

Data and Trends

Environmental protection and safety

2008



EMS-GRIVORY
EMS-GRILTECH
EMS-PRIMID
EMS-SERVICES

Data and Trends 2008

Protection of the environment and health and safety of our employees are factors given top priority by the companies of the EMS Group during manufacturing and distribution of their high-quality products in the fields of performance polymers, fine chemicals and engineering. As a supplement to our brochure, "Environmental protection and Safety", we also provide information about current trends and measures and take this opportunity to comment on changes and special events. These facts and figures refer to the business units EMS-GRIVORY, EMS-GRILTECH, EMS-PRIMID and EMS-SERVICES. These companies employ a total of 900 workers at the production site in Domat/Ems.

Each graph shows the specific quantities which are used or produced during the manufacture of 1 ton of sales product. These figures are independent of deviations in the quantities manufactured annually.

As a result of the global economic downswing in the last quarter, sales quantities were lower than in the previous year. Lower utilisation of plant capacity resulted in lower efficiency and, for example, more energy being consumed for each kilogram of sales product manufactured than in the previous year. For some key figures this effect compensated progress otherwise achieved.

Investments

Investments in energy efficiency and modernisation of the vehicle pool

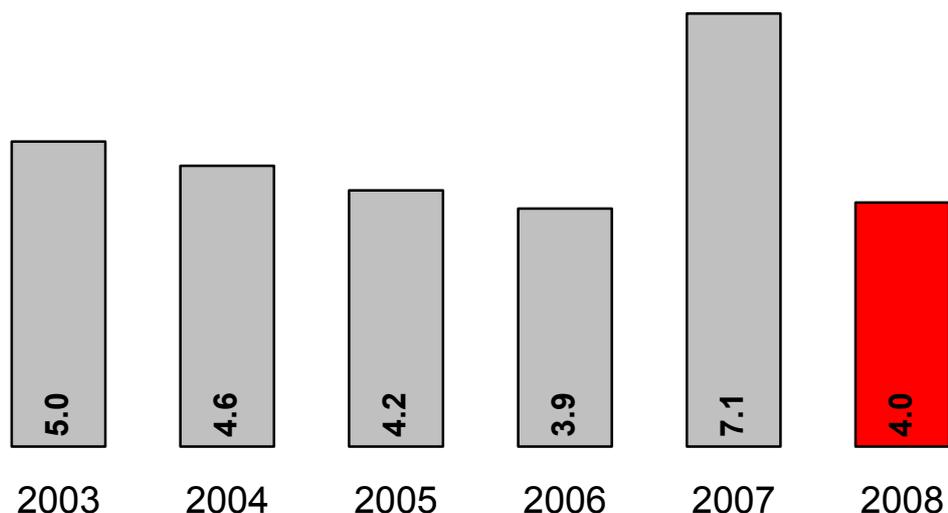
Particular attention was paid to the improvement of energy efficiency, i.e. less energy consumption for the same performance. With this objective, a large number of heating systems and hot air ducts were given new insulation.

Further large investments were made in supplying the production site with process steam from the bio-mass power station "Tegra Holz und Energie AG". This company, located on the production site of EMS-CHEMIE AG in Domat/Ems produces electricity and process steam from the renewable, climate-neutral raw material, wood.

In addition, numerous investments were made in all business units to improve utilisation of energy and reduced consumption of cooling water, nitrogen and compressed air. For cooling water alone we were able to reduce consumption by 22% compared to the previous year. This was possible due to measures taken in the arrangement of cooling systems or re-use of the cooling water (cascade systems).

Progress with regard to fuel consumption, emissions and employee safety was achieved with modernisation investments in the company-owned vehicle pool (mobile container stacker, trucks).

