

Clean Production

New revolutionary technology saves 95% in production energy

For some years now, Mirka has been developing a completely new production method for its abrasives. Not only is this ground-breaking method hugely energy efficient; it also allows for production without hazardous chemicals.

Throughout its history, Mirka has invested a lot in R&D and has also come up with several revolutionary solutions, with dust-free sanding as the most prominent example. Now Mirka is amid taking the biggest technology leap in the company history, with the introduction of a completely new production method. In Mirka's new machines, the glue that binds the sand grains to the paper is hardened with high-energy curing, instead of hardening the glue with heat as in the old machines.

"You could compare the old machines to giant paper machines, while the new machines are more like digital printers. The old machines are hundreds of meters long, while the new ones are just 25 metres", explains R&D Director Mats Sundell.

Two new machines

The reason that the old machines are so big is because they feature giant dryers that use heat to bind the sand grains to the paper. It goes without saying that this production method is quite energy-intensive, and the new machines therefore use as much as 95% less energy than the old ones.

Mirka has developed the new machine type for ten years already and is nowadays a forerunner in the field. At the moment, two machines of this new type are up and running, producing abrasives for customers. In 2021, the new production method is estimated to stand for a considerable part of the sales value of all Mirka abrasives.

"2020 was really something of a breakthrough for this new production method", says Mats Sundell.

Less chemicals

A drastically reduced energy consumption is only one of the benefits that comes with the new production method. Other benefits include reduced amounts of hazardous chemicals as well as less waste in production.

"The traditional type of glue used in abrasives requires formaldehyde chemistry. Free formaldehyde is today labelled as possibly cancerogenic, which is a hazard both in the production of abrasives, but also for the end customer, who uses the abrasive. We are very happy to have found a production method that does not need formaldehyde at all, and that gives the end customer an even healthier working environment", says

Sundell.

Less waste

With the new machines, every production step is more exact. Due to this fact, there is also less waste.

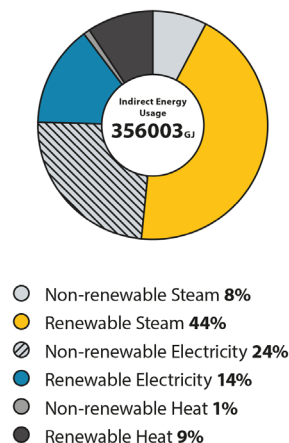
"Now we can, for example, print the sand grains only on the needed areas, and not necessarily on the whole paper. Moreover, the new type of glue does not expire as fast as the old, which means that there is also less glue waste."

In Mats Sundell's future vision, Mirka will also print data on the abrasives, allowing customers to automate and streamline their production processes. "My prediction is that in ten years, all Mirka abrasives are manufactured with this new technology."

