



**Bollegraaf  
Solutions for  
Single Stream  
Waste Processing.**

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

Handwritten signature of H.S. Bollegraaf in blue ink.



## Create value with Single Stream Waste Processing.

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.

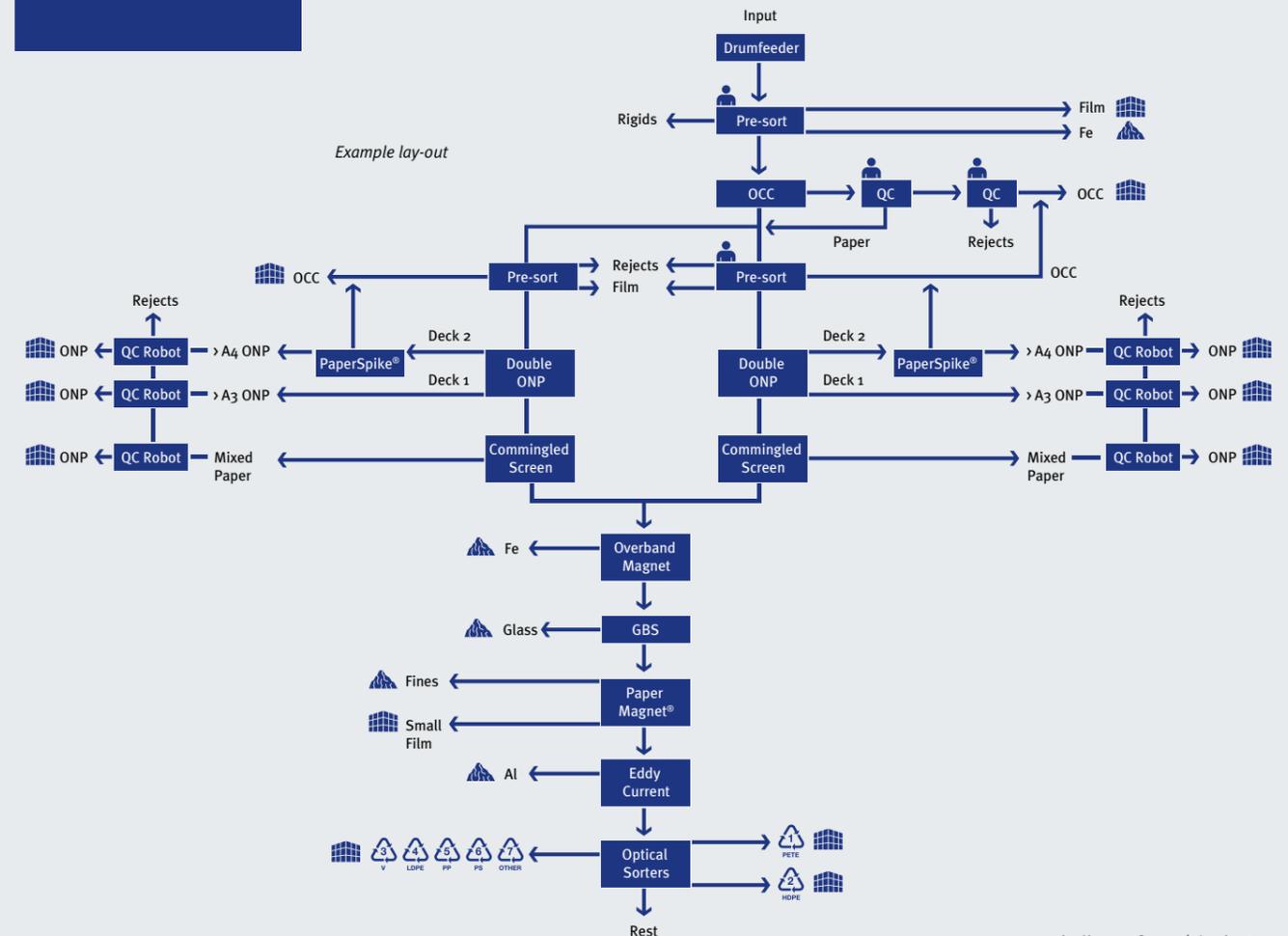
While most EU countries still have a policy that favours source separation, Single Stream waste processing is increasingly becoming an alternative for recycling household waste. Based on our experiences in the United States and the United Kingdom, Bollegraaf is certain that Single Stream waste recycling is an effective, efficient, and sustainable alternative to the way most European countries currently collect and process their waste.

## Bollegraaf Single Stream 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!



[www.bollegraaf.com/singlestream](http://www.bollegraaf.com/singlestream)

## Example lay-out of a Single Stream waste processing installation

The purpose of the installation is to separate, sort, and process valuable commodities, such as newspaper, mixed paper, plastic containers, PET, Tetra Pak, and glass, which are then baled and shipped for reuse.

1 A crane lifts the waste into a drumfeeder, which opens and flattens any large cardboard boxes present. This creates a constant, even flow and thickness.

2 Manual pre-sorting makes sure that any rigid materials, metals, and film are separated from the waste stream.

3 The material stream is then fed into the OCC screen, which separates cardboard from the waste stream.

4 The stream then undergoes further manual pre-sorting to separate any remaining film and rigid materials before it is led to the double ONP screens.

5 The double ONP screens separate the larger than A3 sized paper on the top deck and the larger than A4 sized paper on the bottom deck from the stream.

