

REC/024/05

RECOVERED PAPER QUALITY CONTROL & RECEIPT INSPECTION: THE EUROPEAN PAPER INDUSTRY'S NEEDS

The aim of this document is to clarify the needs of the European paper industry in the field of recovered paper quality controls and to give guidance to the R&D institutes when developing devices and procedures aiming at cost-efficient receipt inspections at the paper mill gates.

Introduction

Recovered paper quality is one of the main topics in the field of paper recycling. To assure the necessary quality level of the recovered paper and to secure its recyclability, the CEPI Recycling Committee decided to develop recommendations on recovered paper quality control in Europe and created in 2000 the Recovered Paper Quality Control Task Force, with the mandate of establishing (in cooperation with recovered paper suppliers) a standardisation of these controls among the different European countries.

Some documents have been published since then in line with this purpose¹. All these documents constitute a step in the way of a total standardisation of recovered paper quality control. Some quality control methods and devices have been developed with some relatively good results for some recovered paper grades. However visual inspection can still be considered as the basic method to control the quality of the material provided by the suppliers. Subjective, non-accurate and non-standardised controls generate mistrust between suppliers and clients, but cost sufficient procedures exist and have been tested and would deserve further development and experimentation.

Measuring can significantly improve the trust between suppliers and buyers of recovered paper. In this field, technical development and standardisation have to be encouraged. Nevertheless, some initiatives are being taken by the industry and the technical institutes linked with it in this field and in the next years it is expected to see a big improvement in quality control technical measurement and specific procedures.

One needs devices and methods / procedures that can meet the needs of the paper mills using recovered paper, be fully integrated in the supply chain and at the same time take into account all the constraints of the companies.

¹ 'Guidelines for Responsible Sourcing and Supply of Recovered Paper' – January 2006, "Quality Control Guidelines" – September 2004



The Quality Control Task Force of CEPI considers that some guidance should be given to the technical institutes in order to secure that:

- Devices and the procedures to use them are coherent with the standardised quality control guidelines published by CEPI;
- Research focused on the main parameters to be measured in the field of recovered paper quality control.
- Research focused on devices that fit with industry needs in terms of reliability, accuracy, cost-efficiency and security.

1. Why should the controls and measurements be done?

The reasons for controlling the recovered paper quality at the entrance of the mills are the following:

- To improve the quality and the yield (e.g. recycled fibres/total tonnage received) of the material supplied in the medium to long term
- to check the quality of the material delivered in the very short term and improve the quality and the yield (e.g. recycled fibres / total tonnage received) of the material supplied in the medium to long-term
- to obtain the requested recovered paper grade in conformity with the EN 643 definition and the mill requirements.
- to harmonise reception, encourage standardisation and secure the integrity of the supply chain
- to evaluate and to compare raw material from different he suppliers based on comparable/harmonized conditions/parameters on the medium to long-term

The controls should ideally and primarily be done by the suppliers of recovered paper and all along the supply chain.

2. What are the constraints of the paper industry related to recovered paper quality control?

Visual inspection is limited to the surface, which does not necessarily correspond to the interior of the bale. It is essential for the paper companies using recovered paper to control the quality of the recovered paper delivered at the entrance of the mill and to make these controls with recommended and harmonized devices and procedures:

- in a continuing way, i.e. without slowing down the supply process and without any interruption of the production process
- on an industrial scale and with very heterogeneous materials to control
- without unloading the materials and opening the bales – if bales
- with a test that does not destroy the material
- with the best equipment – method combination
- which functioning does not require any additional labour force
- which must be easy to install and integrate in the supply chain



- which should be of a limited size
- which require low maintenance costs
- which represent a limited investment and are cost-efficient

Therefore, on a continuous basis, it is not absolutely necessary to have a very accurate measurement of the value of the parameters. It seems better to have quick and cost-efficient controls with measurements that do not slow down the whole furnishing process with some knowledge about the average variation of the value of these parameters. In addition, very accurate controls and measurements can be made on a regular basis to secure a minimum level of accuracy of the controls and measurements and a clear monitoring of the variation ranges.

