LEDiL

2024

Sustainability report



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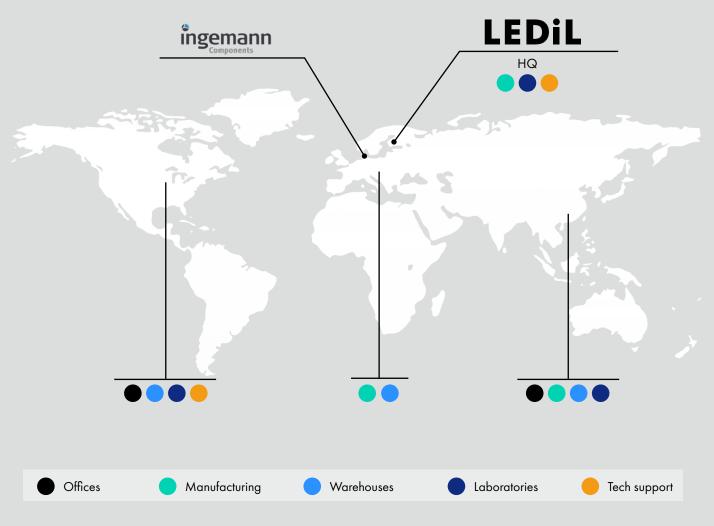


LEDil Group overview

Our story is one of continuous discovery. Since our beginnings in 2002, we set out on a mission to perfect light for a luminous future

for humankind and the life around us.

LEDiL's global presence has expanded steadily with subsidiaries in the USA, China, and Germany, and the 2024 acquisition of Ingemann Components in Denmark. LEDiL also operates the logistics warehouse Delivered Ltd in Hong Kong and is represented by sales agents operating internationally. Most employees are based at LEDiL's headquarters in Finland and Ingemann Components' headquarters in Denmark.



CEO words

Innovative optics: reducing emissions and enhancing well-being

In line with our vision to enhance well-being, functionality, and safety for a more sustainable future, we have gathered a few inspiring examples on the following pages that show how efficient lighting can both reduce the carbon footprint, and improve the quality of life, for both people and the natural world around us.

As a world-leading provider of secondary optics, we help our customers, luminaire manufacturers, drastically reduce energy consumption without compromising visual comfort. High efficiency, the key to a low-emission footprint over a luminaire's lifespan, requires the use of virgin plastic for lenses. However, we actively support the use of

recycled plastics in films and sheets, an area where we have extensive experience in collaboration with our customers. For every product we deliver, we ensure that the materials used are both durable and recyclable.

In 2024, we launched the EcoVadis sustainability platform to assess and strengthen our efforts in environmental responsibility, labour and human rights, ethics, and sustainable procurement. We were awarded a bronze rating, placing us among the top 35% of companies assessed. This platform serves as a valuable tool for continuous improvement, and we have set our sights on reaching the silver level, the top 15%, by 2026.

Our 6% employee turnover rate and 1.3% sickness rate in 2024 are achievements we are proud of. They reflect our ongoing efforts to support a healthy work-life balance and our increased focus on the psychological work environment, including a positive atmosphere

and flexible working models, all of which contribute to employee well-being and satisfaction.

Strong and capable partners play a critical role in LEDiL's business model. In 2025, we will introduce a dedicated Supplier Code of Conduct to further promote responsible and ethical practices throughout our supply chain.

Together, we continue to perfect light for a luminous future.



Kimmo Rauhala CEO

At the core of our business

Our mission

Perfecting light for a luminous future.

Our values

Customer benefit
In this together
Competence
Inspiration
Respect

Our vision

To enhance wellbeing, functionality and safety for a more sustainable future and improved quality of life.



Inspiration

"We are curious and inspiration is the source of our innovation"



Competence

"We take pride in our profession and are dedicated to climbing the mountain of knowledge"



Customer benefit

"Creating real benefit for alla customers is at the core of everything we do"



Respect

"We value people and believe that mutual respect is about appreciation, fair treatment and consideration for all"



In this together

"One LEDiL, one team, one goal"

LEDiL sustainability in brief

This sustainability report highlights LEDiL's ongoing commitment to reducing emissions – recognising that lighting is a major source of electricity demand* and can play a key role in addressing the global climate challenge. Sustainability remains central to our strategy, guided by materiality and GRI standards.