6 The bottom deck of the ONP screen leads to the PaperSpike®, which separates any remaining OCC.

7 The paper > A3 from the top deck and paper > A4 from the bottom deck then undergo a manual quality control.

8 The material stream continues to a Lubo commingled screen, which separates mixed paper.

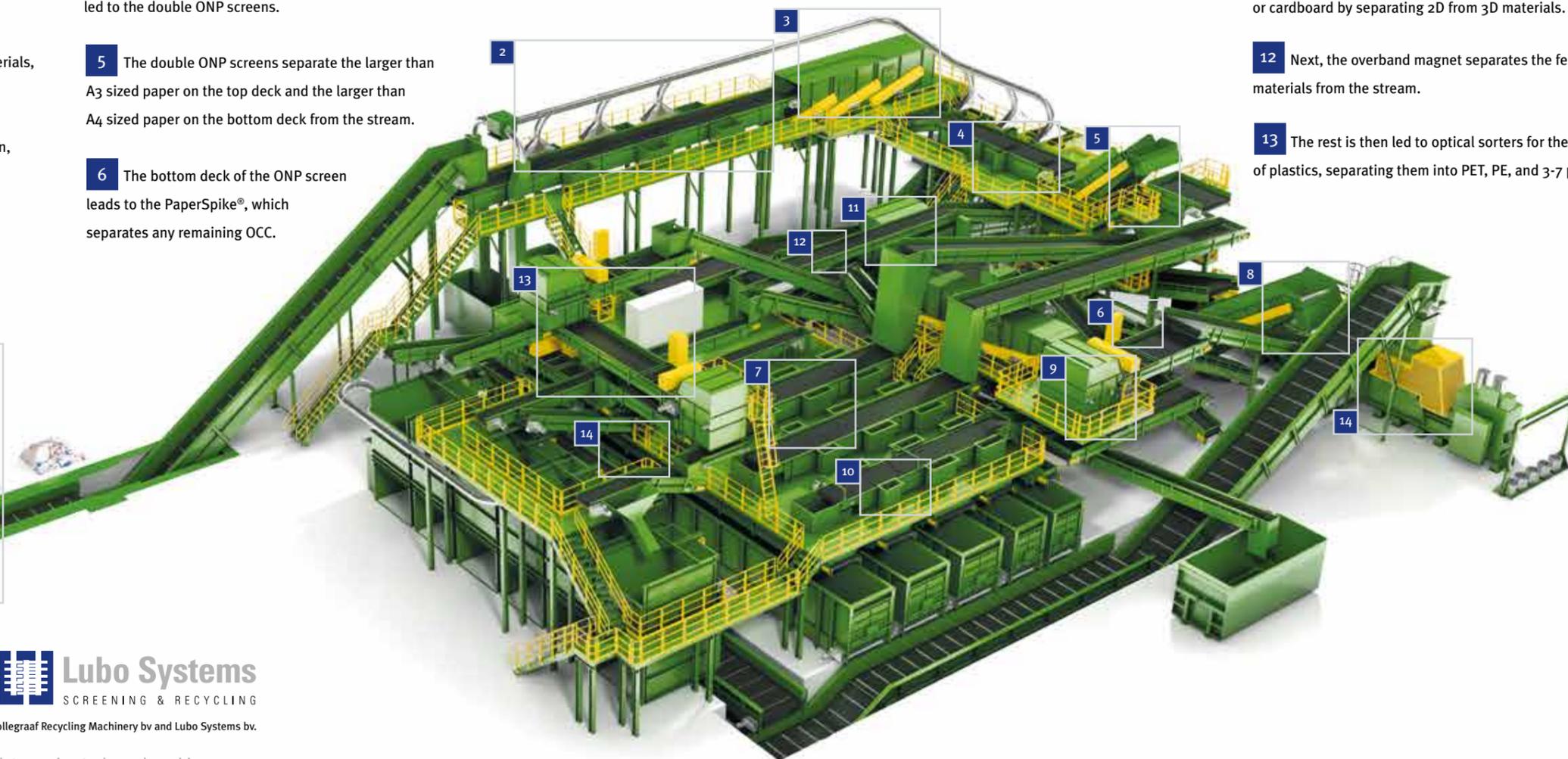
9 This mixed paper is then fed to the optical sorting system to separate any remaining commingled material.

10 The mixed paper then undergoes a manual quality control or Bollegraaf's quality control robots may be an optional addition.

11 The PaperMagnet® then sorts any remaining film, paper, and/or cardboard by separating 2D from 3D materials.

12 Next, the overband magnet separates the ferrous metal materials from the stream.

13 The rest is then led to optical sorters for the positive sorting of plastics, separating them into PET, PE, and 3-7 plastics.



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](http://www.bollegraaf.com/used) for our daily updates on in-stock used machinery



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.



Lubo ONP StarScreen®

The ONP (office newspaper) screen is perfectly suited to separate various paper sizes from each other. The single ONP screen has one screening deck that is placed at an angle between 38° and 45°. The screening deck is placed in its own steel construction. The paper flow is separated into two fractions as a result of the screening process. The standard screen sizes for a single ONP are A4 or A5.



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.



Lubo PaperMagnet®

The PaperMagnet® uses a vacuum force to separate light 2D materials, such as paper, cardboard, and foil, from 3D and/or heavy materials, such as bottles, containers, and stones. Depending on the size and composition of the material, input recovery rates of 85 to 98% can be reached.



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 (HBC series) and small, semi-automatic balers (SA series).

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

5-2014

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