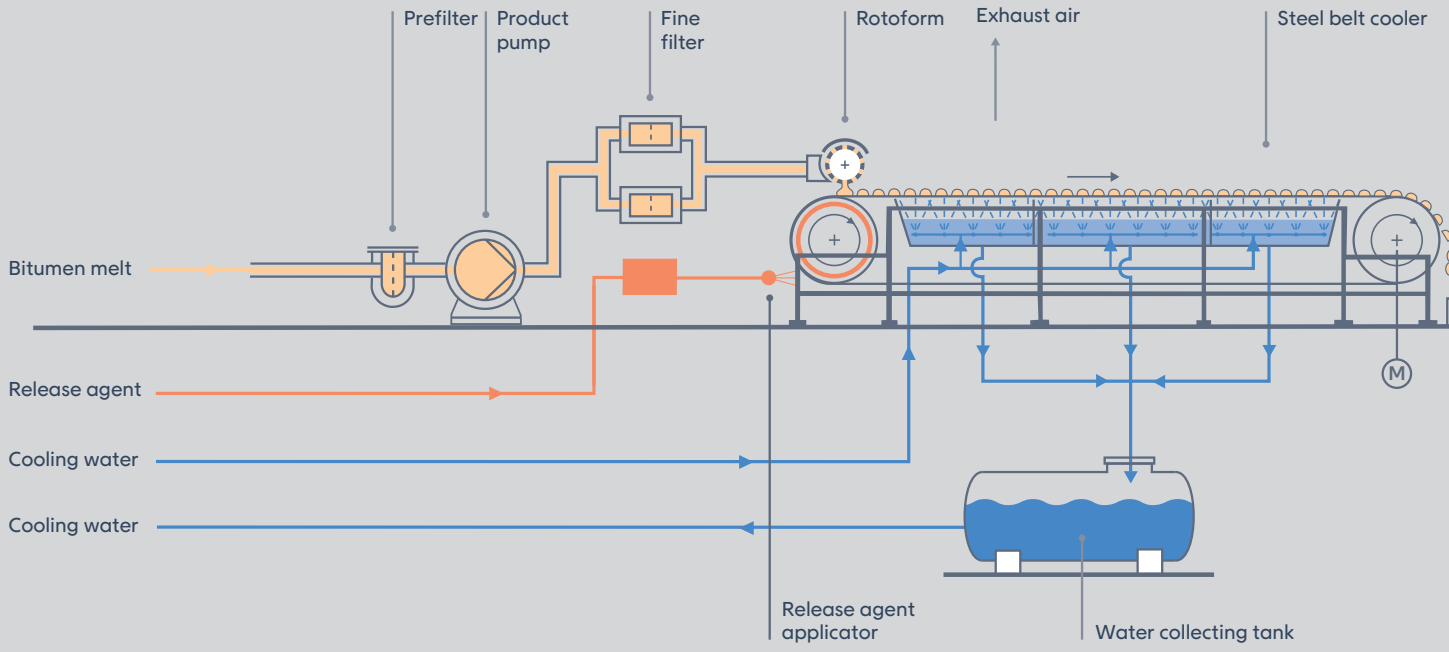
2000 KG PER HOUR

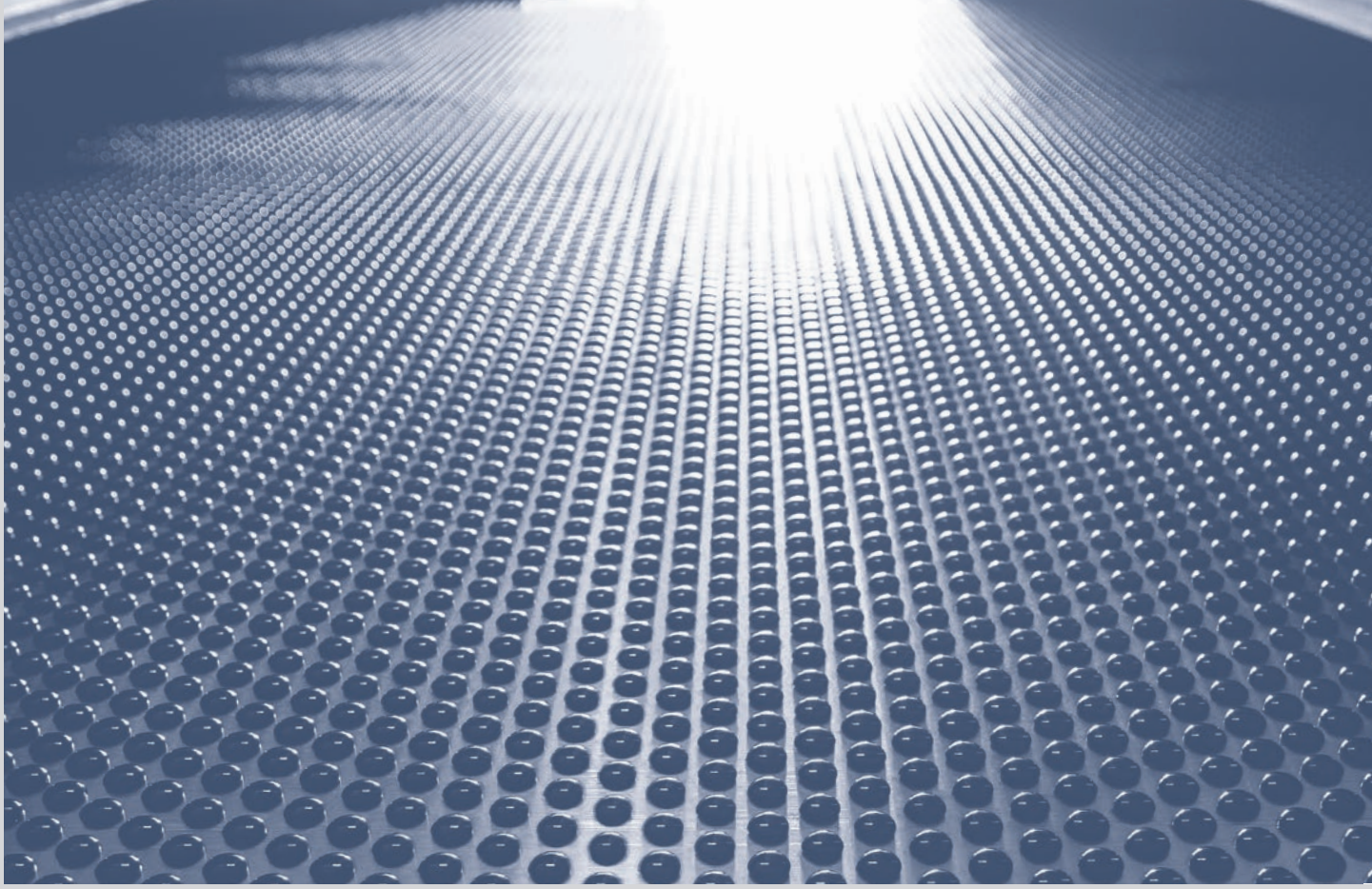
Uniform

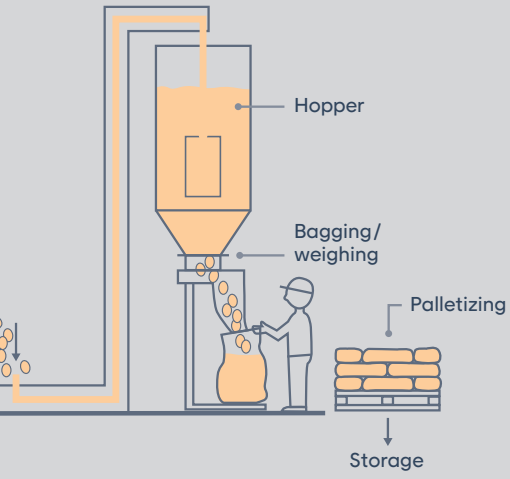
PASTILLE SIZE (AVERAGE)	8 x 2.8 mm
PASTILLE WEIGHT (AVERAGE)	0.13 g

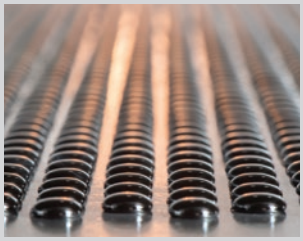
Packaging

AUTOMATED BAGGING IN 25 KG PEBD BAGS









1.5 m

Belt width

Molten bitumen is deposited across a 1500 mm steel belt.

27.5 m

Cooler length

Efficient solidification on a system with minimal floor space requirements.

1.4

Minutes

A belt speed of 19.6 m/min delivers cooling / solidification in 1.4 minutes.

2000

Rotoform units

More than 2000 systems have been installed around the world.

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—STUDY:—BITUMEN—
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