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clarity

sorting solutions for paper and cardboard

The purer a sorting fraction of waste paper is, the more specifically can it be fed back into paper production as a raw material. A decisive quality criterion for waste paper is whether it is composed of bleached (chiefly paper) or unbleached (chiefly cardboard) fibres. Since waste paper is not bleached again when fed back into paper production as a raw material, only waste paper with already bleached high-quality fibres can be used for the production of white or very light coloured paper. Furthermore, the stock of long pulp fibres in recycling is crucial for the constant quality of the end product. Separating short-fibre cardboard materials from long-fibre papers is becoming increasingly important in paper processing. Waste paper, sorted according to quality and colour, is already indispensable for the production of recycling paper, e.g. web printing paper which has to have a specific and stepless grade of whiteness.
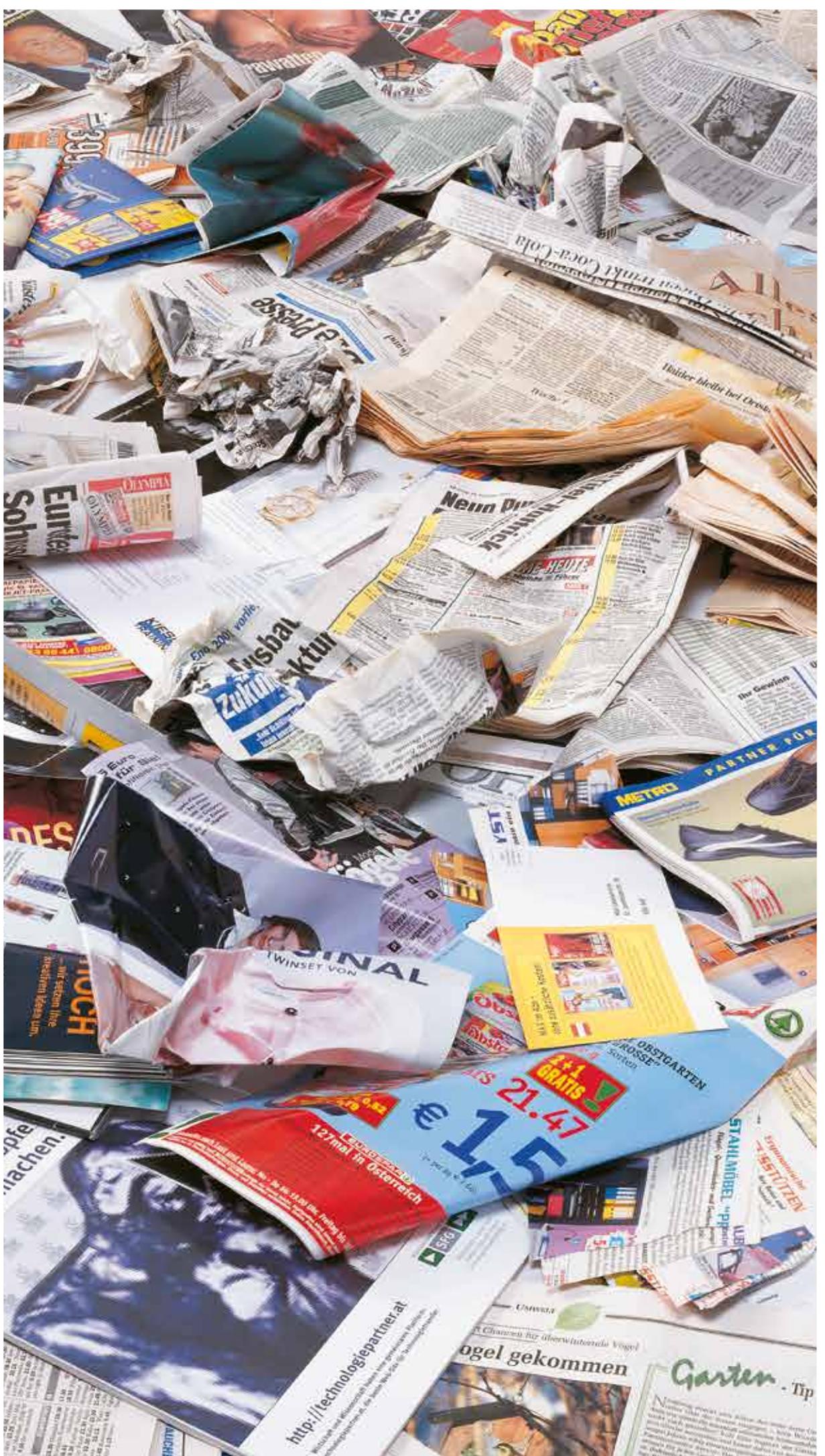