Share of E+S investments as a % of total investment

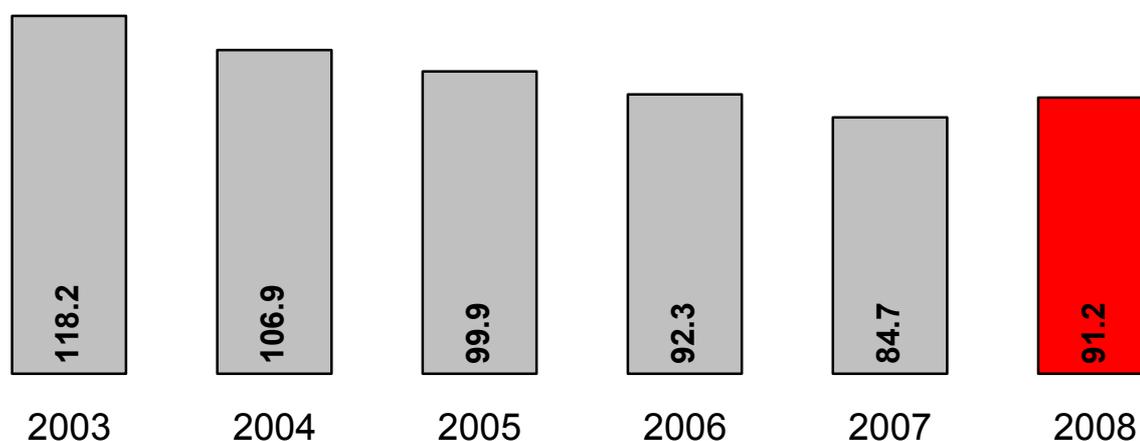


Operating expenses

Costs comparable to previous years

Outlay towards protection of the environment is mainly made up of operating costs for waste water and exhaust air cleaning plants and waste disposal management. Operating costs in the area of safety, result mainly from measures to ensure protection of health, fire prevention, security and working safety (prevention of accidents). In 2008 these costs were comparable to those of previous years.

E+S outlay CHF/t product



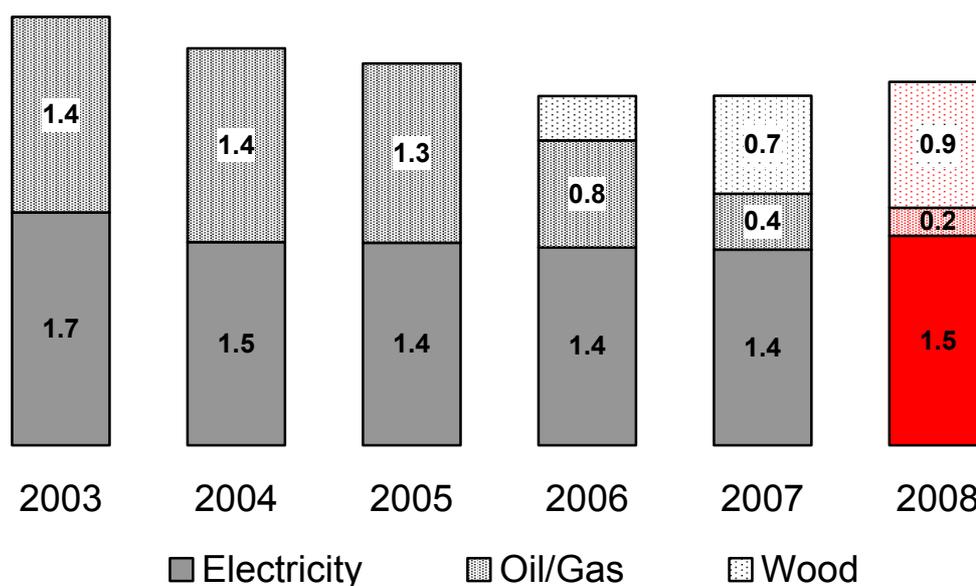
Energy

National Award for Best Performance in the field of Energy

During the reporting year 2008, a third power-plant block of the independent company "Tegra - Holz & Energie AG", located on the production site, started operations. This company generates electricity from the renewable raw material wood and is the largest wood power plant in Switzerland. The timber required as fuel is sourced directly from the forests of the Grisons or from the neighbouring large timber works "Mayr-Melnhof Swiss Timber AG".

With completion of this third expansion stage, more than 80 % of total process heat for the production site is generated using wood. Based on this performance, on January 8, 2008, EMS was awarded the energy prize "Watt d'Or" by a jury under the patronage of the Federal Office for Energy.