Core commitments to a sustainable future:

Energy efficient technology

Our innovative LED optics enhance lighting efficiency by reducing energy waste, emissions, and raw material use – driven by our commitment to continuous innovation and peak performance to boost luminaire sustainability.

Sustainability through modularity

Modular designs extend product life, support repairs, and reduce waste by enabling easy component replacements and upgrades.

Prioritising people: safety and wellbeing at work

LEDiL promotes a safe, healthy, and supportive work environment, with an 93% of employees expressing satisfaction in the 2024 survey, and ongoing commitment to communication, development, and work-life balance.

Accountable and transparent processes

LEDiL ensures integrity, clear processes, and strong partnerships, prioritising transparent reporting, responsible operations, and data privacy.

We achieved an EcoVadis Bronze rating in 2024 and are committed to improve the level.

Upholding ethical excellence

We maintain integrity, fairness, and transparency, enforcing zero tolerance for bribery and corruption. Employee well-being is a priority, fostering a safe and respectful workplace.

Smarter light, luminous future

With over 90% of a luminaire's total carbon footprint coming from its energy consumption, efficient lighting is essential for sustainable buildings. Smart choices in quality optics play a key role in achieving this. When LEDiL moved to its new office, the lighting was designed to optimise both energy efficiency and visual comfort. By incorporating LEDiL's high-quality LED optics in linear luminaires, the setup meets UGR standards, delivers a more efficient output, and results in 20–30% energy savings. This project demonstrates how smart lighting design drives both sustainability and workplace well-being.





Sustainable lighting in harmony with nature

When Pori council sought an eco-friendly lighting solution for its forest fitness track, Greenled and LEDiL provided an innovative approach. By integrating LEDiL's AMBER lens with Greenled's Vega S fixture – crafted from 100% recycled aluminum – the project prioritised sustainability, reducing light pollution and minimising environmental impact. The amber optics filter out ~99% of blue light, preserving nocturnal wildlife while maintaining effective illumination. This solution demonstrates how smart lighting can enhance outdoor spaces while protecting biodiversity.





Illuminating sustainably: upcycled innovation

By rethinking materials and energy efficiency, Fagerhult and Ingemann collaborated to create the sustainable Kvisten pendant, focusing on CO2 reductions both in the manufacturing phase and by maximising energy efficiency (lm/w) to reduce lifetime electricity consumption. A game-changing partnership with Stena Recycling repurposed reflective materials from discarded TV screens, giving them new life as PCB reflectors instead of relying on virgin materials. Every componen was optimised for efficiency, with thinner, smarter designs cutting waste and carbon impact. A bold step toward a circular future, proving that sustainability truly shines through innovation!





Efficient lighting, designed for people

Belid is a leader in human-centric lighting solutions for elderly homes. The SolMate collection of table lamps and pendants was created through extensive studies and collaboration with universities and municipalities. During the R&D phase, Ingemann played a key role in selecting the ideal LED diffuser and developing a highly reflective PCB reflector, resulting in a 20% boost in optical efficiency. This partnership demonstrates how purposeful innovation in human-centric lighting can also drive significant efficiency gains.







Sustainability topics and our focus

As part of our ongoing commitment to sustainability, we asked our employees which United Nations Sustainable Development Goals (SDGs) resonate most with our work and how they see our impact in practice. The responses highlight the ways our everyday actions and innovations support key global goals.

Our products are designed for outstanding performance, efficiency, and durability, guaranteeing long product lifespans and replacement cycles.

- We make continuous improvements to optimise product design for more efficient production.
- We enable significant energy reductions in the end product, targeting the area where the majority of its climate impact occurs.

We define clear product requirements to ensure efficient and purposeful production.

We ensure that our material choices and the materials used are compliant with all relevant laws and regulations.





We are committed to consistent production controls to avoid unnecessary waste.

Optimised production and smart engineering help us reduce energy and material consumption.

