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(Martin Schneider)

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Dear Mr. Han,

Thank you very much for your fax which I received. It is a pleasure to hear from you and I have fond memories of your visit to our Institute. I am glad to hear that your visit has been successful and that you can take advantage of the data we have provided in your national association.

Concerning your questions, how we have developed a good cooperation with local residents I must say that it is not easy to answer. The basic idea is to build up trust over the years indicating that the cement producers are fully transparent. Local residents are always suspicious about what the cement companies are doing. They fear about their health and their local environment and want the cement producers to take this concern seriously and provide sufficient data and insight into their business.

Nevertheless, there are always local residents which are not able to be convinced. So at the same time it is very important to keep a very good relationship to the local administration. Our experience is that towards to the local administration full transparent and trustful communication should be built up. I could summarize a few examples which have been very successful in our work over the years:

<p>- Open Day</p> <p>-</p> <p>- 가</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>가</p> <p>가</p> <p>가</p>	<ul style="list-style-type: none"> - plants visits for local residents, open day for the local community - report of the emissions, circulate small communication letters at the plants entrance with monthly emission data - public information with people from the plants explaining what they are doing and what the next steps are that might concern the local residents - invite school classes to experience cement production, children are very good players of their feelings about cement plant technology - create appropriate brochures which explains the process as such and those fact which are of concern for the public - describe exactly the waste streams which are intended to be used - describe that the quality scheme is very efficient and that no unpermitted material will enter the kiln <p>These are a few examples of what we have done in our country. I will send by mail two brochures which we have published from our association which go in this direction. Each cement company has different approaches but similar brochures in which they explain what they do and what they intend to do.</p> <p>I hope this is of help for you. Do not hesitate to let me know if I can be of additional help.</p> <p>Sincerely, Yours</p> <p>Martin Schneider</p>
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		1,000t/a
Ca	:	37,058 97
	-	
	-	
	-	
Si		1,200 117
Si - Al	/	1,276 41 4
Fe	:	143 111
	-	
	-	
	-	
	-	
Si - Al - Ca	:	5,001 348 195 33 173
	-	
	-	
	-	
S		610 505 398
Al	가 :	70
	-	
	-	

< -1>2005

The cement industry is making efforts to increase the share in the cement of constituents other than clinker. This allows to modify the quality of the product purposefully, to improve the economic efficiency of the manufacturing process, to conserve natural resources, and to utilise materials generated by other processes in a useful manner, as stipulated by the German Waste Management and Recycling Act.

		1,000t/a
Ca	Limestone/marl/chalk Others, such as: - lime sludge from drinking water and sewage treatment - hydrated lime - foam concrete granulates - calcium fluoride	37,058 97
Si	Sand Used foundry sand	1,200 117
Si - Al	Clay Bentonite/kaolinite Residues from coal pre-treatment	1,276 41 4
Fe	Iron ore Other input materials from the iron and steel industries, such as: - roasted pyrite - contaminated ore - iron oxide/fly ash blends - dusts from steel plants - mill scale	143 111
Si - Al - Ca	Granulated blastfurnace slag Fly ash Oil shale Trass Others, such as: - paper residuals - ashes from incineration processes - mineral residuals, e.g. soil contaminated by oil	5,001 348 195 33 173
S	Natural gypsum Natural anhydrite Gypsum from flue gas desulphurisation	610 505 398
Al	Input materials from the metal industry, such as: - residues from reprocessing salt slag - aluminium hydroxide	70

Table 1: Raw materials input in 2005

The materials, having industrial importance as potential substitutes for cement clinker in the cement in Germany, are chiefly (granulated) blastfurnace slag and also limestone. Blastfurnace slag is a spin-off of pig iron production and is used in the manufacture of Portland-slag and blastfurnace cements.

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70%

Natural gypsum and/or anhydrite cover about 70% of the demand for sulphate agents, which serve to adjust the working properties of the cements, Gypsum from flue gas desulphurisation accounts for the remaining share.

Cement clinker burning uses up most of the fuel energy consumed in cement manufacture. To a lesser extent thermal energy is also used for drying raw materials and other major cement constituents, such as granulated blastfurnace slag.

Since the mid-70ies, the traditional fuels of the cement industry have been coal and lignite and, on a smaller scale, also heavy fuel oil. A significant portion of coal has been replaced by petcoke since the 90ies.

Petcoke is a coal-like fraction of mineral oil generated in curde oil processing. In addition to that, light and heavy fuel oil and gas are used for kiln start-up and drying processes. Table2 lists all the energy sources exploited in the Germany cement industry.

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	2003 million GJ/a	2004 million GJ/a	2005 million GJ/a
가	19.1	15.5	8.7
가	27.4	31.6	29.1
가	5.7	3.8	4.2
가	2.7	2.6	2.2
Fuel oil EL	0.4	0.2	0.2
가 ? 가	0.3	0.5	0.5
가	0.8	0.7	0.5
	56.4	54.9	45.4
	34.9	40.0	43.3
	91.3	94.9	88.7

Fuel	2003 million GJ/a	2004 million GJ/a	2005 million GJ/a
Coal	19.1	15.5	8.7
Lignite	27.4	31.6	29.1
Petcoke	5.7	3.8	4.2
Heavy fuel Oil	2.7	2.6	2.2
Fuel oil EL	0.4	0.2	0.2
Natural gas and other gases	0.3	0.5	0.5
Other fossil fuels	0.8	0.7	0.5
Total fossil fuels	56.4	54.9	45.4
Total alternative fuels	34.9	40.0	43.3
Total thermal energy consumption	91.3	94.9	88.7

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Table 2: Fuleenergyconsumption classified byenergysources

2005

49%

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		MJ/kg
	288	26
	60	28
- , ,	237	4
-	309	22
-	3	35
-	0	--
-	567	21
, ,	355	18
	198	15
	74	17
	101	24
	11	11
	157	3
:	28	16
-		
-		

< -3> 2005

Apart from fossil fuels, the use of alternative fuels in the clinker burning process is gaining in importance nowadays. Alternative fuels accounted for about 49% of the total fuel energy consumption of the German cement industry in 2005. Table 3 lists the alternative fuels utilised and their average calorific values.

Alternative fuel	1,000t/a	MJ/kg
Tyres	288	26
Waste oil	60	28
Fractions of industrial and commercial waste:		
- Pulp, paper and cardboard	237	4
- Plastics	309	22
- Packaging	3	35
- Wastes from the textile industries	0	--
- Others	567	21
Meat and bone meal and animal fat	355	18
Mixed fractions of municipal waste	198	15
Scrap wood	74	17
Solvents	101	24
Fuller earth	11	11
Sewage sludge	157	3
Others, such as:	28	16
- oil mud		
- organic distillation residues		

Table 3: Consumption and average calorific value of alternative fuels in 2005