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Permascand is committed to using its expertise to provide electrochemical solutions to meet the needs of current generations without compromising the ability of future generations to meet their needs.

SUSTAINABILITY REPORT

Permascand recognizes that this means addressing economic, environmental, and social needs. The company therefore commits to considering such needs, for the present and the future, throughout the life cycle of its products, including manufacturing and procurement of materials and services.

The company's very business idea revolves around the United Nation's sustainable development goals, numbers 9, 12, 13, and 14. This is why Permascand also strives to embed sustainability throughout the entire company's operations. Several of Permascand's products are key enablers to the global transition towards a more sustainable future as they aim to:

- Reduce energy consumption and avoid high downtime and product failure costs for several industrial processes.
- Preserve marine ecosystems through ballast water treatment systems. These use electrolysis to produce an active substance that disinfects water to eliminate the threat to biodiversity posed by biological pollution.
- Provide technology for the efficient extraction of lithium, copper, and nickel, which are important compounds in the global sustainable energy transition due to their uses

in fossil-free transportation.

- Create the infrastructure for energy storage and transferral which is needed for the transition from the fossil economy.
- Apply materials knowledge in niche areas of electricity transferral technology.
- Provide technology for reducing energy consumption and cost in the manufacturing of hydrogen. Hydrogen is an important industrial material is which also set to play a key role in transportation and energy storage enabling non-fossil energy production to compete on the largest scale as green hydrogen.

Business model

Permascand's business model is based on generating initial revenue from selling electrodes and electrochemical cells with the company's proprietary catalytic coatings. Over time, the catalytic coating is worn down and needs to be replaced to maintain energy efficiency and operational reliability in the customers' electrochemical processes.

Permascand's contribution to selected UN Global Sustainable Development Goals:









Risks relating to sustainability

Environmental risks and measures taken to mitigate them.

Consumption of titanium

The production of titanium creates an environmental burden through energy consumption, emissions from mining and refining, as well as land use from extraction and refining activities.

Risk is managed through re-manufacturing and extending the product life, recycling titanium scrap from end-of-life products and offcuts, recycling from the wastewater treatment system, and optimizing product design and sourcing to eliminate offcuts,

Energy consumption

Permascand's internal electricity consumption comes from renewable sources and since the end of 2019 heating has primarily been generated from biofuel pellets, with oil used only as a support fuel. Permascand recognizes that renewable energy may in turn have a negative impact aside from contributing to climate change. Efforts have thus been made to reduce energy consumption through LED lighting and updating equipment and machinery, such as laser sources.

Resource consumption of noble metals

The extraction of noble metals used in catalytic coatings can have a significant local impact. Furthermore, noble metals are a scarce and non-renewable resource. Risk is managed through process optimization to reduce consumption per produced unit.

Further efforts are ongoing to reclaim materials from the waste streams. The main activity in 2021 was the

implementation of more efficient application equipment in the company's main coating plant. This has led to higher coating yields by reducing overspray and improving coating quality, thus reducing the noble metal footprint of the products overall.

In 2022 the company will start running a test plant to pilot a different application technology, targeting its lower-yield product categories. The test plant project has been ongoing throughout 2021 focused on resource recovery. Normally titanium and noble metals are recovered from filter material produced in our wastewater plant. This process has been put on hold since 2021 as the treatment plant is being rebuilt and external suppliers are currently being used to treat process liquid. Material recovery will resume when the new plant becomes operational.

Following a promising test project in 2020 on noble metal recovery from the air emissions stream, a project looking at metal recovery from wet fractions has been carried out in cooperation with students from a local university. Some promising methods have been identified and will be assessed pending the publication of the final report.

A long-term project with external partners on a technique to recover noble metal from spent coatings was completed in 2021. It has shown some promise for certain noble metal complexes but has failed to show any results on other categories.

In 2022 Permascand will evaluate the results from the three completed metal recovery projects to identify whether any of the techniques tested could form the basis of the noble metals recovery strategy.