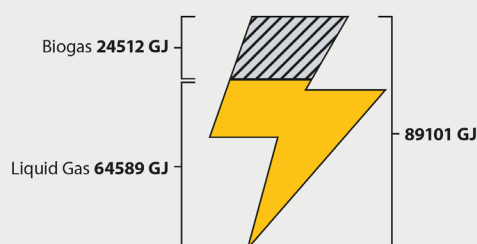
Energy usage 2020

265 169(GJ) Renewable, 179 937(GJ) Non-renewable

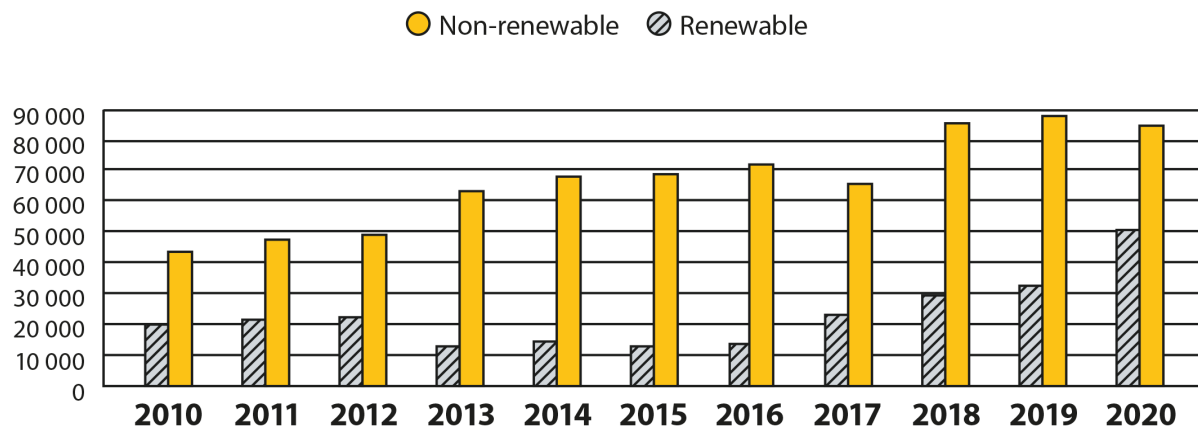
Energy usage by energy source



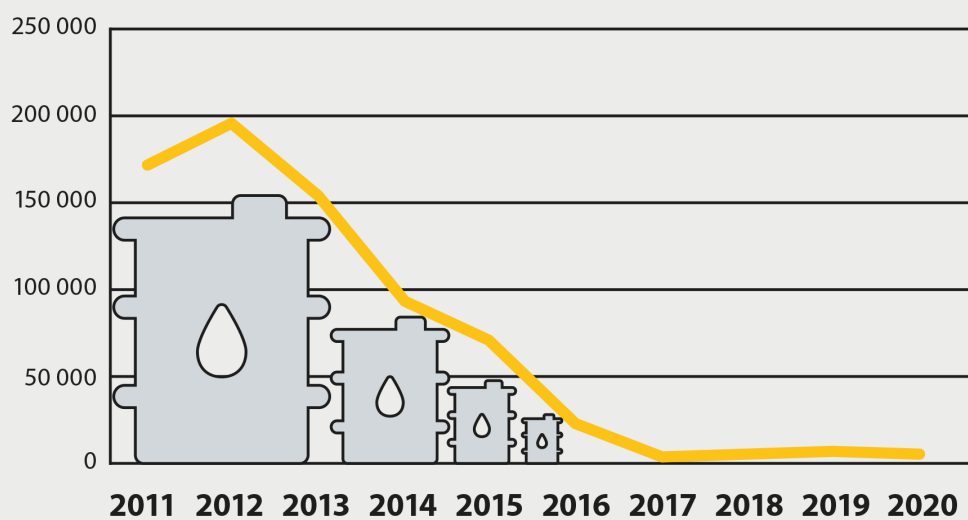
Direct energy usage



Electricity usage (GJ)



Oil usage (GJ)



Successful quality campaign resulted in substantially lower factory waste.

In 2020, Mirka launched a campaign to improve quality and productivity, mainly by lowering the waste in production. As the targets were exceeded, the campaign can be described as a success.

The campaign was launched in early 2020 to the personnel. Two of Mirka's biggest coated abrasive products were chosen for closer examination – Gold 80 and Gold 320. The goal was to find out in which stages of the production unnecessary waste emerges, and to change the way of working by raising awareness among the employees.

