



Executive summary

Nowadays, a common behaviour in the fashion industry is to cheaply and rapidly mass-produce pieces that respond to the fast-changing trends. The products are conceived to expire and that comes with huge environmental impacts. This is where Nordgreen aims to take a step forward. The brand has a long-term vision to change the watch industry from within and has taken on the challenge of creating the world's most sustainable watch: Guardian.

The thinking behind Guardian is to extend the life of the watch to the maximum, as much as 100 years. The reason behind this goal is to reduce the environmental impact caused by the production of each watch. This includes natural resources extraction, emissions, energy consumption and generation of waste. From an environmental perspective, it is 'the next best thing to not wearing a watch'.

Together with circularity and sustainability experts, a lifecycle research and development project was conducted. The study started by a 'cradle-to-gate' environmental screening of a watch to detect the stages of the lifecycle and components of the product that exert the most environmental damage. Guardian is designed to the essential, where every individual element has a distinct role to play. Thus, materials and design alternatives were studied specifically for each component. Lastly, circular strategies were introduced for the complete lifecycle.

The results of the environmental screening showed that the material extraction stage has a more significant impact both in terms of energy consumption and CO₂ footprint than the manufacturing phase. The parts of the product with a bigger contribution, and therefore the ones studied, are: the case body and case back, the dial, the strap and the glass. A study of alternative materials for each of these critical components of Guardian was conducted in order to select a sustainable option. The alternatives were assessed according to a number of evaluation criteria aimed to measure the life expectancy and environmental impact. In addition to the selection of materials, design decisions for every component have been made considering other evaluation criteria: minimization of issues and reduction of maintenance.

The breakdown of materials and design choices for Guardian from these two processes is the following. The case is a round, high in thickness design which holds a Miyota Caliber 9039 automatic movement, sealed by a screw case back. The inclusion of crown guards has been decided on for a higher protection of the crown which is connected to the movement by a T-bar. An H-link strap adjusts the watch to the wrist of the user, using a butterfly lock. Finally, the selected glass is a flat Sapphire crystal and the dial is made of painted brass. All studied parts for which material has not been mentioned are made out of 85% recycled SS 316 LN.

Apart from the decisions on the product design, there are others to be made throughout the complete lifecycle, leading towards their goal of becoming carbon neutral and, consequently, minimizing their environmental footprint. From manufacturing to delivery, land, sea and air freight are used. The latter has been reduced to the minimum, not allowing express shipments when alternative means of transportation are possible. The carbon footprint of all transportation of Guardian, as all other Nordgreen products, is offset completely. Nevertheless, Nordgreen works towards finding even more sustainable solutions for the future.

Every component of Guardian comes from a responsible supplier that has signed Nordgreen's Code of Conduct and Banned Chemical Declaration and that is ready to offer full transparency in its actions. Guardian is produced with the most sustainable stainless steel in the world provided by the leading world producer of this material who has a commitment with moving society to sustainable solutions.



The packaging of Guardian also lives up to the values of the watch, it is a 3D printed box made out of recycled PLA.

Guardian introduces a new strategy towards circular economy into Nordgreen: a Buyback Program that aims to take back to the supply chain as many resources as possible. At the end of the use life of the watch, users have the opportunity to have their Guardians bought back and get a percentage of the original price of the watch refunded. There are two options for the watches' life continuation: refurbishment and recycling. At the same time Guardian will be, as every Nordgreen product, part of the Giving Back program in which customers can choose to donate money to one of the three solidarity causes the brand supports: health, environment and education.

Overall, the study has provided good fundamentals towards achieving the world's most sustainable watch. However, Guardian's ambition surpasses what has been possible to do until now and future knowledge has to keep being collected to optimise it even further.

The study also presented some limitation. The 'cradle-to-gate' approach only considered raw material extraction and manufacturing phases. Even though efforts have been put on the whole life cycle of Guardian, the lack of data on the logistics, use and end of life, could have underestimated the importance of some stage. There were some limitations to calculate the lifetime expectancy of the materials that could have had an impact on the results due to its high sensitivity. In the material study, the lifetime durability was defined based on experts personal experience, however in order to work with more precise data, physical and chemical tests that resemble the normal use of the watch need to be performed.

Qualitative data could be combined with quantitative data evaluating the design alternatives on measurable parameters. As well, Guardian could have considered creating novel solutions for its components instead of using existing alternatives.

The future steps in Guardian's sustainability roadmap will be: to have a full Life Cycle Analysis (LCA) commissioned to evaluate what has been the real impact of these choices and to find new hotspots to improve and an assessment of the current concept of Guardians supply chain and logistics to identify the hotspots in terms of environmental impact and evaluate potential strategies.