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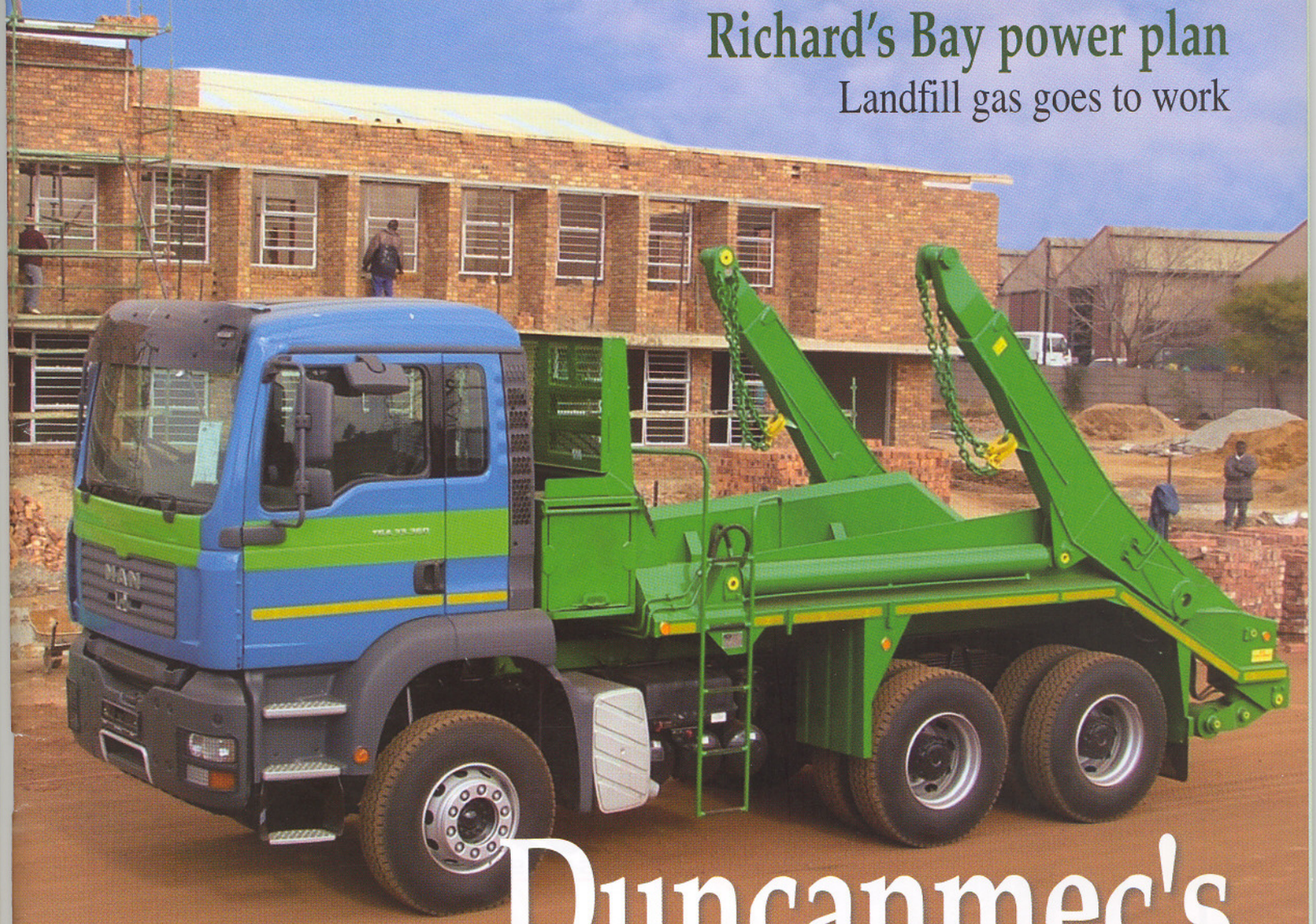
Promoting waste management and cleaner production