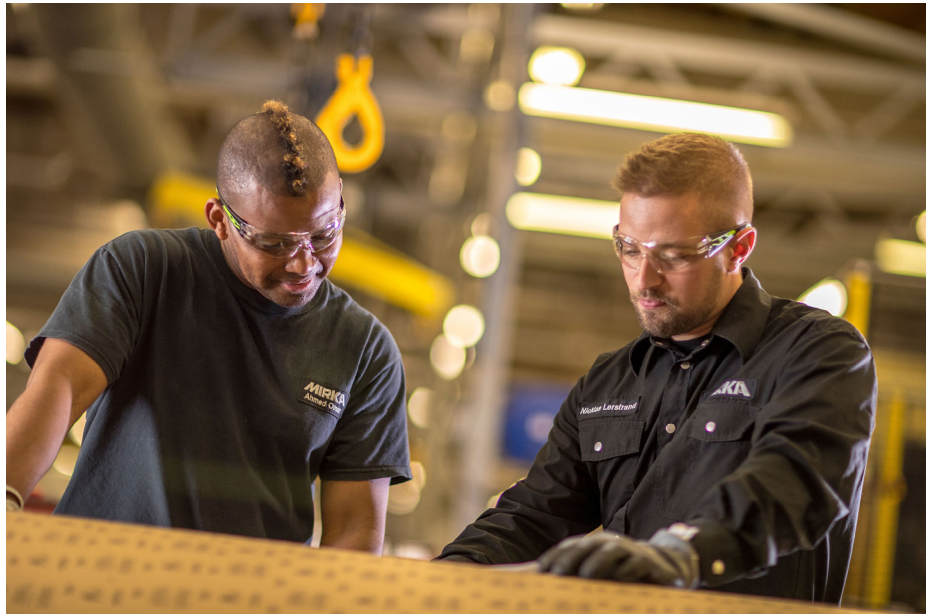
In addition, tangible targets were set for the campaign. The measures should result in savings of 250 000 euros for the two Gold products, as well as in savings of one million euros for all Mirka's products.

Targets were exceeded.

At the end of the year, it became clear that the campaign had been a success as the targets had been exceeded. The savings were several thousands of euros over target for the closely examined Gold products, and as the improved ways of working started to spread to other products as well, the total savings for all Mirka's products were substantial.

Production unit manager Joakim Hinders, who oversaw the campaign, is very happy with the results:

"Of course, it is nice that we managed to exceed the targets. It is evident that the savings were the result of our campaign and the enhanced awareness among the staff, as the processes in a technical sense largely remained unchanged during 2020. Another factor that contributed to reaching the targets was a change in the minimum orders quantity in our machines."



Down-to-earth measures

How, then, were these impressive results achieved? The measures taken were very down-to-earth.

"We simply examined all stages of production very carefully. We also put great effort into explaining to the employees why we were doing this and how they could improve their own way of working. We want employees to understand how their own actions impact Mirka's result", explains Joakim Hinders.

Close attention to waste

Employees were encouraged to pay close attention to waste and report all incidents where waste occurred. One thing that quickly became clear was that the biggest part of the waste emerged at the end of the production process. At some production lines, employees had a habit of cutting off as much as ten meters at the beginning of each reel, just in case it was not of good enough quality. This material is not used in the next step of production anyhow, which meant that huge amounts of perfectly fine abrasives were discarded.

"This was not really anybody's fault; we had just not paid enough attention to these things before. We have had a strong focus on safety in production in recent years, and it might be that productivity and quality issues have therefore not gotten quite the attention they deserve", explains Joakim Hinders.

