

Data and Trends

**Environmental Protection
and Safety**

2020



EMS-GRIVORY
EMS-GRILTECH
EMS-SERVICES

Data and Trends 2020

EMS works sustainably and responsibly. Protection of people and the environment during production and distribution of our high-quality products is a primary concern of the companies in the EMS Group.

In the annual publication "Data and Trends", we report on current developments and measures in the field of environmental protection and safety and take the opportunity to comment on significant changes and developments.

The graphs show the specific quantities which are used or produced in each case during the manufacture of one ton of finished product. These ratio figures are independent of annual fluctuations in quantities manufactured and allow an independent comparison to be made over a period of several years independent of volumes.

The continuity and sustainability of our improvement measures can be seen from a comparison with the first key index figures published in 2001:

Key Index Figures		2001	2020	Δ (2001 → 2020)	GOAL 2025
E+S investment share	[%]	4.7	8.1	+72%	+73%
Energy consumption	[MWh/t product]	3.5	2.0	-43%	-50%
Recycling quota	[% all waste]	7	37	+528%	+530%
Hazardous waste	[kg waste/t product]	8.0	4.8	-40%	-45%
Waste water load	[kg TOC/t product]	0.7	0.1	-86%	-85%
Emission factor*	[kg/t product]	270.9	42.9	-84%	-85%
CO ₂ emissions**	[kg CO ₂ /t product]	270	0	-100%	-100%
Accidents with loss of working hours	[pro 1,000 employees]	50	36	-28%	-30%

* steam generation from wood firing since 2007

**CO₂ compensated since 2020

EMS IS CLIMATE NEUTRAL – independently certified by DFGE.

Progress achieved is our driving force for future improvements; because our goal is and remains ongoing improvement in all areas. This is what we work for - every day!



Dr. Joachim Maigut

Head Environmental Protection & Safety



Investments

Investments 2020 – Focus on environmental protection and plant safety

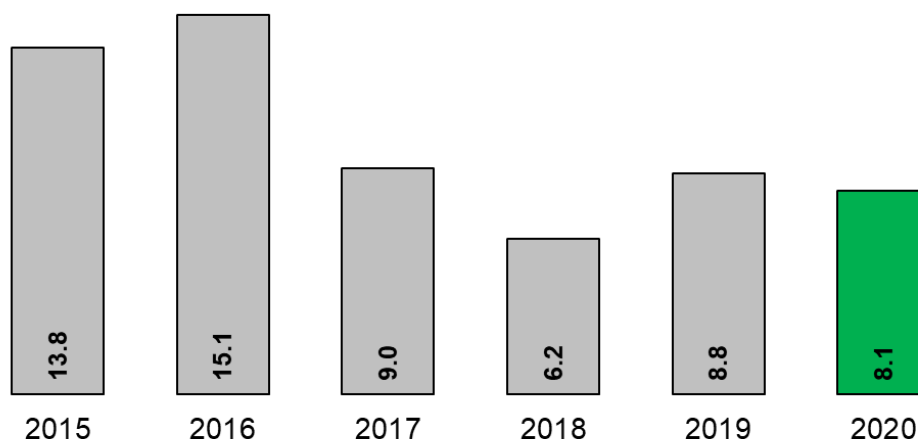
Environmental protection and safety is of great importance to EMS. Correspondingly, significant investment was made again in 2020 in environmental protection and optimisation.

Focus in 2020 was placed on improvement of the cleaning of exhaust air in one of our largest production plants. The bio-filter in the company-owned waste water treatment plant was reconditioned and a project to increase filtering efficiency started in the primary sedimentation stage.

Other focus points were various safety and quality improvements in different production units and on the production site, both in the field of plant safety and perimeter security.

Due to several major projects aimed at increasing capacity and a correspondingly high overall investment volume in the last years, the percentage share of E+S investments is slightly lower.

Share of investment for environmental protection safety (E+S) in % of all investments



Resources

Energy efficiency programme – CLIMATE NEUTRALITY 2020

Energy consumption at the production site has dropped continually for years. Compared to the first year of monitoring key index figures in 2001, energy consumption per ton of finished product has been reduced by -43%.

