LIME FOR FLUE GAS CLEANING

sma mineral

Clean Flue Gases – Clean Air

SMA Mineral is one of the largest producers of lime products in the Nordic countries.

We have extensive experience of lime and handling lime. Applying lime, a product of nature, is the most natural method of resetting the balance in nature.

The path lime travels to its different areas of use can be viewed as an eternal ecological process, where very little of the raw material is wasted.

And its areas of use are many – from gardens, forestry, agriculture, and lakes to steel mills, power plants, the pulp industry, water purification, and flue gas cleaning.

Lime is found in all geological formations, all over the world. SMA Mineral masters the many possibilities for using lime, as well as the technology, processes, and areas of use in which it plays a crucial, versatile and practical role.

We have extensive experience of the industry. Our headquarters is located in Persberg, Värmland's largest mining region with a tradition stretching hundreds of years back in time.

One application in which SMA Mineral has specialized is lime products for flue gas cleaning.

Today, many different methods are available for cleaning flue gases, and most of them use lime products in the process.

SMA Mineral has extensive experience as a supplier of lime products to plants with various types of combustion and flue gas cleaning methods. The reactivity and high purity of the lime are essential for efficient flue gas cleaning.

Three Cleaning Methods

Modern waste combustion had its breakthrough in the 1960s and 1970s. It was not long before plants were faced with emission requirements, leading to major investments in highly sophisticated flue gas cleaning technology to minimize impact on our environment. Many cleaning methods are available today, but lime products are included in most of them. The methods can be divided into three main groups: dry, wet-dry, and wet.

Dry Method

Lime is added to the flue gases either in the furnace or in the flue. Water is sprayed on the flue gases to cool and vaporize them. After that dry slaked lime $Ca(OH)_2$ is added to the flue gases to bind acidic components such as HCl, HF, SO_2, and SO_3. A dry product is formed that is mixed with fly ash, which is captured by a downstream filter.

If combustion of the waste takes place in a fluidized bed, lime can be added through a separate infeed in an unrefined form such as limestone, $CaCO_3$, or dolomite, $CaMg(CO_3)_2$.

Wet-dry Method

The flue gas is sprayed in a reactor with a slurry consisting of lime mixed with water. The slurry dries at the same time that it reacts with the acidic elements in the flue gases. A filter captures the particles in the flue gases most effectively.

This method can use either burnt or slaked lime. The lime is used most efficiently, however, by using burnt lime and slaking it on site.

Wet Methods

In one wet method the flue gas is washed with water in a column or in a scrubber.