- We deliver customer satisfaction through consistent, sustainable, and high-quality solutions.
- We choose production locations with customer proximity in mind, minimising logistics emissions.
- Streamlined production ramp-up enables us to optimise production parameters and machine selection.

Sustainability topics and our focus

The environmental impact of LEDiL products and services

The positive environmental impacts of our products and services are related to LED lighting energy saving and reducing hazardous substances found in traditional lighting i.e. FL (fluorescent lamps) and HID (high intensity discharge) lamps, as well as enhancing the efficiency of special applications and reducing environmental footprint e.g. in horticultural applications. The use of our products can directly contribute to reducing light pollution and its negative effects on biodiversity.

Our products are designed to maximise the energy efficiency of LED lighting by directing light precisely to where it is needed. When it comes to lighting sustainability, the emissions generated during a product's use phase outweigh the climate impact of manufacturing it. Lighting accounts for around 15% of global electricity consumption, and even more than 90% of a luminaire's carbon footprint comes from its usage. That's why in-use efficacy is so critical – every improvement in real-world performance can lead to substantial carbon savings.

Modularity is the basis of our design ideology which allows us to combine fewer parts and tools into a large number of tool combinations and end products, reducing the need for producing, transporting and warehousing large numbers of end products, and reducing the total amount of different molding tools.

With our wide range of standard products and custom product design services and support we help luminaire manufacturers in developing optimal solutions for better quality and more efficient lighting.

LEDiL operation's environmental approach focuses on fulfilling environmental compliance, ensuring efficient material and energy usage, appropriate handling and reduction of waste and reducing our carbon footprint. Key internal projects focus on optimising our logistics chain and product packaging in order to minimise direct climate impact.

LEDiL sustainability focus areas



Environmental compliance



Emissions in logistics chain



Employee wellbeing and safety



Ethical business practices

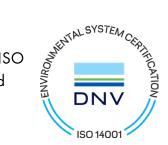


Responsible supply chain



Certifications

LEDiL environmental compliance is based on ISO 14001 standard. Currently LEDiL holds ISO 14001:2015 certificate which was recertified by DNV in May 2024 and the next audit is scheduled for May 2025. We constantly maintain and develop our environmental management system. All LEDiL products are REACH and RoHS compliant.



EcoVadis is a globally recognized sustainability rating platform that assesses companies' environmental, social, and ethical performance. The EcoVadis certification evaluates businesses across key sustainability criteria, including environmental impact, labor and human rights, ethics, and sustainable procurement. LEDiL received the bronze rating (top 35%) in May 2024. The objective is to get the silver rating by the year 2026.



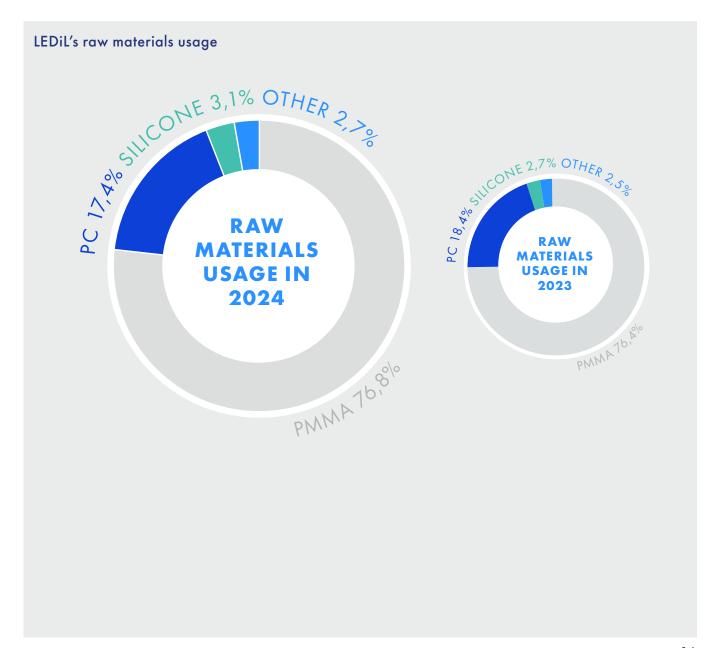
Ingemann holds ISO9001:2015/14001:2015 certificate which have been certified in 2024. The first certication of ISO9001 dates in 2015 and the ISO14001 was introduced and certified in 2024.



