

Safety, quality and efficiency

Our production work culture is team-oriented. We work together to reach high-level safety, quality, efficiency, and sustainability goals in all of our manufacturing facilities.

Over the years, we have:

- reduced the amount of VOCs by 250 000 litres by eliminating Iso-propanol as a solvent for stearate

coating.

- phased out phthalates, used for softening purposes, in 2004.
- found a phenolic resin to use with a lower content of free monomers over 17 years ago.
- eliminated use of chromium (for colour).

In 2012, we eliminated the use of the

toxic substance cryolite (two tonnes per year) entirely.

Currently, we are developing a xylene-free process for fine grit production. This process will be used to manufacture waterproof finishing sheets, a Mirka niche product.

Clean Production

Mirka Workplace Safety Evolution 1997–2018

Year	Action
1997	Started nearby reporting process for accidents
1998	ISO 14001 certification achieved
1999	Began system for managing inspections
2000	Introduced OHSAS 18001 into our facilities (Occupational Health & Safety)
2001	Developed change management risk analysis
2002	Formed first safety group
2003	Introduced Zero Accident thinking
2004	Began new machinery acceptance inspection
2005	Started using Occupational Safety Card
2006	Established safety walks
2007	Developed root cause analysis
2008	Introduced Japanese 5S efficiency and effectiveness organisation system
2009	Initiated machinery risk analysis
2010	Oravais factory sets Zero Accident target
2011	Began systematic work of eliminating hazards
2012	Company-wide Zero Accident programme launched; achieved in Karis factory
2013	All factories have equal Occupational Health & Safety plans and metrics
2014	Full-time machine safety group initiated in Jeppo factory
2015	Improving warehousing and handling of chemicals
2016	Safetymoments and Environmental Safety Card training in Karis factory
2018	Occupational atmosphere survey conducted



On-site manufacturing reduces transportation

The largest project during the past two years has been the phase-out and closing of the old landfill in Oravais where left-over and discarded material from conversion was deposited. The landfill was considered unsustainable and superfluous since materials in question had been transported to the Adven power plant for some time, and in 2018 the landfill was capped. The project was planned

by the consulting firm Ramboll and monitored to meet environmental requirements.

Also, the use of fossil heavy fuel oil in heating has been changed to a renewable energy source, i.e. wood chips. However, the launch of the new combi-maker line has increased water and electricity usage due to the manufacturing processes demands.

At the same time, the new maker will lead to reduced transportation emissions, since the possibility of manufacturing a wide range of materials used in on-site conversion has decreased the need for transport between Oravais and the high-bay warehouse in Jeppo.

Different areas of Mirka's general safety vision:

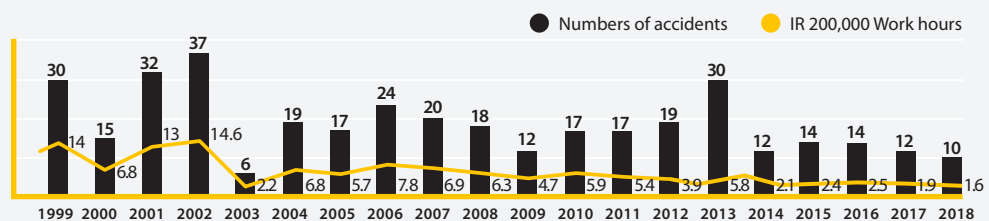
- Risk management
- Safety communication
- Personnel safety
- Information security
- Facility safety
- Environmental safety
- Rescue operations
- Production and operations safety
- Occupational security

During 2015–2016 there were no instances of environmental damage or negligence of environmental regulations, and as such Mirka did not receive any related fines or sanctions.

Incidents of non-compliance concerning the health and safety impacts of products and services

We have not identified any non-compliance with regulations and/or voluntary codes.

Mirka's Injury Rate history (IR) in Finland 1999 – 2018



During the reporting period (1999–2018) no fatal accidents occurred.

$$IR = \frac{\text{Total number of injuries}}{\text{Total hours worked}} \times 200,000$$

The factor 200,000 is derived from 50 work weeks at 40 hours per week per 100 employees.

Improved ergonomics through robotics

In Karis, there has been significant investment in both energy efficiency and ergonomics over the past two years. The new production hall that was introduced in 2017 only uses LED lighting in both the ceiling and as work lights at the machines. All in all, it has been a successful introduction and feedback from production workers has been positive regarding the brightness.

Also, changing the lighting in the entire factory to LED, has been considered, but since lighting fixtures in the older part were updated recently, a more feasible solution is to gradually change the fluorescent tubes to the corresponding LED tubes.

The biggest advance in ergonomics has been the automation of yarn roll

handling in the weaving process. Before, the rolls, weighing approximately 3-6 kg, were loaded into the machine manually, and since there are thousands of rolls the task was repetitious and unergonomic. Now there are three robotic arms that load rolls for most of the material qualities. This has meant that the operators can focus more on manufacturing itself.