Transportation of incoming and outgoing goods

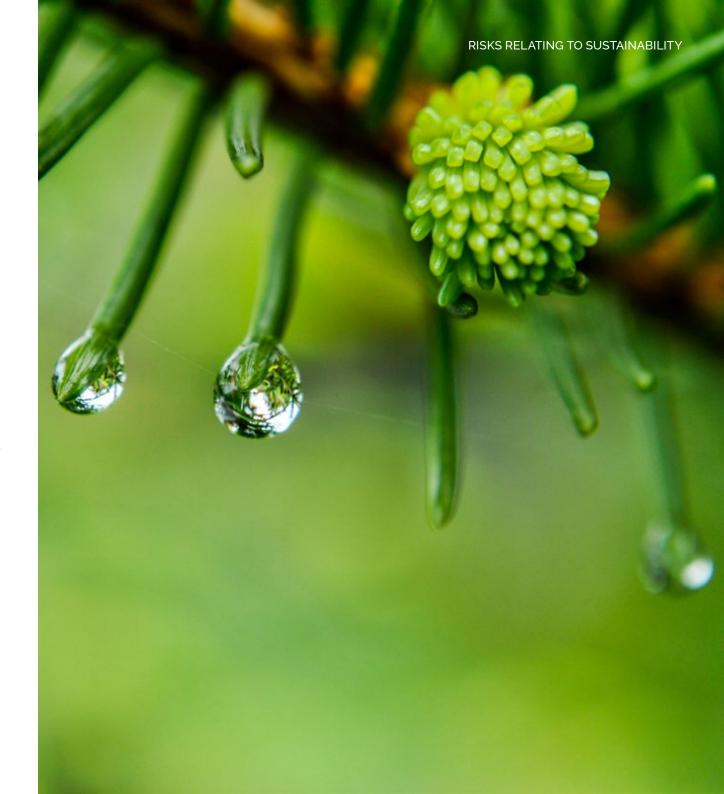
The most significant risk is from road transport by lorry which has a relatively high footprint per unit compared to shipping and high volumes. Air transport, which has a higher environmental footprint, is only used on the rarest of occasions and only when required by an urgent customer need.

Permascand works systematically with its suppliers to reduce the amount of transportation used, however work is required to create a relevant metric for assessing the effects of the company's efforts. During 2021 Permascand began transitioning to the next generation of one of the company's ballast water treatment cell models which was redesigned in 2020 to have a smaller transport and materials footprint. This will have a significant effect on both incoming and outgoing transportation.

Personal travel

As a company operating in a global market and located in a location that is far from transportation hubs, Permascand has significant usage of cars and air travel. Company cars are run on HVO - a diesel replacement derived from waste streams, when available. Company cars that have been added to the fleet from 2021 onwards are either fully electric or hybrid vehicles. As part of this transition six charging stations were installed at the Ljungaverk site in summer 2021.

During the Covid-19 pandemic Permascand has been able to operate with a much-reduced need for personal transport by increasing the use of video conferencing and working from home. As the end of the pandemic approaches, the company is reassessing its travel needs and it remains to be seen what the most notable demands for travel will be in the future. It is already apparent that working-from-home will continue to be used as a tool to reduce the company's transport footprint, even as employees return to the office. Video conferencing tools have evolved to the level where the many meetings that previously required travel will no longer do so. However, it is clear that some travel will still be essential going forward to maintain and build relationships with customers, suppliers, and partner,s and even between colleagues at different Permascand locations.



ESG in today's manufacturing industry

Key ESG issues in the industrial manufacturing sector relate to the upstream impact of resources, the impact of chemical usage on ecosystems, health and safety of employees, and energy use for manufacturing. Upstream sustainability impact primarily relates to sourcing of metals, both noble and otherwise.

Manufacturing and refurbishing electrochemical solutions can have a positive impact on society when applied in green industries. Moreover, refurbishment activities extend the lifespan of electrochemical cells.

Management of key material themes

Permascand aims to examine environmental, social, and economic sustainability matters in its efforts to improve its sustainability performance. The executive management of the company class all known negative environmental/social impacts based on significance. Permascand's executive management plans and executes remedial actions based on significance and the company's ability to address problems. After addressing problems the impacts are reclassified.

In 2021, the company has not found reason to adjust its classifications in any significant way. In 2020 noble metal consumption was re-ranked as a prime area to act upon. Executive management predicted that demand for the materials would grow due to growth in the company's, and other, sectors. The 2021 price fluctuations are deemed to be a sign of this happening. Noble metals are a finite resource that are sourced through mining, thus depleting natural capital during extraction. The materials themselves are taken from nature and cannot be re-extracted, and the mining depletes other

forms of natural capital. Long-term sustainability therefore relies on keeping noble metals in the industrial system.

Energy consumption continues to be a significant matter, but the company has a limited opportunity to reduce its direct impact in this area due to it already having transitioned to green electricity, bio pellets for heating, and having harvested any quick wins in energy efficiency gains. The area of energy/fossil-fuel consumption in transportation is something Permascand aims to address but improvements are going to be incremental as the company operates globally, and its main site is in a sparsely populated area where road transport is the primary mover of people and goods.

Permascand also classes its positive impacts. Currently its most significant positive impact is in ballast water treatment where Permascand's products are a key component in a major portion of the total treatment capacity. The fields of electrification and renewables, plus green hydrogen have increased in significance as demand grows, and the magnitude of Permascand's potential role in supporting the green energy transition also continues to grow.

Employee health and safety is one of the most significant areas of the company's social impact, and goals are set annually to improve the wellbeing of Permascand employees. A project was run during 2021 to identify material-handling improvements in the company's work processes. This project was based on an analysis of the company's incident monitoring system as well as an analysis of product flows through the company. Several of the areas for improvement identified have already been acted upon and further are planned to be addressed as the company is in a phase of evolving and expanding activities.