Materials

LEDil's designed LED secondary lenses and reflectors are produced from plastic and silicone raw materials. The benefits of plastic compared to glass, another optically competitive material are the lower price, lighter weight and lower energy intensive production process. The weight of optical plastic is 6 times lighter than optical grade glass.

LEDiL's aim in product design is to optimise raw material usage and hence reduce environmental loading and waste as far as possible. We actively test and study new materials to find more ecological solutions. All of our products manufactured out of PC or PMMA are fully recyclable. LEDiL's annual raw material usage in 2024 based on material purchasing was 616 tons (last year 669 tons), shows in the graph. Over 90% of Ingemann's annual raw material consumption is PMMA, PET, PETG and PS.



Sustainable packaging development

At LEDiL we are committed to making smart, sustainable packaging choices that minimise waste, reduce environmental impact, and align with our company-wide sustainability efforts. Packaging development is an ongoing process that we continuously optimise with sustainability in mind.

We use only 100% recyclable packaging materials, eliminating PVC and multi-material packaging with mechanical fastenings that could hinder proper recycling. When designing new trays, we ensure they are universal to allow for greater efficiency and flexibility in packaging across different product lines. This approach reduces material waste and optimises space utilization.

Packaging material usage	Tons			
	2024	2023	2022	2021
Plastic packaging material (recyclable)	37,6	56,6	61,7	68,9
Carton packaging material (recyclable)	40,3	61,3	80,0	91,1
Wood pallets (EUR, reusable) *	29,4	19,7	14,2	14,0
Plastic pallets (reusable) *	10,4	16,6	21,3	14,6

Our key development areas

Reducing plastic use

We use recyclable plastics in our packaging and aim to minimise plastic packaging content wherever possible. We prioritise cardboard when suitable, and when plastics are necessary, we evaluate foam materials to optimise product fit, reducing both material use and shipping weight.

Reducing material weight

Lightweight materials enhance shipping efficiency, reducing emissions and overall environmental impact.

Optimised packaging design

By refining packaging sizes and materials, we minimise excess use while ensuring product protection during transportation.

Recyclable and renewable materials

We choose packaging materials with recyclability in mind and strive to increase the proportion of recycled content where possible, ensuring that the durability and performance of the packaging are not compromised.

Customer awareness

We provide clear labeling whenever possible to support responsible recycling and disposal practices.

By continuously refining our packaging strategy, we aim to lower our environmental footprint while maintaining the highest standards of product protection.

Highlights of LEDiL's sustainable packaging initiatives

2020

Reevaluation of LINNEA packaging led to the adoption of a simple, stacked solution using dust-minimising cartonboard, eliminating the need for plastic and resulting in a significantly more efficient footprint.

2016-2017

Switched packaging for the top 5 product families from PET trays to foam trays, raising efficiency by reducing weight, using less packaging per product, and allowing more products per carton.

2019

Design of new stackable connector packaging method introduced and rolled out, optimising space and reducing the footprint, allowing more products to fit in a smaller area.

2022

Introduction of packaging material with a proportion of recycled materials while maintaining performance, with ongoing efforts to increase this proportion going forward

2023

Modification of YASMEEN and AMY HLD2 packaging from PET trays to stacked in plastic bags, reducing plastic use and optimising space efficiency.

2023

Introduction of the recycling triangle on packaging began and is being gradually added to different parts of the packaging where applicable.

2023

Optimisation of AMY-45 tray layout, increasing the number of products per tray and box by 50%, improving efficiency and reducing packaging waste.

2024

Introduction of kraft cartonboards at our China packaging facilities, enabling packing of some products from PET tray or foam sheet packaging to plastic-free packaging.

