

PRESS RELEASE

Wuppermann AG

Wuppermann galvanizing process saves up to 54% CO₂ compared to market standard

Leverkusen, 06.02.2023 - The Wuppermann Group has commissioned the renowned Fraunhofer Institute for Environmental, Safety and Energy Technology (UMSICHT) to re-evaluate the environmental impact of the Wuppermann Group's Heat-to-Coat strip galvanizing process compared to the conventional cold strip galvanizing process. The study now also includes the group's most recent galvanizing plant at the Hungary site. An investigation was also carried out for the first time for the tube mills.

For this purpose, the team led by Jochen Nühlen, Business Development Manager at Fraunhofer UMSICHT, has drawn up a life cycle assessment based on DIN EN ISO 14040 and evaluated the environmental impacts as climate effectiveness in tonnes of CO₂ equivalents per tonne of hot-dip galvanized steel strip (t CO₂-eq./t). The result: The measures taken since the last study for the base year 2018 are having an effect. The CO₂ advantage of the Wuppermann process, is now even greater where the application areas for galvanized hot-rolled strip and galvanized cold-rolled strip overlap - if both the use of cold-rolled and hot-rolled steel are technically possible for one application.

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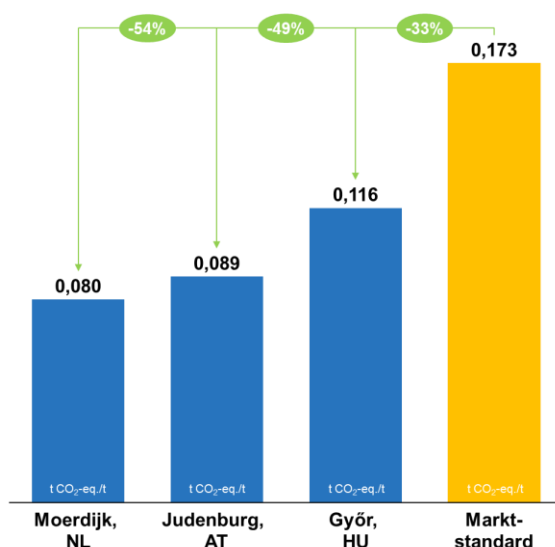


Illustration 1: Environmental impact of the "heat-to-coat" strip galvanizing process by location compared to the market standard.

The galvanizing process including post-treatment and zinc causes 0.080 t CO₂ -eq./t at the Moerdijk site in the Netherlands (WSN). The reference process causes CO₂ emissions of 0.173 t CO₂ eq./t. This results in a CO₂ saving of 54%. At the Judenburg site in Austria (WA), 0.089 t CO₂ eq./t CO₂ emissions are produced, which corresponds to an advantage of 49%. At the site in Győr, Hungary (WH), CO₂ emissions amount to 0.116 t CO₂ eq./t, which corresponds to an advantage of 33%. This includes the emissions from the production of the zinc and electricity consumed. The environmental impact of the input material hot strip is not included in this analysis.

One of the main reasons for the very low value at the Moerdijk site in the Netherlands is, in addition to many measures to reduce specific energy consumption, the switch to electricity from wind power based on European certificates of origin. This is because the largest contribution to CO₂ emissions from the Wuppermann process - and thus also the most important lever for further emission reductions - is generated by the electrical energy required for the integrated pickling and galvanizing process. And this is one of two major differences to conventional cold strip galvanizing: in contrast to the standard process, Wuppermann does not use fossil fuels, but only electricity for heating. Wuppermann can avoid the energy-intensive recrystallisation annealing, which is why the maximum temperature in the process is around 450°C instead of 750°C. In addition, most of the input material is transported by ship, which also has a positive effect on CO₂ emissions.

The Judenburg site in Austria can also report a very low value thanks to the use of electricity from hydro and wind power. In Hungary, the photovoltaic plant commissioned in 2022 also contributes to the good value. In particular at the two locations supplied with green electricity, the environmental impact of zinc thus remains essentially the same, with each accounting for around 90% of the reported CO₂ emissions. The production and origin of the zinc therefore play a major role in further reducing the greenhouse gas emissions of the galvanised products.

Taking into account the production volumes of galvanised steel strip at the respective sites, this will result in total CO₂- savings of around 60,000 tonnes for 2022 as a whole. Customers can calculate their individual savings using the CO₂ calculator on the Wuppermann Group website.

"Thanks to the first study by Fraunhofer UMSICHT about three years ago, we already knew that our special heat-to-coat process emits less carbon dioxide than galvanizing processes commonly

used on the market. Now we are pleased to see that the measures taken are having the desired effect and increasing our competitive advantage," says Karsten Pronk, technical managing director of Wuppermann Staal Nederland B.V.