From 2020, the supply of electricity to the production and distribution locations in Switzerland and Germany will be covered to 100% by CO₂-neutral hydroelectric power and unavoidable greenhouse gas emissions will be compensated completely in climate protection projects with DFGE certification.

EMS continually monitors possibilities for further optimisation and identification of additional reduction potential.

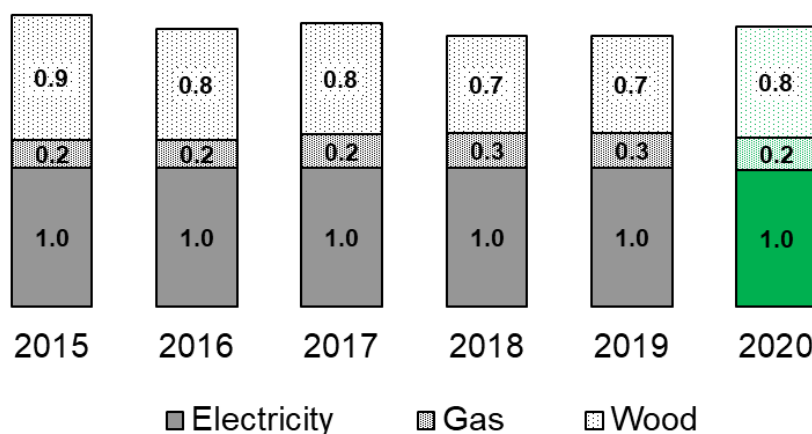
Main activities are focussed on:

- saving of electricity (above all, drive systems, process heating and lighting)
- limitation of heat loss and reduction of energy required for heating (steam)

In 2020, a total of 2,244 MWh was saved through 6 energy-saving projects and reported to the Swiss Federal Office of Energy as efficiency of measures.

Focus of energy saving in 2020, was above all in the areas of production plant renovation as well as process improvements in production.

Energy consumption in MWh/t product



Manufacturing waste

Recycling quota increased - new record level !

In 2020, a total of 2,566 tons of recyclable materials such as metal, glass, wood, paper and packaging materials was separated from manufacturing waste for recycling. This corresponds to an increase of +9 % material recycled compared to 2019 with 2,355 tons.

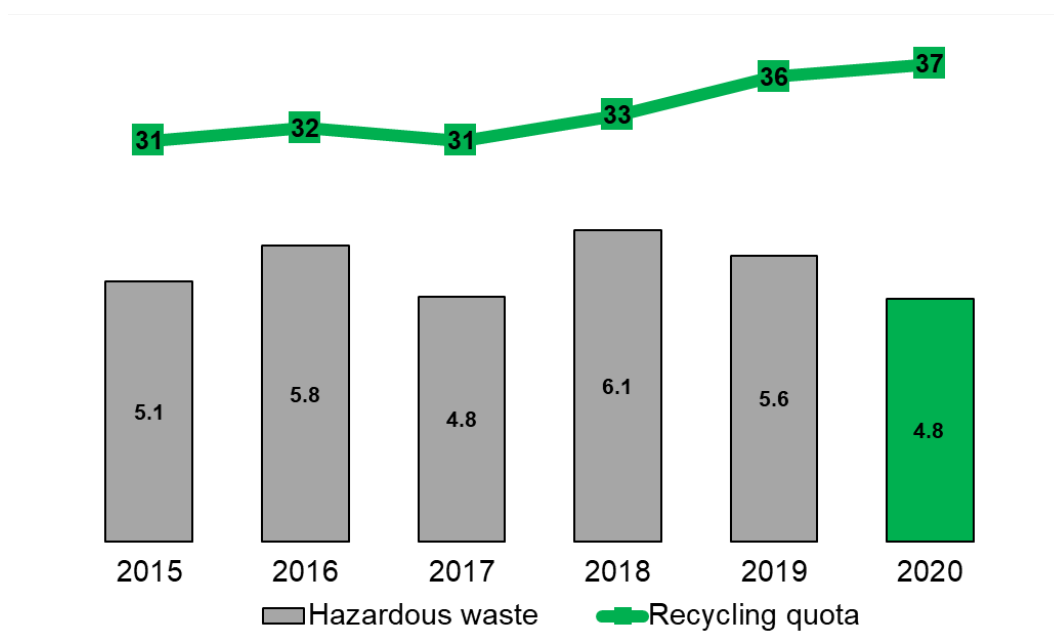
This means the recycling quota has reached a new record level of 37% in 2020.