MWh/t product

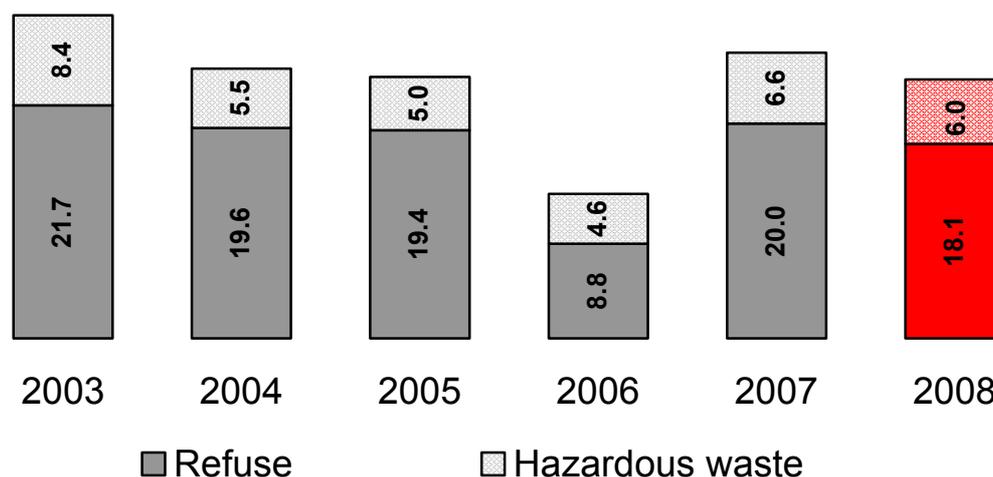


Manufacturing waste

Lower quantities of manufacturing waste compared to the previous year

Through technical improvements in a large compounding line, product quality was increased by 20% and waste quantities reduced by 30%. All waste produced on the production site is disposed of according to its quality i.e. with household refuse in an incinerator plant, as secondary fuel in a cement factory or burned as hazardous waste in a Swiss facility. All plants incinerating our waste products make use of the heat generated.

kg/t product



Waste water

Significantly less waste water load entering the treatment plant

In addition to processing our industrial waste water, the company water treatment plant also treats waste water from the local towns of Rhäzüns, Bonaduz and Tamins. The dry sludge is dewatered and transported to other treatment plants for further processing. Gas generated during this process is made use of directly in the water treatment plants and the dry sludge is used by a local cement work as a valuable alternative fuel source.

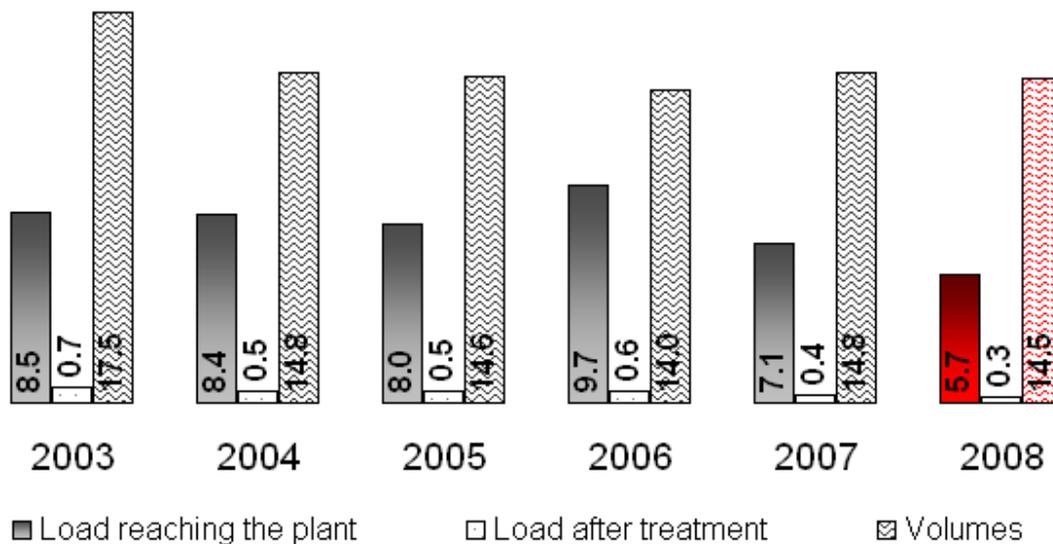
The graph shows the development of waste water quantities and wastewater load before treatment at our plant. As the water load is made up mainly of organic material, this is shown as TOC (total organic carbon).