Energy

Our measurable in-house energy consumption is based on head office electricity consumption readings for facility, machinery and heating. LEDiL headquarters relocated to new office spaces in April 2024, facilitating a more efficient utilisation of square footage. The new, more modern workspaces better support work, while open-plan office area enhance collaboration between teams. The new premises' electricity consumption is 82% lower than the old premises due to the smaller square footage and more efficient heating.

Ingemann has been added to the LEDiL Group 2024 reporting, showing higher consumption due to production activities.

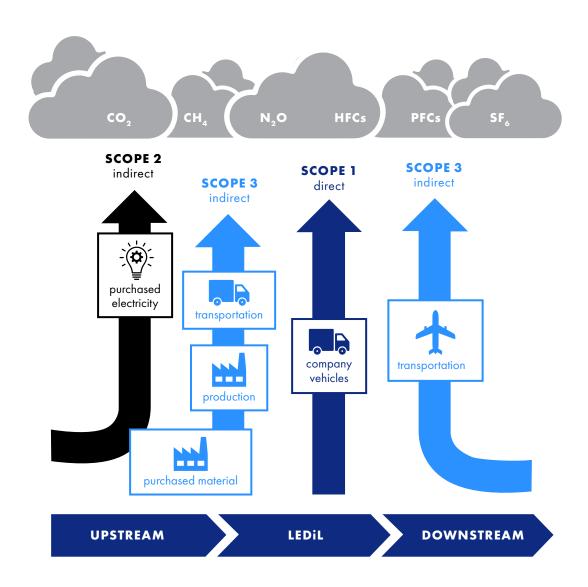
The main contributor to energy consumption in our value chain is the energy used in our supplier's injection molding factories. This part of our energy consumption can only be estimated from available literature and studies of energy consumption in injection molding together with production volume.

LEDiL Group electricity use (kWh)	2024	2023	2022	2021
LEDiL electricity use +	109 000	232 000	230 000	270 000
Ingemann electricity use +	103 000	-	-	-
Solar electricity production for own use -	15 000	120 000	120 000	150 000
Net electricity use	197 000	112 000	110 000	120 000
Energy consumption in production (MWh)	2024	2023	2022	2021
Estimated electricity use in injection molding	1 286	1 230	1 714	1 766

Emissions

From 2019 onwards LEDiL sustainability reporting has implemented a new calculation method for CO2e reporting according to the Greenhouse Gas (GHG) protocol which divides emissions into 3 scopes and direct/indirect emissions. LEDiL's emission split into scopes 1–3 is shown in the picture below.

The direct emissions of our operations in scope 1 include emissions from company owned and leased vehicles. Emissions related to company facilities are due to purchased electricity which is reported as indirect emissions in scope 2. The emissions in the upstream of our supply chain in scope 3 are emissions due to the production of purchased raw materials, emissions due to production at suppliers, and transportation. In the downstream of our supply chain the emissions are mainly due to logistics. Ingemann emissions are included in the calculation for the entire year 2024.



The main carbon footprint in our value chain is due to the production of plastic and silicone raw materials in the upstream and logistics emissions in the downstream. In 2023, we refined the calculations for our suppliers. We have also taken into account work trips and company car emissions.

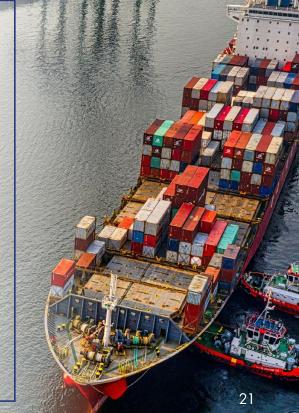
In 2023 we changed our logistics by moving our main warehouse from Finland to Poland. A location closer to our customers and shorter material transport from Asia to Europe had a significant impact in terms of reducing emissions. We were able to reduce logistics emissions by optimising our production footprint and increasing the share of sea freight for internal goods transfers. The same sustainable operations and optimised use of packaging materials used in the Finnish warehouse continued in the new warehouse.

Ingemann is included for the full year 2024. Ingemann has

implemented an add-on to its ERP that calculates emissions based on invoices processed in the system. The system is being trained with new suppliers to improve accuracy over time.

