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### Let's talk about Chemical Recycling

## "There must not be a cannibalisation of material flows".

### Interview with Michael Ludden, Managing Director of Sutco Recycling GmbH

#### Mr. Ludden, what potential does chemical recycling have in your view?

The potential is clearly between mechanical processing and energy recovery. When incinerating, only the energy of the plastic waste is used, the material itself is lost; therefore, new material has to be obtained from fossil resources. But unlike mechanical recycling, chemical recycling breaks down these compounds instead of utilising existing polymers as material.

#### In practice, in which area is it feasible?

For me, chemical recycling becomes feasible whenever mechanical recycling proves difficult. It makes sense to break up the carbon compounds, clean them and polymerise them again. That is not taking place at the moment, however. Unfortunately, the crux of the matter is that chemical recycling currently only deals with reprocessing of polyolefins such as polypropylene and polyethylene. These plastics consist only of chains made up of carbon and hydrogen. The large amount of other plastics that also contain nitrogen, sulphur or oxygen is not the focus of chemical recyclers, because these substances interfere with pyrolysis. However, polyolefins can be processed very well in mechanical recycling. This type of recycling is ecologically much more sensible because the plastics remain intact in their composite structure. Firstly, no material is destroyed, and secondly, fewer resources, less energy and less water are required for reprocessing. If chemical recyclers now also use the material that the mechanical recyclers can process very well, this will lead to a cannibalisation of the material flows. This must be prevented at all costs.

#### With which approach?

It is the task of politics to prevent this. In principle, there is a legally defined five-level waste hierarchy. Mechanical recycling is of higher value than chemical recycling. This principle must not be disrupted. Efforts to sync mechanical and chemical recycling are already underway; however, in my view, this is very dangerous, as it would have a considerably negative impact on the environment. However, the environment must always be the main priority.

### **Isn't the lack of economic viability thwarting the progress of chemical recycling?**

From today's perspective, large-scale chemical recycling may not be economical, but that could all change in the years ahead. Ten years ago, you wouldn't have thought that you could get more money for recyclates than for virgin material. What we call uneconomical today may well prove to be economical in the future given a different political framework. It is important that politics steer developments in such a way as to enable a permanently sensible future utilisation of chemical recycling, with the assurance that mechanical and chemical recycling complement each other optimally. This would mean, for example, that polyolefins are not chemically recycled. Once again, cannibalisation would be the worst solution, because it would lead to environmental damage.

### **To what extent does chemical recycling affect Sutco's business?**

It does not affect our business model; on the contrary, as Sutco builds sorting plants, which are absolutely necessary in mechanical recycling before the actual processing of the material, but are also indispensable for chemical recycling. We have already received several enquiries.

### **How will chemical recycling develop?**

Chemical recyclers are currently in a pilot phase. The procedures are all only running on a small scale. Some plants have a capacity of maybe 10,000 tonnes a year. By comparison, we are building sorting plants for 100,000 tonnes today. Chemical recyclers will face problems that many don't even see yet. On a small scale, they often don't even materialise. One example is the treatment of foreign elements like sulphur or nitrogen. At 5,000 tonnes a year, the end product is still acceptable. At 100,000 tonnes, you suddenly have a large waste stream that has to be treated, resulting in the necessity to build desulphurisation plants and much more, something that will become very expensive. And that is one of the reasons why I am convinced that mechanical recycling will always be cheaper than chemical recycling. That's why the main material flows will go into mechanical recycling. Still, policymakers have to be careful not to make mistakes in that regard.

### **What's your view on quotas for the use of recycled material?**

I am absolutely in favour of a product-related recyclate input quota. It will boost the market for recyclates enormously, and thereby also ensure that the material flows become greater. Subsequently, anyone who produces a hair shampoo, for example, must ensure that their packaging bottle has the specified recycled content. In return, they have to pay the supplier the requested price. When supply becomes scarce, prices will rise. This creates a pull from the market into recycled plastics, and consequently more will be invested in recycling plants. If you plan a sorting plant and a processing plant today, you have to be able to expect a continuous input over several years and a continuous output at a reasonably constant price. Then the material quantities also increase. That is why recyclate quotas are so important. But at the same time, policymakers must see to it that chemical recycling does not absorb these material quantities. These are their two main tasks. If they can manage that, then many things will become feasible.

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**Industry interviews on chemical recycling:**

The world is facing great challenges: The careful use of available resources is one of the most important goals of our times. The challenge for our generation is to keep elaborately produced materials in the economic cycle for as long as possible.

The social focus is always on plastics, often synonymous with packaging waste with and from plastics, and their recyclability.

Chemical recycling has recently been presented more and more often as a solution to this problem.

The future perspective is that plastics from various applications that cannot be recycled mechanically can be broken down to their basic components using chemical processes and therefore be put to new, high-quality utilisation.

In an exchange with experts from the involved stakeholders, the VDMA is discussing in which areas and to what extent chemical recycling can complement the established recycling processes.

**VDMA Plastics and Rubber Machinery**

More than 200 companies are members of the trade association, covering over 90 per cent of the industry's production in Germany. Ten per cent of our member companies come from Austria, Switzerland and France. The German member companies represent a turnover of 7 billion euros in core machine manufacturing and 10 billion euros including peripheral technology. Every fourth plastics machine manufactured worldwide comes from Germany in terms of value; the export quota is 70 percent. The chairman of the trade association is Ulrich Reifenhäuser, managing partner of Reifenhäuser GmbH & Co KG.

**VDMA Waste and Recycling Technology**

The trade association represents the interests of more than 130 manufacturers of waste and recycling technology. Many of our member companies come from Austria and the Netherlands. Members of the trade association are manufacturers of entire plants as well as individual machines for sorting, processing and recycling secondary materials. The member companies represent a turnover of around 3 billion euros; the export rate is almost 70 percent. Chairman of the VDMA Waste and Recycling Technology Association is Michael Ludden, managing partner of Sutco RecyclingTechnik GmbH.