The remaining refuse is mainly plastic waste which has a particularly high heating value and is used to a great extent for incineration purposes. As a secondary fuel, above all in energy-intensive plants in the cement industry, this waste replaces fossil fuels such as oil or gas. Only refuse with a lower heating value is disposed of together with household waste in an incinerator plant. Root causes of waste generation are systematically and increasingly eliminated through focussed waste reduction programmes.

In 2020, the Corona pandemic caused specific one-time effects with regard to waste. The key waste figures in 2020, adjusted to consider these special one-time effects, were 30.4 kg/t product, which is -2.5% compared to the previous year.

The amount of hazardous waste was further reduced in 2020. This was achieved through focussed programmes to increase process stability of the production lines. To achieve the hazardous waste-reduction targets, ongoing optimisation measures were implemented. All hazardous waste is disposed of solely by authorized disposal companies and only at specialized facilities located in Switzerland.

Kg refuse/t product



Waste water

Waste-water volumes further reduced – cleaning efficiency: 97%

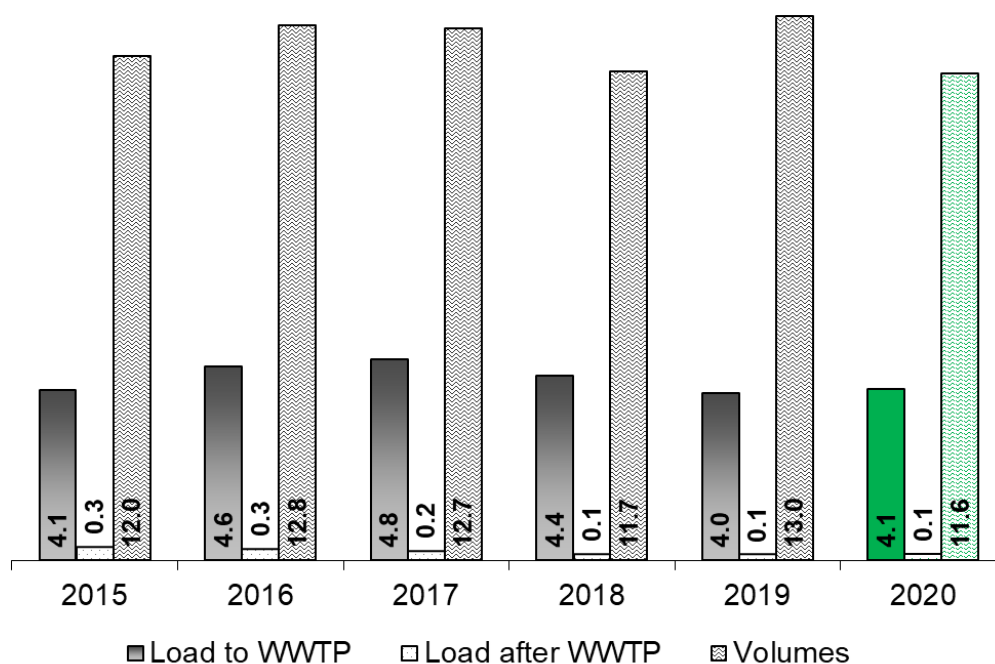
The graph shows the development of waste water volumes and waste water load before and after processing at the company-owned waste-water treatment plant (WWTP). As the load is made up mainly of organic material, this is shown as TOC (total organic carbon).

In addition to processing the company's industrial waste water, the WWTP treats domestic waste water from the local towns of Rhäzüns, Bonaduz and Tamins.

Through various improvements in the water treatment process, efficiency of the cleaning process has been further improved. This means cleaning efficiency is an impressive 97% for all organic compounds in the waste water. Work was already started on installation of an additional mechanical cleaning phase planned for 2021.

Sewage sludge resulting from the cleaning process is dried on site. This makes it possible to reduce the quantity of sludge to be transported annually to the drying plant at Chur by around 4,200 tons, corresponding to a saving of 190 truckloads each year!