Low CO₂ emissions also in tube production

The tube production facilities that have now been examined for the first time also impress with low CO₂ emissions in the production process. Here, too, the two Austrian sites in Altmünster and Judenburg benefit from the purchase of electricity from hydroelectric and wind power as well as their own electricity generation by means of photovoltaic systems. The life cycle assessment based on DIN EN ISO 14040 considers the environmental impact as the climate impact of the tube manufacturing process in tonnes of CO₂ equivalents per tonne of longitudinally welded steel tube (t CO₂ -eq./t). In Judenburg (Austria), the tube manufacturing process produces 0.014 t CO₂ -eq./t, in Altmünster (also in Austria) 0.042 t CO₂ -eq./t and in Małomice (Poland) 0.070 t CO₂ -eq./t. The two main drivers for the difference between the two Austrian plants are the areas of transport and packaging. This analysis does not include the environmental impact of the input material hot-rolled strip or pickled or galvanised hot-rolled strip.

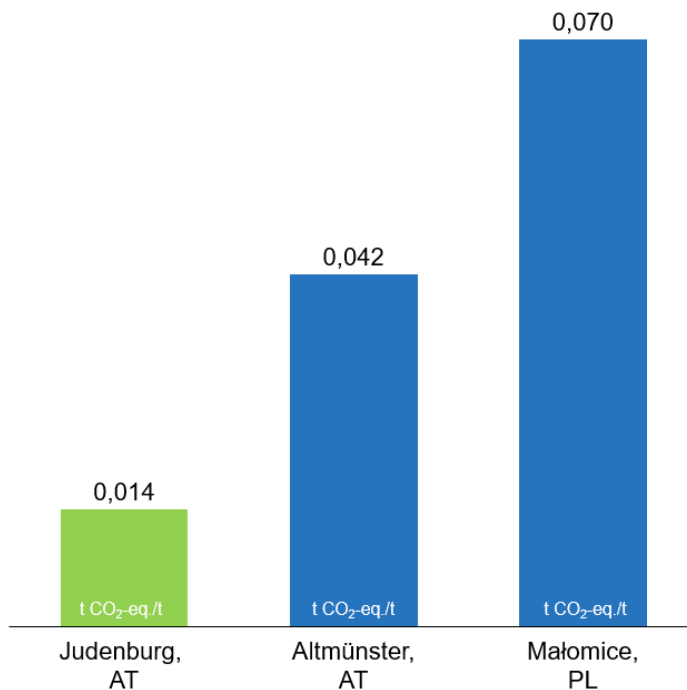


Illustration 2: Environmental impact of tube production by location

"The life cycle assessment enables us to provide our customers with important information about the CO₂ footprint of our tube production. At the same time, it helps us to identify the fields of action through which we can further reduce our environmental impact in the area of tube and profile production," Hubert Pletz, Managing Director of Wuppermann Austria GmbH, summarises.

"Avoiding CO₂ emissions in our manufacturing processes is a key differentiator and thus now an integral part of our strategy - with the clear goal of avoiding all emissions directly caused by us as soon as possible," adds Johannes Nonn, Spokesman of the Executive Board of Wuppermann AG.

About the Wuppermann Group

The Wuppermann Group is a medium-sized family business based in Leverkusen that has been successfully active in steel processing for over 150 years. Its product portfolio includes surface-finished flat products, tubes and tubular components made of steel for the mechanical engineering, furniture, food, packaging, automotive, construction and solar industries as well as water and wastewater technology. The Wuppermann Group currently has five production sites and more than 800 employees. In 2022, the Wuppermann Group achieved a turnover of around 990 million euros. For further information, please visit www.wuppermann.com

Methodology

The primary data of Wuppermann AG were collected on the basis of a process questionnaire from Fraunhofer UMSICHT. Secondary data for the representation of upstream and downstream processes come from the life cycle assessment databases GaBi SP 43 and ecoinvent 3.8. Data sets for the production of galvanised sheet by means of cold strip galvanisation (coating mass: Ø 275 g/m²), for the production of cold-rolled steel strip, and for the production of hot strip serve as reference data sets. The balancing follows the methodical approach of the worldsteel organisation. In order to achieve the best possible and neutral comparability, Wuppermann's site-specific data are adjusted to the data of the reference process. The zinc layer thickness is defined as a guiding parameter and scaled to Ø 275 g/m² by linear adjustment of the zinc quantity and the zinc slag. Further information on the methodology can be found at <https://www.wuppermann.com/en/heat-to-coat-process/environmental-impact-study/>