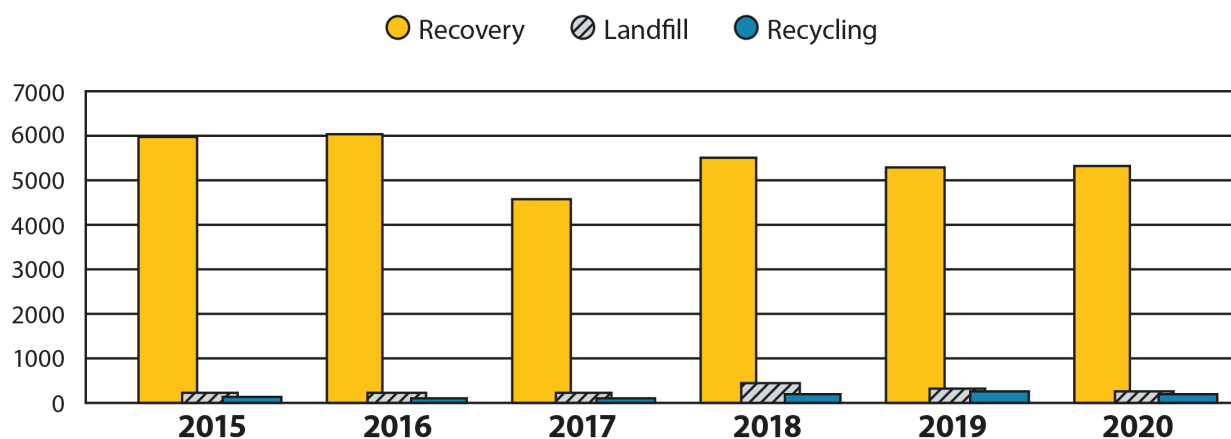
Continuous improvement

In the future, however, productivity and quality issues will remain high on the agenda, as the goal is to continue the work started by the campaign and continuously make improvements. A new product has been chosen for closer examination in 2021. In addition, Mirka will have a closer look on how to minimize, not only paper waste, but also abrasives grit and glue waste in production.

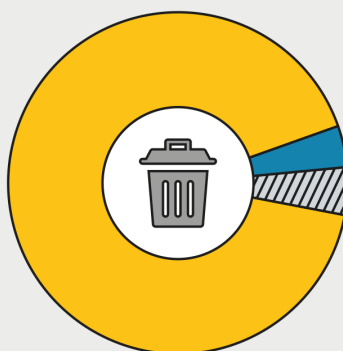
"Our goal is that eventually, all employees will automatically work in a way that prevents waste from emerging. This requires training so that the new ways of working eventually become a habit."

Production waste 2020

Quantities and handling of waste (Global, tonnes)

