



Bollegraaf
De-inking
Solutions.

Sorting your business



Bollegraaf
RECYCLING SOLUTIONS



Bollegraaf Sorting your business.

At Bollegraaf, we appreciate the fact that, like any other profit-driven operation, the recycling industry is subject to economic changes. We help you sort your business and make it as profitable as possible.

Although domestic recycling initiatives continue to gain momentum and consumer demand for recycled goods is increasing, commodity prices for recycled materials tend to fluctuate. In this respect, you are always looking for the best possible return on your investment. Sorting waste is our specialty. Keeping your operation profitable is our ultimate goal. We believe that the key

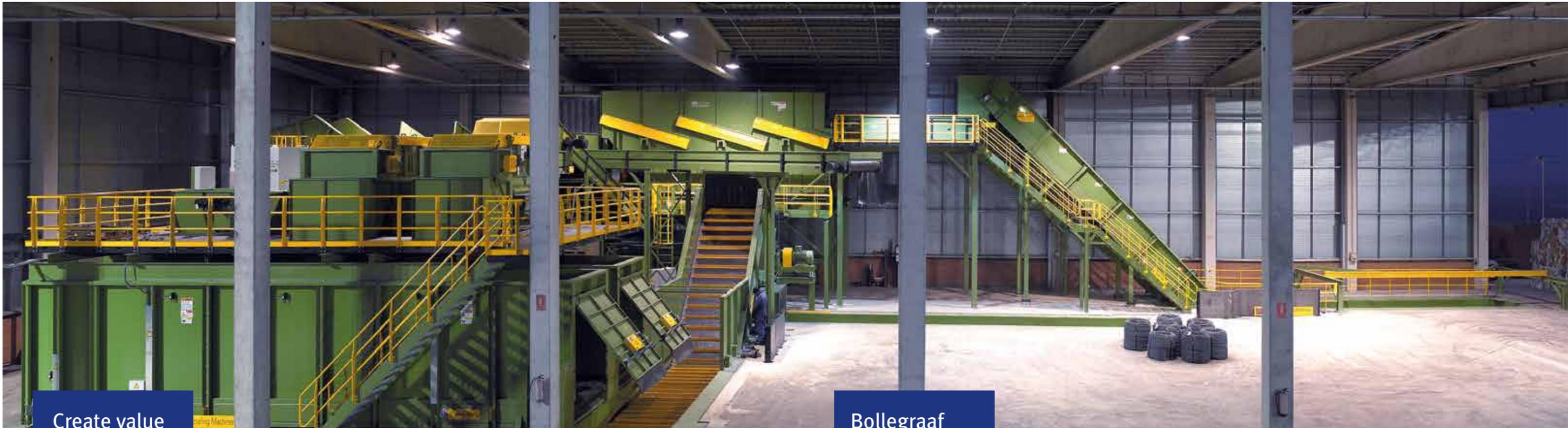
to a profitable recycling installation is creating the highest possible value for your recyclables. In order to do this, your aim should be to maximize separation quality while keeping your operational costs to a minimum. With a track record of 50+ years in the industry, we can help you achieve just that.

Bollegraaf's extensive experience in the recycling industry makes us the ideal partner for finding the best solution for your business model. Your business inspires our engineers and technicians to build machines, systems, and installations tailored to your needs. It is the very reason we keep innovating and improving our machines.

Our technological advancement offers you maximum flexibility, efficiency, and the highest throughput. Choose Bollegraaf and make the most out of waste.

We invite you to see it with your own eyes. Join us for a visit to one of our reference projects or take a tour around our production facility in the Netherlands. I hope to see you there.

Sincerely,
Heiman Bollegraaf, CEO



Create value from Paper & Cardboard Waste.

Optimizing output in terms of economic value against the lowest possible costs per tonne. This is the short-term goal for every installation that Bollegraaf provides. The long-term goal is to ensure permanently low operating costs and achieve an optimal return on investment.