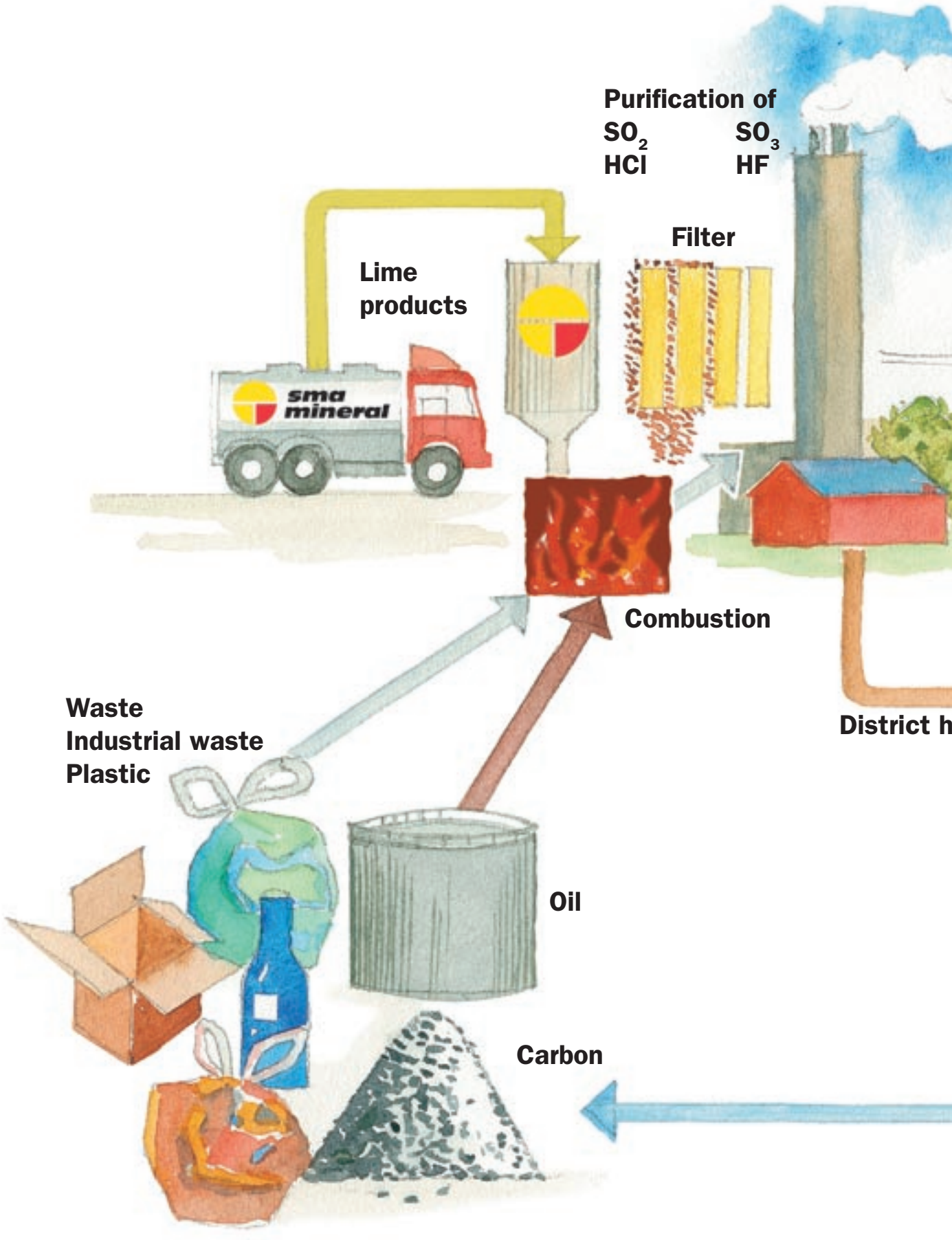
In the other wet cleaning method, the flue gas is cooled enough for the vapor to convert from the gaseous phase to the liquid phase.

This liquid phase, or condensation, contains many pollutants and must therefore be cleaned before release.

Lime is used in the cleaning process to neutralize the condensed material. After that the pollutants are precipitated using a flocculent, which is disposed of later.

Adding lime and active carbon substantially contributes to the separation of dioxins, mercury, and sulfur dioxides.