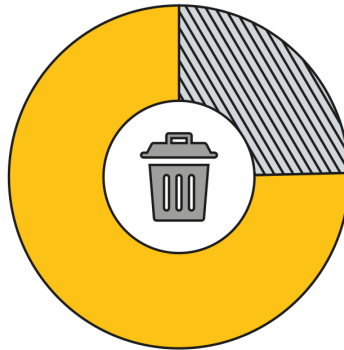


Production waste 2020



● Recovery **5332 t**
▨ Landfill **262 t**
● Recycling **228 t**

Hazardous/Non-hazardous waste 2020

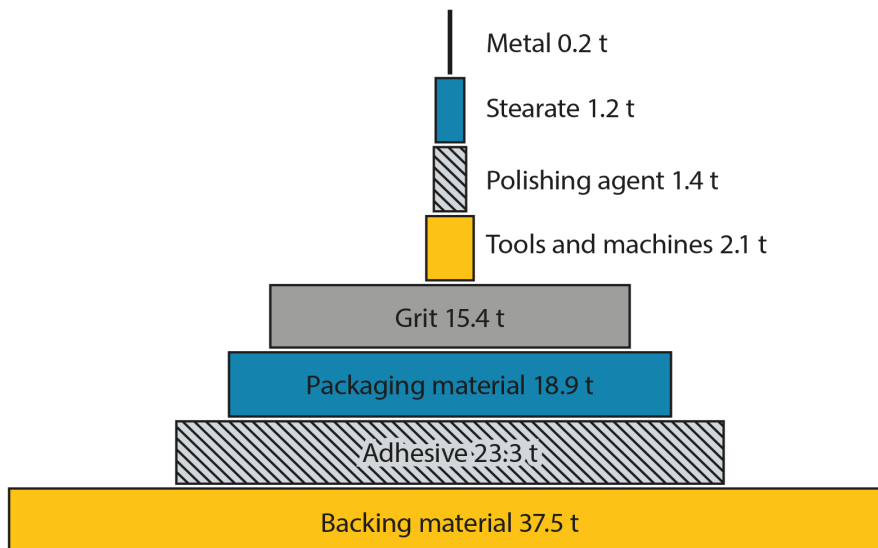


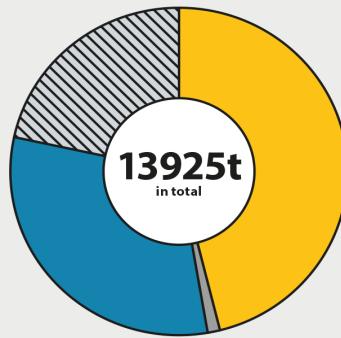
● Non-Hazardous **4388 t** ▨ Hazardous **1434 t**

Material usage 2020

7913 Tonnes Renewable, 7096 Tonnes Non-renewable

Material usage



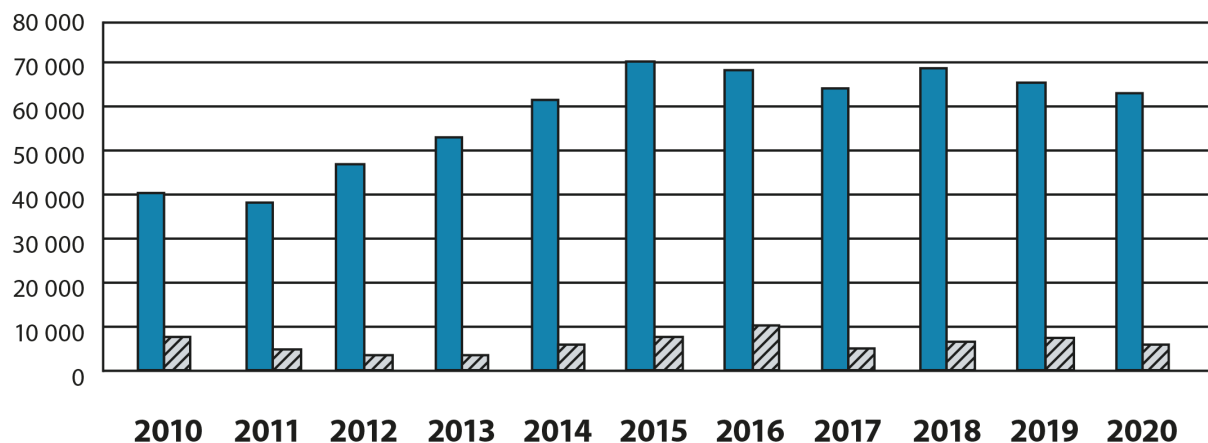


- Non-renewable Materials & Packaging **6918 t**
- Non-renewable Packaging Materials **178 t**
- Renewable Materials in Products **4667 t**
- ▨ Renewable Packaging Materials **3246t**