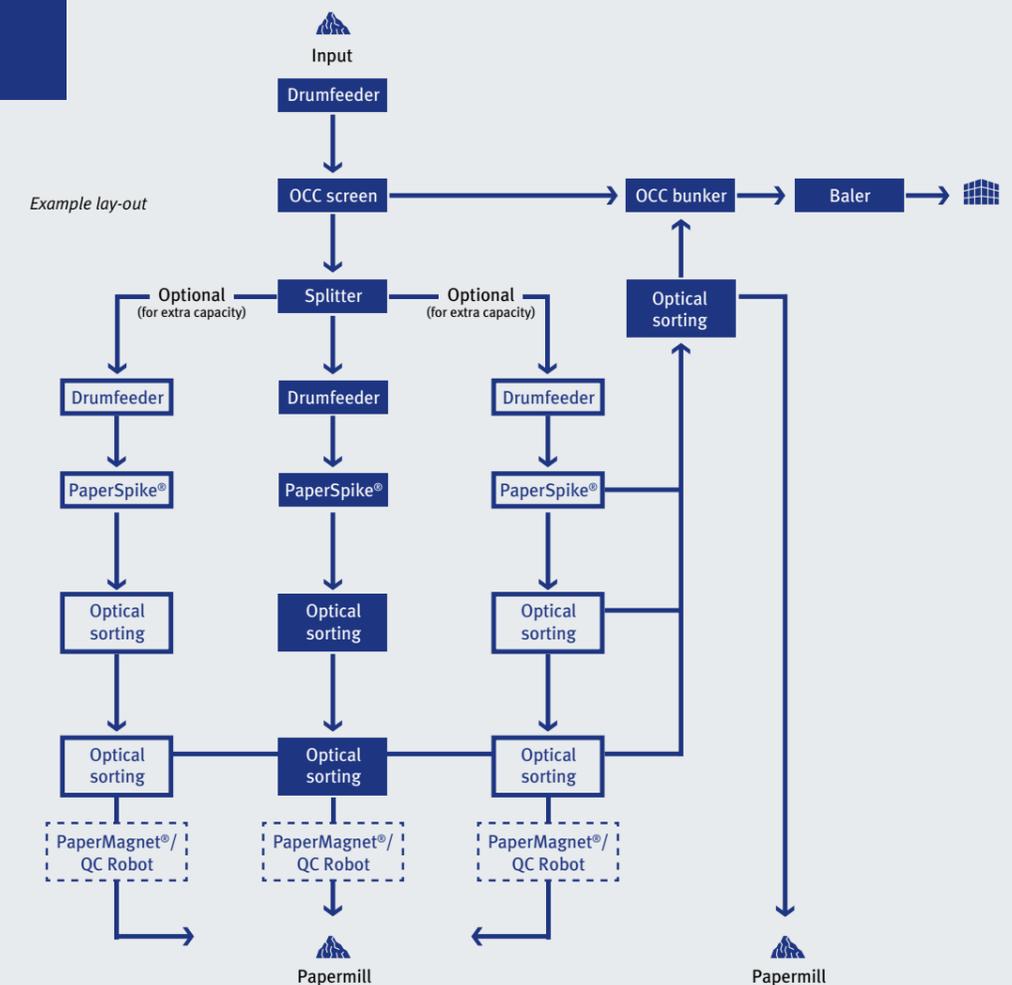
The better the separation, the higher the value of the output. This is the very essence of our paper & cardboard processing equipment: to increase the quality of the end product. At Bollegraaf, we build and provide high-end turnkey installations that combine a range of effective separation technologies that will improve the quality of the output and its intrinsic value. This will substantially reduce de-inking costs for your clients, the paper mills.

Bollegraaf De-inking Solutions Process.

Advantages of working with Bollegraaf

With more than 50 years of experience worldwide, Bollegraaf is one of the most knowledgeable suppliers on the planet. We know there is no single specification for the composition of your waste; it can vary per country, per region, or per city. The requirements for the output of the separation system may also vary, depending on the available markets for recycled products. This is why we believe versatility is key. It inspires us to engineer, build and deliver tailor-made solutions that are easy to use, have a low cost of ownership, perform to your specifications, and offer an excellent return on investment.