Flue Gas


Purification of
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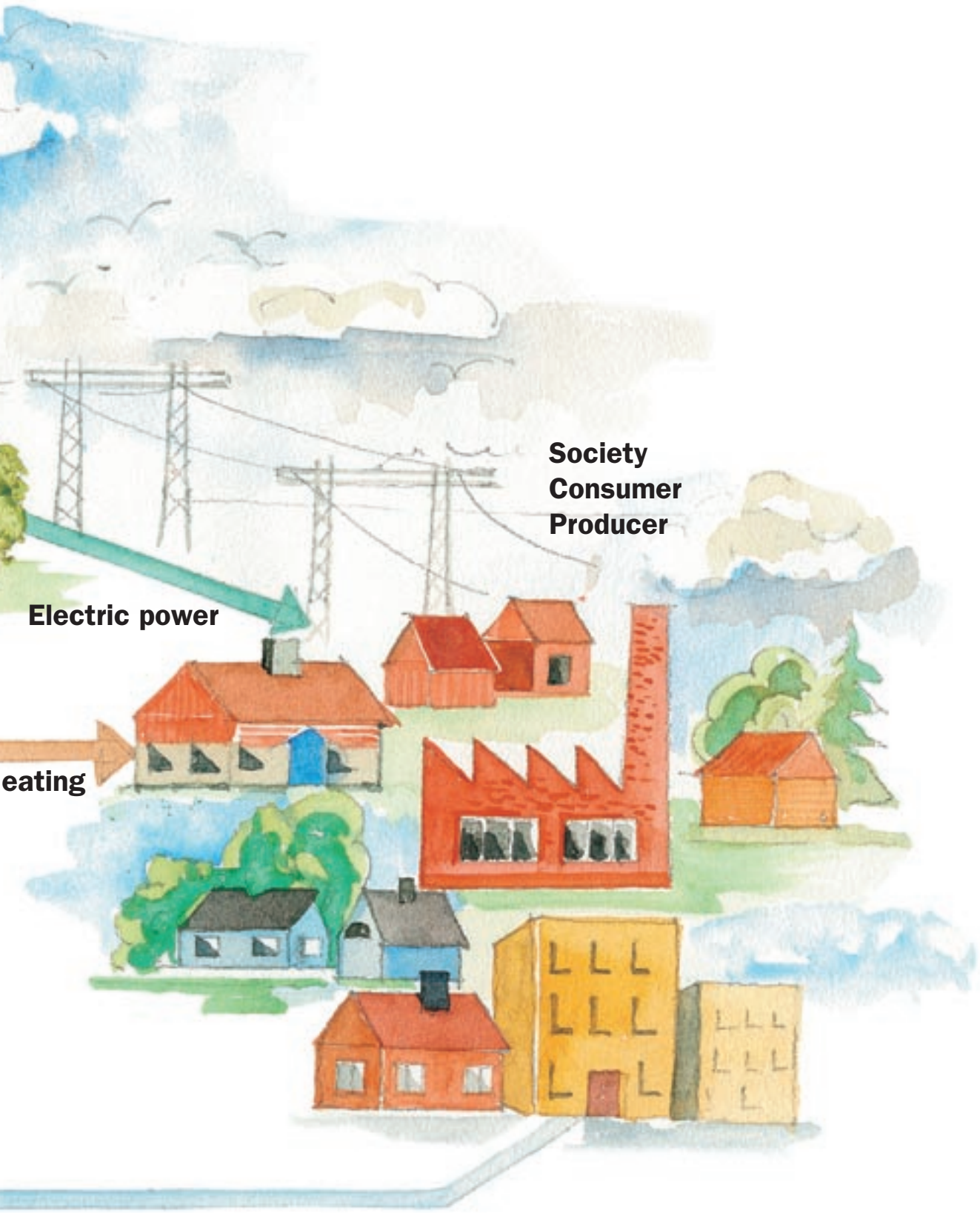