RéSource

Oil recyclers' slick initiative
Quest for the missing litres

Street sweepers
It pays to be clean

Richard's Bay power plan
Landfill gas goes to work



Duncanmec's
aluminium equipment factory

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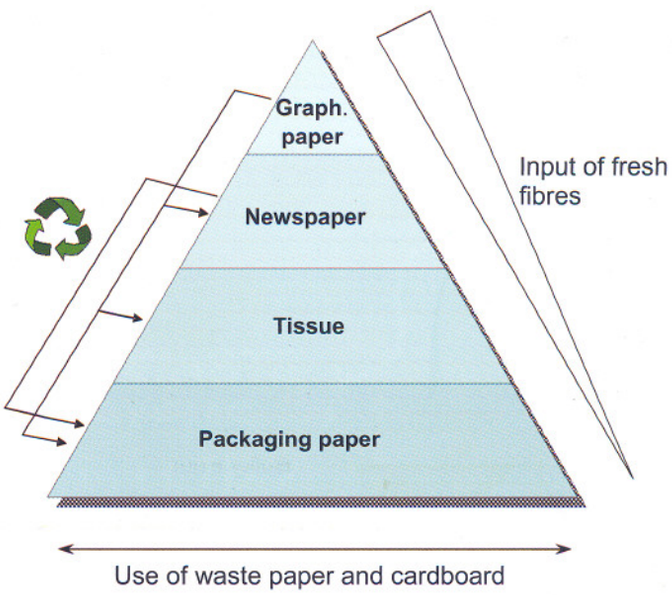
by Olaf Pollmann

The aim of zero waste is a good goal for the future, but we have to accept that an affluent society will always cause natural waste and produce man-made waste.

The accepted minimisation hierarchy of the three Rs, Reduce, Reuse and Recycle, does not focus on the non-recyclable remnant. I believe that recycling itself has to extend into the production process and should apply to the use of new materials.

This aim will soon be legislated in the proposed Waste Management Bill that wants industry to reduce the amount of waste generated and to ensure that waste is recycled, reused or recovered at every opportunity, in an environmentally sound manner before being disposed.

Our research into production processes has shown a potential for minimising the input of primary raw material in most fields of production by optimising and raising the input of secondary material.



Formula

The optimisng tool is based on the different quality requirements as one of the most important boundary conditions of the production process. To find the optimised composition of the new product with the same quality requirements and a higher content of secondary or recycled material, the tool uses evolutionary algorithm.

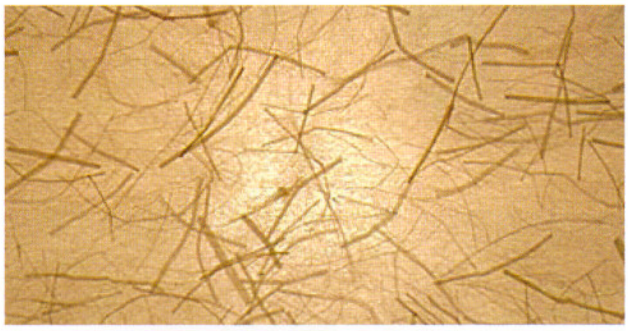
This calculation method is effective in finding a possible optimum among all the possible solutions. None of the other methods available are as fast and precise.

The achievable optimisation has been proven in the recycling of used paper, the input of used and fresh fibres depending on the type of new paper. Paper production is affected by the down-cycling of paper quality, and that, in turn, depends on fibre lengths. Fresh fibres are longer than used ones and have to be more prevalent in paper of a higher quality standard.

There is a potential in almost every paper class to raise the percentage of recycled waste paper while retaining the set paper quality

Fibre status

Each recycling process decreases fibre length by cleaning and separating of the fibres. The use of secondary fibres is limited by their length and recycled status. In theory, fibres could be used up to six times, but in practice are used up to three times in paper production.



Paper fibres magnified

Optimising paper recycling and retaining a set qualty, was proven to improve the rate of use of waste paper in two different paper brands. The results also showed that there is a potential in almost every paper class to raise the percentage of recycled waste paper while retaining the set paper quality.

In newsprint production, for example, the input of secondary recycled fibre could be raised to more than 72%, about 2% more than it regularly practices, according to research in the German paper market.

In tissue production, the input of recycled paper could be raised by about 7%.

Experience in paper production proves that sub-streams of human waste can be optimised by the use of evolutionary algorithms. **3S**



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