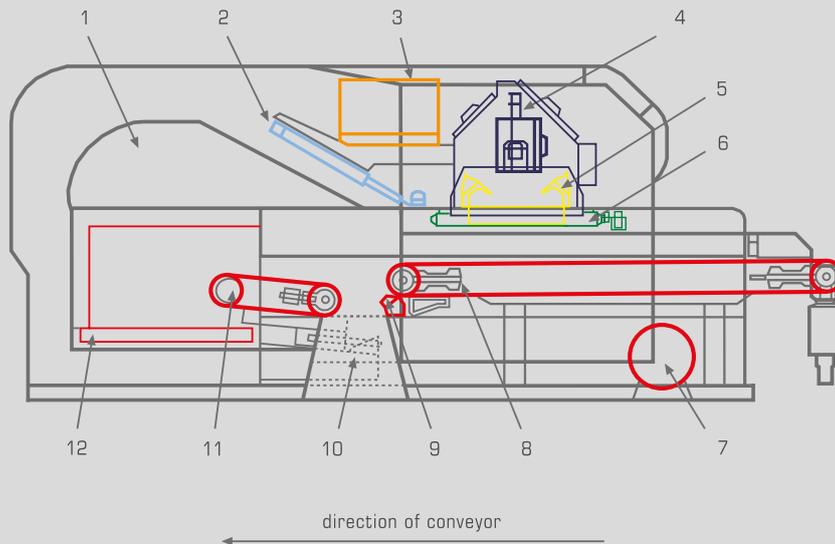Collected waste paper

De-inking (newspaper, magazines)

Cardboard

1- Ejection and expansion room
2- Calibrating facility
3- Air conditioning
4- Optical recognition unit
5- Illumination
6- Automatic cleaning facility
7 - Compressed air storage
8 - Recognition belt
9 - Blow-off jets
10 - Shaft for throughput fraction
11 - Sorting belt
12 - Discharging device

Equipped with many years of experience in areas such as the sorting of glass, stone and plastics, Binder+Co got down to developing a completely new machine to solve the necessary tasks and demands required of an automatic system for sorting waste paper. Using CLARITY, unbleached cardboard and dyed paper made of bleached paper can be sorted from each other. For the first time, automatic production of extremely pure paper or cardboard fractions is now a reality.

The most modern camera technology from Binder+Co is used for the detection of various types of paper and cardboard. The chief criteria for the differentiation of the materials are colour qualities and/or structural and contrast characteristics of the waste paper.

CLARITY guarantees continuous production of high-quality paper as a secondary raw material.
The system is distinguished by its high operational reliability contrasted with a low application of resources, its flexible adaptation to differing throughput amounts and input qualities, and its low personnel requirement.

After being well separated into single pieces, the paper is conveyed to the recognition and illumination unit and thus passes the sensors. In this area the flow of materials is taken over by the optical recognition system and at the same time analysed by the computer, which determines the colour and degree of print.

When a piece is recognised in accordance with the specific set-up conditions, a blow-off signal is passed to the pressurised air valves after a time delay in the form of an image of the size of the piece.
By means of a blast of air the blow-off valves blow the piece onto a separation chamber which is limited by a separation drum. This, in turn, transports the separated material to the ejection area.
The number of blow-off valves simultaneously activated varies according to the size of the piece.

The material identified as the target material leaves the sorting module without being diverted and is subjected to further sorting or fed into the end product

CLARITY is used primarily for sorting cardboard from waste paper materials in industrial and communal collection systems. A prerequisite for optimum operation is an even-as-possible size of pieces to be sorted and a one-layered charging evenly distributed over the width of the machine. This is achieved by pre-sorting and using a special feeder system.