LEDiL's GHG	emission	split into	scopes	1-3
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	Group	2024	2024		2023	2023		2022		
	tCO ₂ e	%	tCO ₂ e	%	tCO ₂ e	%	tCO ₂ e	%	tCO ₂ e	%
SCOPE 1	22,3	0,3	6,1	0,1	5,5	0,1	1,6	0,0	1,6	0,0
Company owned vehicles	6,1	0,1		0,0	5,5	0,1	1,6	0,0	1,6	0,0
Ingemann	16,2	0,2								
SCOPE 2	71,4	0,8	24,6	0,5	38,4	0,7	51 , 7	0,7	75,9	0,9
Purchased electricity for own use	24,6	0,3		0,0	38,4	0,7	51,7	0,7	75,9	0,9
Ingemann	46,8	0,6								
SCOPE 3	8 356,6	98,8	4 925,6	99,4	5 151,1	99,2	7162,2	99,3	8 029,7	99,0
Logistics	641,3	7,6	641,3	12,9	791,3	15,2	1 296,9	18,0	1 863,1	23,0
Production of purchased materials	3 715,6	44,0	3 715,6	<i>7</i> 5,0	3 522,1	67,8	4 750,8	65,8	5 018,6	61,9
Production at suppliers	534,5	6,3	534,5	10,8	799,3	15,4	1 114,4	15,4	1 148,0	14,2
Employee commute	34,2	0,4	34,2	0,7						
Ingemann	3 431,0	40,6								
Total	8 450,3		4 956,3	3	5 194,9		7 215,5		8 107,2	



Waste

Our aim is to minimise the generation of waste in general, promote recycling, and minimise the amount of waste to landfill. Our primary efforts in waste management are focused on LEDiL headquarters and warehouses in Poland and Hong Kong. The aim is to expand reporting to include all subsidiaries.

In Salo headquarters waste sorting is every employee's responsibility.

Office spaces, the dining and break space, warehouse and laboratory are all equipped with appropriate waste sorting containers that enable easy sorting of paper, cardboards, bio-waste, metal, energy waste, security plastic, and packaging plastic. Employees are instructed to use these sorting stations appropriately to optimise material circulation. Security destroyed plastics is mostly scrapping of discontinued

products as part of LEDiL's product life cycle management.

The rise in waste levels in 2024 is a result of clearing out the old office premises following LEDiL's headquarters relocation to new office spaces in April 2024.

The increase in security destroyed plastics in 2023 is due to inventory clearing before transit to Poland warehouse.

At Ingemann's office, all raw materials are sorted according to colour codes, with each material having its own colour code, and waste is collected and recycled. 2023 Figures are between April and December due to change of supplier.

Waste by type

LEDiL headquarters Salo, Finland (tons)	2024	2023	2022
Carton (recyclable)	1,500	4,400	4,000
Security destroyed plastics (incineration)	6,799	8,371	2,900
Biowaste	6,060	2,604	2,352
Energy waste (incineration)	4,920	0,582	1,624
Plastic (incineration)	0,674	1,936	1,247
Recyclable paper	0,682	0,156	0,304
Hazardous waste	0,648	0,018	0,019
Metal	0,276	0,006	0,004
Total	25,579	18,073	12,450

Ingemann office Bjæverskov, Denmark (tons)	2024	2023*			
Mixed for sorting	-	3,000			
Cardboard / paper	8,040	2,200			
Plastic foil (thickness <0,5 mm)	7,080	2,540			
Plastic (thickness >0,5 mm)	2,480	-			
Pvc	9,600	2,820			
Residual waste	46,290	22,680			
Metal	-	2,970			
Total	73,490	36,210			
* 2023 Figures between April and December due to change of supplier. Same data not available from previous supplier.					



Social and employee responsibility

Employee wellbeing and safety

The primary objective at LEDiL is to offer employees a healthy and safe working environment. Our target is zero accidents annually. All new employees receive training in health and safety. A health and safety committee consisting of representatives from employees, the employer, and HR meets regularly to follow up on issues and take action when required. Cooperation with the occupational health services provider is active and focuses on preventive measures and the continuous development of employee wellbeing.

