Mister Plasterboard

Photo: Gypsum Recycling

Henrik Lund-Nielsen has always been interested in recycling. By making plasterboard waste usable, he solves a climate problem at the same time

By Morten Andersen

"I don't see myself as an environmental saviour. But I am certainly resource-oriented!"

Henrik Lund-Nielsen is wearing a shirt and tie, his appearance indicating that the director of Gypsum Recycling considers it a thing of the past to associate recycling with long hair and knitted sweaters. Since it was founded in 2001, his company has achieved international success with sales in UK, USA, Japan, Norway, Sweden, Ireland, Holland, Belgium and Switzerland, in addition to a leading position on the Danish domestic market.

"I am an economist by training, and previously had management jobs in the furniture sector and related industries. But I have always had an interest in recycling. What drives me is the belief that things have a value," explains Henrik Lund-Nielsen.

Gypsum Recycling has developed a system that recycles plaster from plasterboard. It makes an otherwise wasted resource not only usable again, but also provides a considerable benefit for the climate.

Worldwide, it is estimated that around 15 million tons of plaster waste are produced every year. Gases produced by the plaster waste, along with other landfill waste, generate around 3-5% of combined global greenhouse gas emissions. In comparison, the global aviation industry generates about 2% of the emissions.

"Unfortunately, it is normally only the energy and transport sectors that attract attention in relation to climate. But waste in disposal sites also contributes a lot to the greenhouse effect, so we can really make a positive impact on climate change by recycling more. Politicians are starting to realise this, but there is still far from enough attention being paid to it," says the director.

Although he doesn't see himself as an environmental saviour, Henrik Lund-Nielsen took a significant financial risk when he put his own money into the company:

"A company of this type will always make a loss in the early years. I invested because there was an element of the environment in the company's foundation. I have no doubt that the environment will remain in focus in the long term." •

Old plasterboard is worth its weight in gold

The Danish waste management model is designed to maximise recycling. Gypsum Recycling is one of the international success stories in this area

By Morten Andersen

Gypsum Recycling has developed a system that strips the plasterboard of its paper cladding and grinds the plaster to a powder of almost the same quality as virgin plaster. To be precise, the finished product is 99% as pure as ordinary plaster. This is easily good enough for making new plasterboard that is comparable to all the others, and is evidenced by the fact that the world's five biggest manufacturers of plasterboard – Lafarge, BPB, USG, National Gypsum and Knauf – all buy the product.

In Denmark, the majority of the country's 200 or so municipal recycling centres are customers of Gypsum Recycling, and today 20-25% of the plaster used domestically comes from recycling. The company's director Henrik Lund-Nielsen cannot help but smile when he reveals a sales trick:

"Many municipalities are initially a bit sceptical and have difficulty believing that they have so much plaster waste that it can

Gypsum Recycling employee with recovered plaster for recycling. The separated nails and paper are also recycled.

Photo: Zenit and Pinkerton, Gypsum Recycling

pay to be one of our customers. So we offer them a free three month trial period. That gives them time to discover how much plaster they actually have, and after that they can't do without us. It never fails."

Double climate benefit

Although the municipalities pay for delivering their plaster waste for recycling, it is cheaper for them than taking it to a waste disposal site. At the same time, Gypsum Recycling's solution delivers a double benefit for the climate. Firstly, it takes less energy to use plaster that has already been produced than to manufacture virgin plaster. And secondly, it avoids the climate-damaging effect of dumping plasterboard at a waste disposal site. The paper cladding of plasterboard encourages the formation in waste disposal sites of methane, a greenhouse gas which is 20 times more potent than CO2.

In fairness, it should be added to the equation that the collection and processing at Gypsum Recycling requires energy and produces CO2. But the net result is that the atmosphere is saved the equivalent of 0.2 tons of CO2 for each ton of plaster waste sent for recycling rather than to the disposal site.

"This climate benefit gives our customers certificates, and I can tell you that they are very happy to have them. This is especially the case for recycling centres, which are the key elements in getting the system to work. It is they who do the sorting of waste, so their motivation is crucial," says Henrik Lund-Nielsen.

Avoiding toxic hydrogen sulphide

In countries like Denmark, where incineration plays a major role in waste management, there is an extra benefit to recycling plaster. It is only the paper cladding, which comprises around 10% of plasterboard, which can be combusted. The other 90% will become furnace slag if plasterboard is mixed with other waste and put in the incinerator.

"It is not only a massive waste of resources but also an environmental problem when the plaster comes in for incineration. Every municipality can see this," says Henrik Lund-Nielsen.

The municipalities receive all the waste from private households. And since virtually every municipality agrees that plaster should be recycled, today over 80% of plasterboard waste from private homes goes for recycling. The overall proportion of plasterboard waste recycled in the country is however only 50-60%. Businesses have been a bit slower in joining in, but they are now beginning to come on board.

In countries where plasterboard is deposited at waste disposal sites where it is mixed in with household waste, another more serious environmental problem arises. Plaster contains large amounts of sulphur which normally remains chemically bound as sulphate. But microorganisms from the household waste can liberate the sulphur, which leads to the formation of the toxic gas hydrogen sulphide. The EU has therefore agreed that plaster waste will henceforth be deposited separately at waste disposal sites, which makes recycling an obvious thing to do.

Britain takes the lead

Measured in tons, Denmark is still the biggest market for Gypsum Recycling, but the new EU rules will alter that picture, foresees Henrik Lund-Nielsen.

"Britain is the first country which has adopted the EU directive into its own legislation. At the same time it has imposed special taxes on disposal at waste dumps, and these taxes will increase significantly in the coming years. I noticed that Prime Minister Gordon Brown referred to the environmental issue when the tax was announced. I expect that Britain will soon become our biggest market, and that other countries will follow when they introduce the EU rules." •

The Danish waste management model

64% of the waste Denmark produces is recycled, a very high percentage in an international context.

Waste should preferably be recycled. If this is not feasible, waste should be incinerated so that at least some energy can be obtained from it. Only when it is not feasible – for example because the waste is not combustible, or because incineration would create insurmountable environmental problems – is the waste taken to a disposal site.

This is the waste management hierarchy that has operated for many years in Denmark, where currently 64% of all waste is recycled.

The Danish waste management model works through a combination of traditional legislation and economic instruments in the form of taxes and fees. Dumping waste is the most expensive solution, incineration is cheaper, and recycling is free. Moreover, there are taxes on packaging, plastic bags and disposable tableware, as well as on nickel-cadmium batteries.

Citizens don't actually pay when they take waste to municipal recycling centres, but the municipalities' costs are determined by which solutions are chosen. So citizens experience the costs through their tax bills. Businesses pay taxes and fees when they dispose of their waste.

For some types of packaging there are deposit schemes, for example packaging for beer and soft drinks.

Municipalities are allowed to charge fees to cover the cost of handling particular types of waste from businesses. In addition certain types of product – such as tyres and lead-containing batteries – are subject to special charges to finance collection and recycling. •