Through an investment to the value of more than CHF 16 million in process improvements for reclaiming un-reacted monomers, a significant improvement in waste water load from continuous polymerisation was achieved. Through this and other measures, the total waste water load for the whole production site was reduced by more than 40% compared to 2006.

The cleaning performance of the water treatment plant for solute organic materials remained at the high level of 95%.

Load in kg TOC/t product

Volumes in m³/t product



Air emissions

CO₂ emissions reduced by 85%

CO₂ emissions from burning fossil fuels have been reduced by 85% step by step over the last three years since 2005.

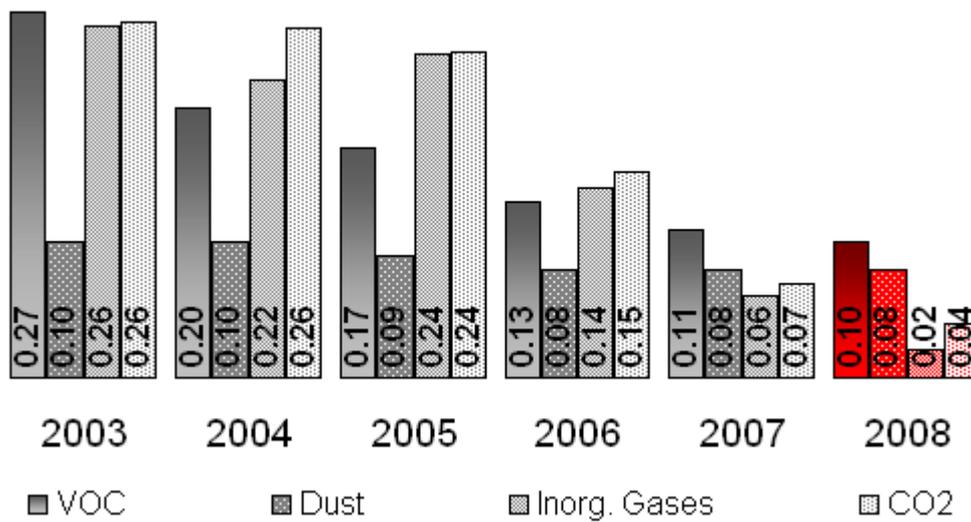
This has been made possible by sourcing of process steam solely from the nearby bio-mass power plant Tegra. The renewable energy source wood is CO₂-neutral when burned.

Plant emissions of highly volatile organic hydrocarbon compounds (VOC) were also further reduced.

In order to allow a comparison of environmental factors, exhaust air emissions are given as an emission factor kg/t of manufactured product.

- The emission factor indicates the quantity of pollutant of a particular class which escapes into the air for each ton of product manufactured.
- VOC are volatile organic compounds such as solvents or secondary products from the manufacturing processes of our performance polymers.
- Dust emissions are mainly fine particles which are not all collected in the exhaust air cleaners.
- Inorganic gases, mainly nitrogen oxides, are generated during combustion of natural gas for heating purposes.
- CO₂ is released during combustion of natural gas or heating oil for heating purposes.

Emission factor in kg/t product



Protection of health

Accidents can be prevented

Despite intensive efforts to prevent accidents, the number of work-related accidents stagnated. The seriousness of the injuries incurred on the other hand, has significantly decreased. In 2004, 293 work hours lost/100,000 working hours were recorded. In 2008 this figure had dropped to 125 working hours lost /100,000 working hours. This is a pleasing reduction of more than 50%.

For the first time last year, regular, compulsory safety checks were carried out by supervisors at all levels. The objective was to analyse processes or work places for possible dangers and to improve them where necessary. In 2008, 841 safety checks were recorded.

Work-related accidents/1,000 employees