Load in kg TOC/t product
Volumes in m³/t product





Air emissions

Highlight 2020: EMS IS CLIMATE NEUTRAL!

In order to allow a comparison of the values, exhaust air emissions at the production site are given as emission factors. These show which air emissions are released into the air per ton of material produced. The following substance classes are relevant for EMS-CHEMIE AG:

- Volatile Organic Compounds (VOC) - such as solvents or secondary products from the manufacturing processes for our performance polymers.
- Dust: Mainly fine particles caused by abrasion during the manufacturing process of the granules and from solid raw materials.
- Inorganic gases: Mainly nitrogen oxide generated during combustion of natural gas for heating and from rail transport at the site.
- CO₂ : Released mainly during heating processes.

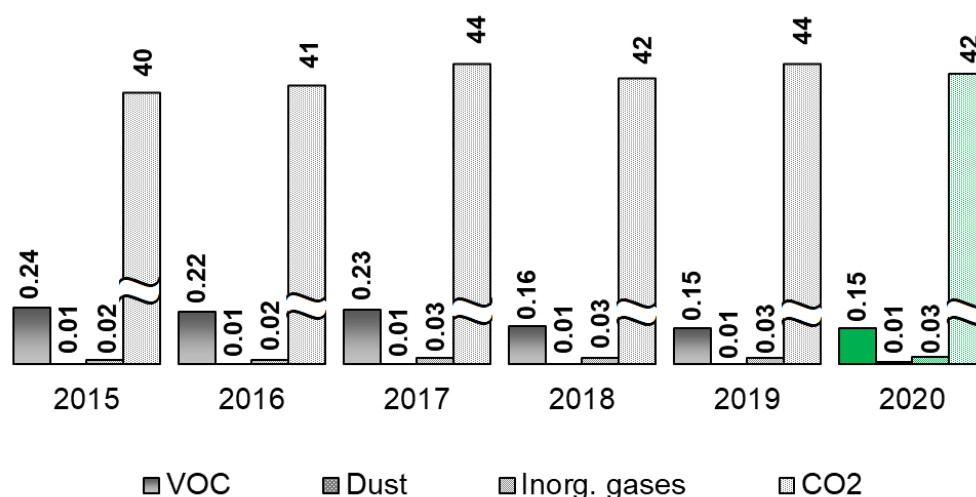
The evaluation shows that emissions at the work site, created during the production process, decreased further in 2020. Emission of CO₂ dropped by -491 t compared to 2019.

EMS-CHEMIE AG has been committed to sustainable climate protection for many years. With voluntary participation in Swiss Energy Agency programme, we commit ourselves to active reduction of CO₂ emissions and optimisation of energy efficiency. The target agreement is recognised by Swiss Federal and cantonal authorities and industrial partners.

EMS becomes CLIMATE NEUTRAL in 2020:

From 2020, the electricity supply to the production and distribution locations in Switzerland and Germany will be covered 100% by CO₂-neutral hydroelectric power and unavoidable greenhouse gas emissions will be completely compensated in climate protection projects - with DFGE certification.

Emissions factor [kg/t product]



Work safety and protection of health

More accidents with lost working hours – special "Corona" situation in 2020

In contrast to earlier years, work-related accidents involving loss of working hours per 1,000 employees could not be further reduced.

Compared to the previous year, 2020 showed a slight increase in work-related accidents due to Corona. In order to prevent the spread of the Corona virus at the production site, measures became necessary which had a negative effect on the accident statistics.

Use of handrails no longer compulsory → accidents involving tripping
Requirement to wear face masks → tripping (fogging of safety glasses)
Waiver of safety audits and training → increase in the number of accidents

An increase in accidents, mainly involving tripping and falls, was recorded. These were mostly bagatelle with only a short loss of working hours and occurred while walking around or during manual work with and without tools.

In 2020 a digital training platform was introduced for all employees at the production site. The aim was to replace as soon as possible the face-to-face training made impossible by Corona, as well as generally improving training at the production site.

Results of regular inspection by the local labour authorities showed that every precaution to improve working safety and health protection is being taken.

Work-related accidents with loss of working hours / 1,000 employees