The standard design is fitted with eight cameras independent of each other and recognising up to 16m colours. These analyse in parallel the information gained from the reflected light. CLARITY has a modular structure and one camera module has a working width of 200mm. The standard total width of the sorting area is 1600 mm while the outer dimension is extremely compact. Special adaptations of the detection width are on offer and are individually matched to the demands of throughput.

Due to the very high resolution of the recognition units and the extremely short valve opening times, the highest sorting quality is achieved. Without recourse to an external computer, cardboard and coloured paper are thoroughly separated from paper. Depending on the respective type of installation, CLARITY can be adapted to local demands concerning type of paper and cardboard output.

The allocation of sorting parameters and the evaluations take place in a PC with touch screen. By means of the touch screen, a variety of pre-programmed recipes for combinations of sorting parameters can be activated. Several CLARITY units can be controlled simultaneously by means of a control station. Remote maintenance can be carried out by means of a modem and data-line in order to take into consideration the personnel-saving wishes of the plant operators.
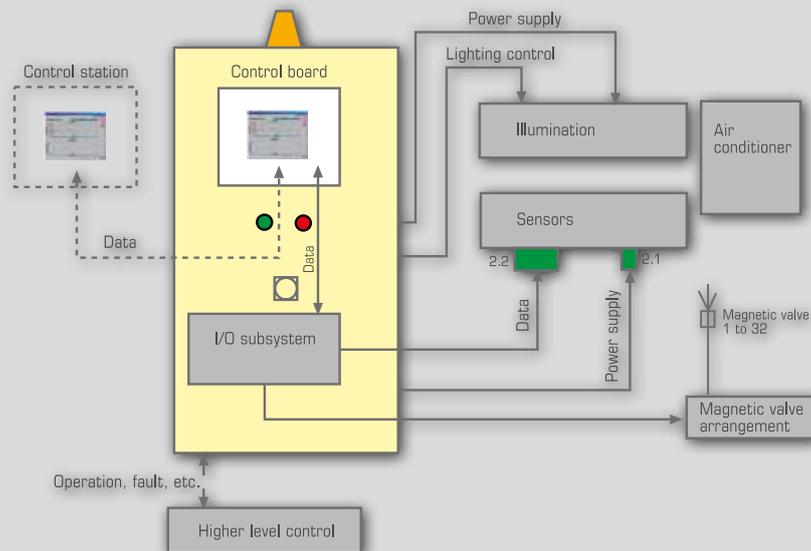
Binder+Co's know-how in the field of optical sorting is demonstrated in the intelligent choice of materials and the perfected technical conception of CLARITY.

CLARITY has been constructed in a well-proven modular system so that integration in an existing paper production plant presents no problems. Apart from a supreme ease of operation what is most striking to the eye is its modern design.

CLARITY has been designed for fully automated sorting operation – thus it does not need its own operating personnel. The sorting quality can be flexibly adapted not only to the current feeding material but also to the desired end product. The user-friendly touch screen considerably simplifies manual operation and checking the machine. Moreover, breakdowns and errors are graphically represented on the monitor.
An automatic self-cleaning unit deals with removing dust and small particles of dirt on the surface of the glass panes of the camera modules.
An automatic self-cleaning device guarantees an optimum removal of dust and minor contaminated particles from the surface of the glass screen of the camera module. The design is fitted with connections for a suction facility for the bulk material and the circulating air.
Various safety systems, such as photo-electric barriers, monitor the unhindered material flow through the machine.

Special attention in the design of CLARITY was given to simple handling concerning assembly and dismantling of spare parts.

The milestone for the future of paper sorting has been laid. Through the expandability of the CLARITY system and constant development and research in the area of paper production, Binder+Co has proved itself as an extremely competent partner in the paper industry.

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- Processing Technology
- Environmental Technology
- Packaging Technology

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Binder+Co's know-how in the field of processing of bulk goods and recycling materials is demonstrated in its wide range of special machines which are deployed globally in the raw materials, construction and chemical industries. The company supplies turn-key plants, from planning and design to production, assembly and commissioning. Highly qualified personnel process metal into intelligent machinery and structures. The special strength of this Austrian company lies in its more than 50 years of experience in creating customised solutions for specific customer requirements.

CLARITY is the name of most efficient paper processing by Binder+Co. Compact machines sort Paper and Cardboard to purest valuable material. Efficient technology packaged in an exciting design.

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