Water usage 2020

Total 68 796 M³

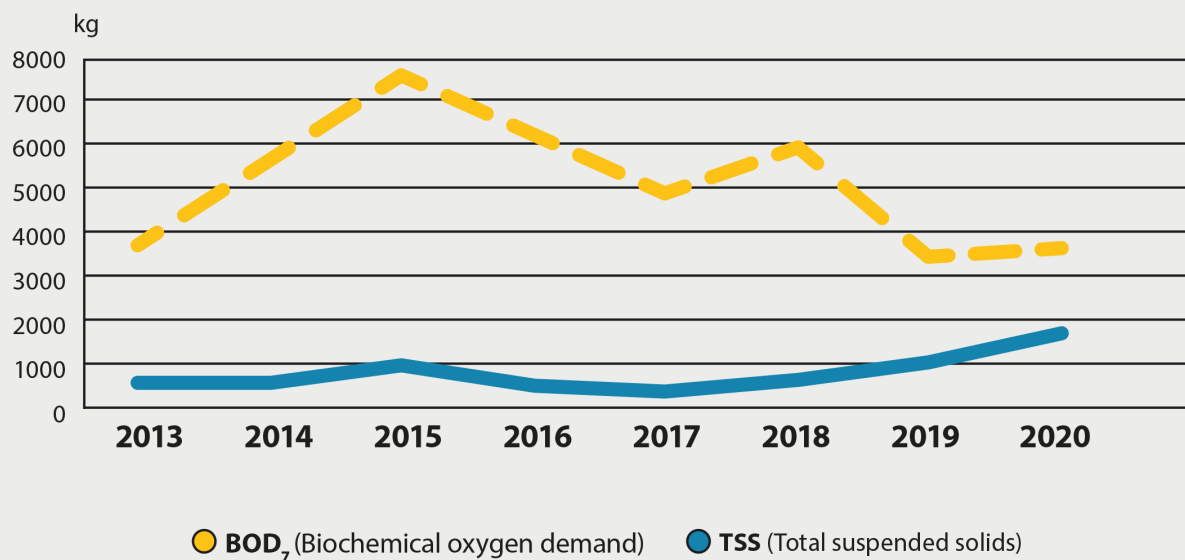
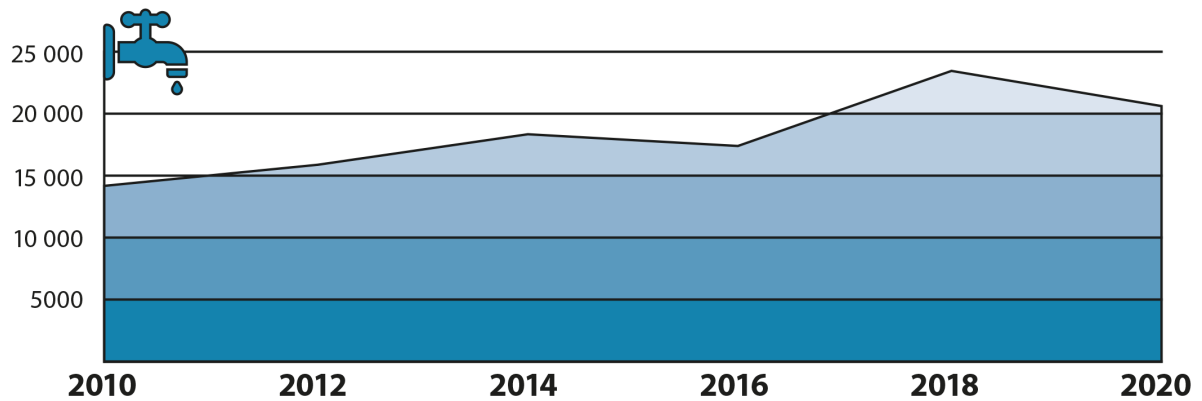
● Municipal water ▨ Ground water



Wastewater 2020

17 459 m³

Wastewater Global



Carbon dioxide (CO₂) 2020

Tonnes carbon dioxide (CO₂)

| | 2019 | 2020 |
|----------------------|--------|--------|
| Jeppo | | |
| ⬮ Adven (biofuel) | 8708 | 9618 |
| ⬮ Propane gas | 2902 | 3109 |
| ⚡ Electricity | 5129 | 4928 |
| Oravais | | |
| ⬮ Adven oil | 187 | 72 |
| ⚡ Electricity | 1634 | 1615 |
| Karis | | |
| ⬮ Propane gas | 691 | 777 |
| ⚡ Electricity | 593 | 609 |
| Jakobstad | | |
| ⚡ Electricity | 1799 | 1694 |
| Opglabbeek | | |
| ⚡ Electricity | 0 | 68 |
| Fino Mornasco | | |
| ⚡ Electricity | 296 | 287 |
| | 22 644 | 23 355 |

Tonnes CO₂ from company cars

Finland **57**



Subsidiaries **33 687**