Complete Security

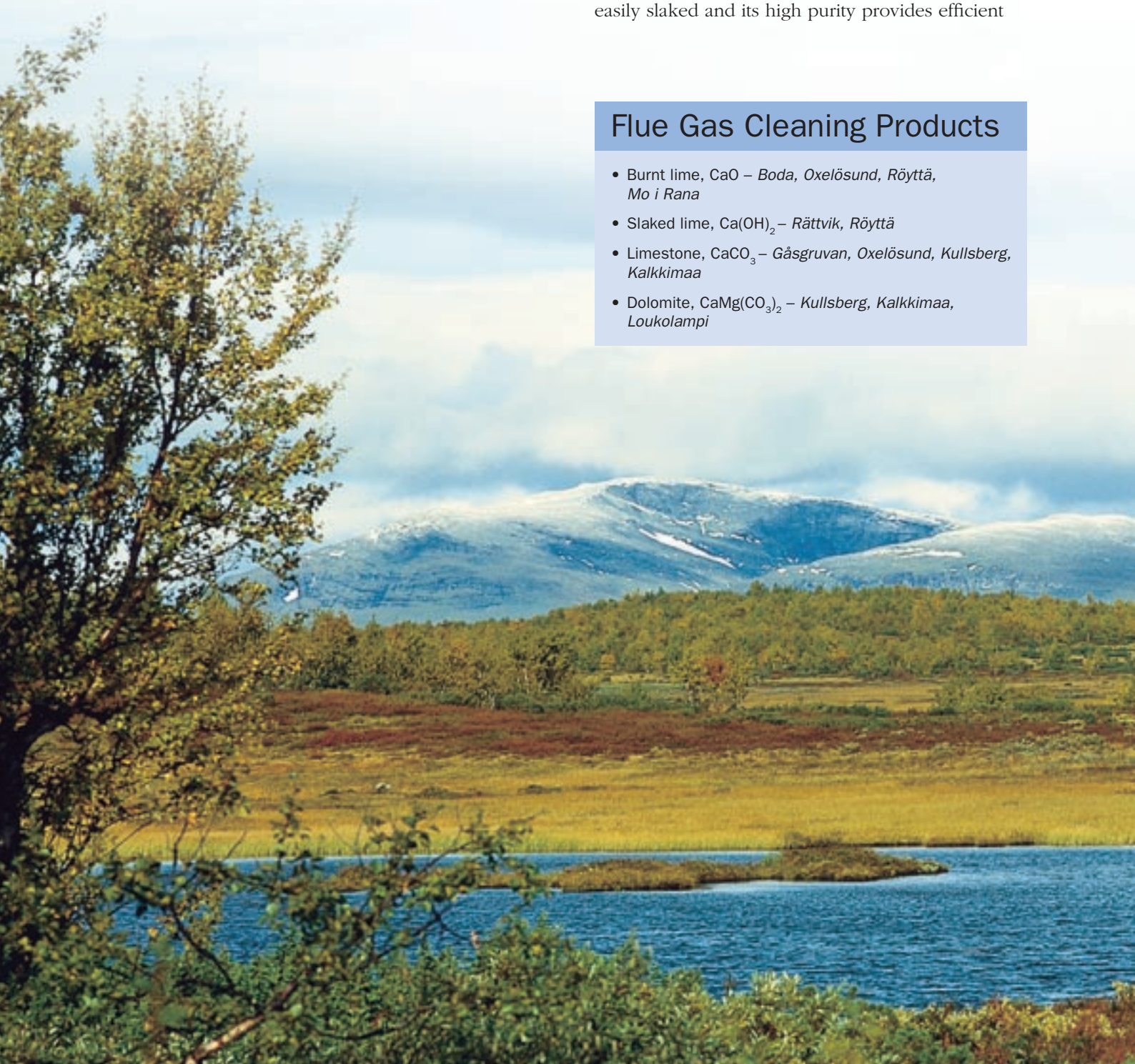
Which Lime for What Purpose?

We supply the entire range of lime products for flue gas cleaning, from unrefined limestone in the form of $CaCO_3$ or dolomite, $CaMg(CO_3)_2$, to the highly processed burnt lime, CaO, and slaked lime, $Ca(OH)_2$.

With production and mining of lime in several locations in both Sweden and abroad, we can offer a broad line of products.

Our customers have different needs and place different demands on our products. With both raw limestone and shaft- and rotary-kiln burnt lime available, we can meet everyone's needs. SMA Mineral also produces in its own hydration plants a slaked lime for purposes such as flue gas cleaning.

Our shaft-kiln burnt lime from Boda, Oxelösund, Mo i Rana and Röyttä's lime kilns is a highly effective lime that is ideal as a flue gas cleaning chemical. Thanks to its high reactivity, it is very easily slaked and its high purity provides efficient



Flue Gas Cleaning Products

- Burnt lime, CaO – *Boda, Oxelösund, Röyttä, Mo i Rana*
- Slaked lime, $Ca(OH)_2$ – *Rättvik, Röyttä*
- Limestone, $CaCO_3$ – *Gåsgruvan, Oxelösund, Kullsberg, Kalkkimaa*
- Dolomite, $CaMg(CO_3)_2$ – *Kullsberg, Kalkkimaa, Loukolampi*

The Entire Chain

The combination of large production and storage capacity and our own transport organization serve as the basis for reliable deliveries to our customers.

But it takes more than just products and distribution method. Handling and the method of using lime products also play a major role in order to meet our customers' needs and demands.

SMA Mineral has its own process and technology department that tailors technical solutions for each individual company. This means that we can design material handling systems including silo construction projects.

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