The device should detect, as far as possible, degraded vegetable matter and other volatile matters, DIPNs, which are restricted in food contact grades. As a minimum, the device should detect an indicator (matter, smell etc...), which would trigger an alert on the presence of these products. (The precise measurement of the content of these prohibited products is not the aim at this stage.)

3. What parameters are to be controlled?

We recommend that the number of devices to remain as limited as possible.

3.1 Quality

3.1.1 Identification of the grade (in a first step R&D on brown grades and deinking grades.)

- for brown grades: Percentage of corrugated board in a load (in loose or in bales). This would solve the main question in mixed and brown grades.
- for deinking grades: Percentage of newspapers and magazines.

It should be noticed

- that there are mills (the ones that produce cartonboard) that use these two groups of grades (so two different devices would probably cause operational problems.)
- that at least 70% of recovered paper utilisation would be covered.

3.1.2 Unusable materials

Material unusable in the production of paper and board consists of “non-paper components and paper and board detrimental to production”.



Non-paper components consist of any foreign matter in the recovered paper and board which, during processing, may cause damage to machines or interruptions to production or may reduce the value of the finished product, such as metal, plastic, glass, textiles, wood, sand and building materials, synthetic materials, synthetic papers.²

The device should detect, as far as possible, degraded vegetable matter and other volatile matters, DIPNs, which are restricted in food contact grades. As a minimum, the device should detect an indicator (matter, smell etc...), which would trigger an alert on the presence of these products. (The precise measurement of the content of these prohibited products is not the aim at this stage.)

3.1.3 Moisture

3.1.4 Level of accuracy to be aimed at concerning the various elements

For the elements considered:

- Desirable Grades (1.01, 1.02,1.04, 1.05,1.11): 5% deviation in the determination of desired papers
- Unusable materials: 0,1% deviation
- Moisture: 0,2% deviation

3.2 R&D parameters

1.1 Feasibility study NIR

1.2 Any other possibilities outside NIR

1.3 Lab scale testing and evaluation of test results

Any kind of technology should be considered (not only NIR). The chosen technology should accomplish with the following criteria:

- *Fast measurement: less than 30 seconds.*
- *Accuracy levels: the ones formerly proposed.*
- *Measurement of the whole material.*
- *Energy: reduced energy costs.*
- *Hazard: non-hazardous technology.*
- *Maintenance: as simple as possible.*

3.3 Sample size

3.1 Every truck load completely

3.2 Representative sample upon inspectors' decision

3.3 A fixed number of bales

3.4 Only one bale per load

² EN 643, European List of Standard Grades of Recovered Paper and Board, June 2002



The preferred option for the industry would be the measuring of the content of the complete load. If it is not technically possible, then technical institutes should tell us what should be the size of a sample to be a reliable measure, depending on the objective:

- representative average for the load*
- detect wrong/bad bales*
- other options*

3.4. Locations where measurement should be made

- 4.1 At the suppliers gate
- 4.2 Direct at the gate upon arrival of the truck
- 4.3 At the unloading place
- 4.4 At a separate inspection station.

There might not be enough space for the measuring in every location.

The preferred option for the industry would be at the suppliers gate and made by them. However, if this is not possible and the measurement must be done in the paper mill, the preferred option for the industry would be the direct measuring at the gate upon arrival of the truck. If it is not possible, then measuring should be done with a simple device in the Recovered Paper yard, but not in a separate inspection station (there are many mills with no room for it)

3.5 How should the load be measured?

- 5.1 Shoot and ready (fully automatic procedure)
- 5.2 Manual device
- 5.3 Static device

The preferred option for the industry would be an as simple as possible device operation to reduce staff costs.

3.6 Device and procedure development

- 6.1 Development of hardware (the measuring equipment)
- 6.2 Development of software
- 6.3 Development of procedures

The devices have to be tested with paper mills