In addition to physical safety, we place increasing importance on the psychological work environment. We recognise that a positive atmosphere, flexible working models, and a healthy work-life balance play a key role in supporting employee wellbeing, and our employees agree. LEDiL's flexible ways of working and weekly sports activities are just a few examples of how we strive to maintain a good balance and strong team spirit.

We follow ISO 45001 standard principles in our OHS management. In addition to health and safety requirements, including zero tolerance for discrimination, these principles are defined in our Code of Conduct, which we also require our suppliers to adhere to.

LEDiL key metrics for occupational health and safety 2024 2023 2022 2021 Work related injuries 0 pcs 2 pcs 1 pcs 0 pcs Sick leave rate 1.30 % 1.37 % 1.73 % 1.53 % Employee turnover 6,0 % 5,0 % 7,0 % 7,0 %

LEDiL employee data	2024	2023	2022	2021
Number of employees in the end of year	156	112	113	108
Share of women in employees	35 %	38 %	35 %	35 %
Share of women in the management team	0 %	9 %	9 %	9 %



Social and employee responsibility

Competence development

Competent, innovative and motivated people are key to LEDiL's success. Staying ahead of the competition requires constant development as an organization and individual learning. As a foundation of competence development LEDiL is continuously mapping training needs and listening to employee's aspirations for personal and organisational development. Every employee has a development plan, objectives and a means of how to reach those objectives. LEDiL actively supports employees to improve individual and organisational performance.

Employee satisfaction 93%

Employee satisfaction

We are committed to continuously maintaining and developing employee satisfaction. At LEDiL, the wellbeing of our people and a positive working atmosphere have always been key focus areas. To support this, we have implemented flexible work practices and adopted a hybrid working model, laying the groundwork for a healthy work-life balance and greater employee satisfaction. Since 2018, we organise an annual employee satisfaction survey to ensure we are consistently listening and improving. In 2024, the results showed that 93% of LEDiL employees were very or quite satisfied with LEDiL as an employer. Going forward, we are focusing on more systematic crossdepartmental communication, increasing training and development opportunities, and streamlining project management at the departmental level.



Business ethics and anti-corruption



Social and employee responsibility

Compliance

We are committed to following all applicable environmental, safety, quality, and business-related laws and regulations. LEDiL Code of Conduct establishes LEDiL company standards for ensuring safe working conditions, equal and respectful treatment of workers, and environmentally responsible and ethically conducted business operations. The highest standards of integrity are to be upheld in all business interactions enforcing zero tolerance for corruption and bribery.

All LEDiL employees and sales agents have been trained in the code of conduct and anticorruption, and the training rate is followed and reported in the LEDiL sustainability KPI. Every new employee is trained on these topics during the induction period. To be able to prevent and take actions in case of misconduct against the code of conduct, a Whistleblowing channel was established in 2018. The channel is an externally managed third-party service that enables anonymous reporting for all LEDiL employees and stakeholders.

Data privacy

LEDiL is committed to protecting the required privacy expectations of personal information of everyone we do business with, including suppliers, customers, consumers, and employees. We carefully safeguard the confidentiality and availability of our proprietary information. We fulfill the requirements of the GDPR data protection regulation which came into force on 25th May 2018.



Social and employee responsibility

Responsible supply chain

LEDiL is committed to conducting its business in a responsible and sustainable way and we expect the same commitment from our suppliers and business partners. By careful selection and evaluation of suppliers and partners, we ensure that quality, human rights, environmental, anti-corruption and other business ethics requirements are met. All suppliers have signed the agreement to LEDiL code of conduct as targeted. During co-operation with the supply chain we evaluate the supplier's operations and compliance with agreed ways of working by on-site audits. Within our supply chain, we prioritise the safe and healthy handling, storage, and disposal of chemicals, which we actively monitor through routine supplier audits and visits. LEDiL and its suppliers are committed to the non-use of conflict minerals.

We are creating a Supplier Code of Conduct in 2025, with implementation planned to follow thereafter, to ensure responsible and ethical practices throughout our supply chain.



LEDiL sustainability KPIs 2024



2025 Outlook: setting our sights on the upcoming targets