- **Versatility:** our installations can be easily adjusted to fluctuations in input streams and/or output requirements. Even daily variations in waste streams can be handled by the adjustability/fine-tuning possibilities of most of our machines. This ensures that a Bollegraaf installation will last for many years and remain up-to-date. Even if the market changes, our installations have the ability to change with it.
- **Quality:** we believe in putting quality above all else. That's why we only use name brand components from experienced suppliers. This ensures our installation will provide the durability you require so you get efficient performance every day with as little downtime as possible. We guarantee your installation will be trouble-free for many years to come.
- **Customization:** we always put our customers first. Our worldwide delivery program consists of complete sorting systems for the waste paper industry and plastics recycling, collectors of industrial waste and household waste, municipalities, and companies that produce voluminous waste. We also feature R&D backup for custom-built products so we can always offer our customers a one-stop shopping experience that meets their exact requirements, whatever they may be.
- **Eco-friendly:** we are not just active in an industry that's rapidly going green. At Bollegraaf we are also very aware of our own corporate responsibilities towards the environment. From our water-based green paint to investments in the latest innovations for reducing energy and oil consumption to the use of recycled materials for all our communication and promotional activities, we are making a conscious effort to help protect our planet.
- **Experience:** 50+ years of worldwide experience in all areas of recycling. We know the local market characteristics and requirements as well as local laws and regulations, and we anticipate market changes in collaboration with our clients. We know recycling!



Example lay-out of a de-inking installation

The purpose of the installation is to separate, sort and process, printed paper and cardboard from an input stream of mixed waste paper, which are then baled and shipped for reuse.

1 The paper waste is lifted from the tipping floor into a drumfeeder, which opens and flattens any large cardboard boxes present. This creates a constant flow and feed.

2 The material is then fed into the Lubo OCC screen, separating the cardboard from the waste stream.

3 The OCC falls to a bunker leading to the baler.

4 5 The remaining paper then goes through a splitter before it is led to the PaperSpike®, which separates any remaining cardboard and de-inking from the stream.

6 The de-inking is led to an optical recovery unit to separate any remaining paper.

7 The paper stream continues to a second optical sorting unit to separate any remaining printed material, leaving clean paper for reuse in paper mills.

8 Optionally, the Bollegraaf quality control robot improves quality control, resulting in separation rates of up to 98%.



Dedicated technology for strong solutions

Bollegraaf
RECYCLING MACHINERY

Lubo Systems
SCREENING & RECYCLING

Bollegraaf Recycling Solutions is the trading name of Bollegraaf Recycling Machinery bv and Lubo Systems bv.

See also www.bollegraaf.com/used for our daily updates on in-stock used machinery



Bollegraaf Drumfeeder

The drumfeeder has been specially designed to optimize your materials input flow. The drumfeeder ensures that your sorting system, baler or shredder has a constant flow of input material for optimal performance.



Lubo OCC StarScreen®

The OCC (old corrugated cardboard) screen is perfectly suited to separate large cardboard from the material flow. The over fraction is large cardboard. Paper, small cardboard, and small material will be screened off. This particular screen is placed at the beginning of a sorting installation to separate large cardboard, making manual separation of large cardboard redundant.



Bollegraaf HBC Baler

The world-renowned Bollegraaf fully automated HBC balers turn large quantities of various types of waste into homogenous bales. The capacity and pressure force of the HBC balers ranges from 25 to 180 tonnes. Besides the HBC range, Bollegraaf also offers a full range of sheer balers (HBK series) and small, semi-automatic balers (SA series).



Bollegraaf PaperSpike® by Grumbach

Designed to deal with curbside paper/commingled collections. Ideally placed after a screen, it is a simple and cost-effective alternative to optical sorting of OCC from your de-inking waste stream.



Bollegraaf RoBB QC Sorting Robot

RoBB can drastically reduce your OPEX in the quality control phase of your sorting line. RoBB delivers optimum purity and separation quality on various materials (various types of plastics, paper, and other materials), resulting in a significantly higher value for your output.



Bollegraaf Conveyor Belts

Bollegraaf Conveyor Belts are world-renowned for their extremely solid construction and guaranteed long operational lives. The complete series comprises of chain belt conveyors, troughed belt conveyors, gravity/sliding belt conveyors, and steel belt conveyors.

Bollegraaf Recycling Solutions is the trading name of Bollegraaf Recycling Machinery bv and Lubo Systems bv.

5-2014

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