THEME	COMMENT	2022 GOALS
(Hazardous) materials	Responsible use of hazardous chemicals, and external monitoring in place.	> No incidents in 2022
Energy & GHG emissions	ISO 14001:2015 certified. Hydro electricity used in production and bio-pellets replaced oil-based heating in December 2019. Increase future road transport efficiency through product design created in 2020 and brought to market in 2021. Company cars run on waste-derived diesel replacement. Company cars provided since 2021 are either electric or hybrid vehicles. Six charging points installed at Ljungaverk site.	> Reassess travel needs post Covid-19
	In 2022 a test plant will be put into operation that uses a less energy-intensive coating application technology. This may have a significant impact if it can be applied at scale.	
(Hazardous) waste & wastewater	No spillages in 2021; projects ongoing for recovering materials from waste streams and closing recycling loops. An incident in November 2020 has led to the loss of function of the on-site waste-water treatment services. Currently wastewater is treated by off-site waste management services, and there are no direct emissions from the site to water. This situation will remain until on-site wastewater treatment is re-established, which is expected in summer 2022.	> Re-establish wastewater treatment capacity.
Employee	In 2020 Permascand transitioned to ISO 45001 from OHAS 18001.	> Complete project assessing physical materials handling focusing
health & safety	One accident leading to lost time was registered for 2021.	on increased safety and efficiency.
& salety	Employees present at work, total 2021: 96.9%	> No accidents leading to time off.
	Harassment incidents: 3 (survey completed Q1 2022)	Sick-leave less than 3%. Employees present at work 97% excluding parental leave holidays etc.
	Leadership index: 79% (survey completed Q1 2022)	> 0 incidents of harassment amongst employees.
		> Leadership index >80%
Supply chain management	Use of a third-party service to ensure supplier compliance with ESG standard; initiatives to reduce surplus chemicals.	> On time delivery >97%
Material efficiency of noble metals	During 2020 a project was initiated to implement more efficient coating application technology in the main coating plant. This was completed in 2021. Results show reduced coating consumption across the board.	> Keep performance in the coating plant on the levels seen at project completion or better during the whole of 2022.
	A coating line concept that uses an alternative application method to significantly improve noble metal consumption efficiency for certain product groups has been running during 2021. This should also have an added benefit of reducing power consumption per production unit.	Progress on establishment of new test coating line. Test plant operational in Q2 2022.
Noble metal and titanium recovery waste streams	Normally titanium and noble metals are recovered from filter material produced in the company's wastewater plant. This process has been on hold since 2021 while the treatment plant is being rebuilt and external suppliers are being used to treat process liquid. Metal recovery will restart when the new water treatment plant comes online in summer 2022.	 Assess if technologies investigated 2020 and 2021 can form the basis of a commercially feasible improved recovery system. Identify further avenues of investigation into noble metal recovery.
	Following promising results in a test project in 2020 on noble metal recovery from the air emissions stream, a project looking at metal recovery from wet fractions has been carried out in cooperation with students from a local university. Some promising methods have been identified and will be assessed pending the publication of the final report.	,,,,,,,,,,,,,,
	A long-term project with external partners on a technique to recover noble metal from spent coatings was completed in 2021. It has shown promise for certain noble metal complexes but has failed to show any results on other categories.	
Hydrogen and electrification renewable market	Meet the increased market need for hydrogen production capacity and electrowinning capacity.	> Progress on establishment of new coating line. Project expected to finish Q2 2022 with the initial test phase being completed in 2022.
Ballast water treatment market	Global capacity for cleaning ballast water continues to grow albeit at a reduced rate due to worldwide installation capacity being limited by the Covid-19 pandemic. A very significant part of that capacity relies on a Permascand product.	> Support customer needs while retaining scalability to supply the increased demand post pandemic.
	A program of improvements was carried out in 2020 to increase Permascand's capacity to supply this vital product.	

Promoting environmental responsibility

Permascand acknowledges that its operations have an impact on the environment. The company therefore seeks to reduce its environmental footprint as much as possible through the application of innovative technologies and techniques. Examples include improving energy efficiency at the company's own premises and reducing waste while fostering the efficient use of resources through improved design and process improvements. Moreover, refurbishment extends the lifespan of electrochemical cells spreading the environmental burden over more years of utility.

Manufacturing and refurbishing of electrochemical solutions can have a positive impact on society when applied in green industries. Permascand has set itself a goal to become the number one independent supplier of electrochemical solutions for green technology.

Material management

In the electrochemical industry, the main environmental issues relate to energy consumption and the impact of materials (metals and chemicals) on the ecosystem.

At Permascand, hazardous chemicals are used responsibly and only handled by trained personnel. A list of surplus chemicals was drawn up in 2019 and these were subsequently removed. However, certain chemicals cannot be replaced due to client requests or a lack of alternatives, so since 2019 the company's focus has been on reducing the consumption of chemicals. Sodium Dichromate (SVHC) is used for research purposes to model electrode performance in the chlorate industry where the material is still in use.

Permascand's products rely on metals and chemicals which are not renewable. The company is aware of the upstream impact of mining and refining activities. Unfortunately, there are currently no renewable alternatives available, so the company's focus is on reducing consumption and closing industrial loops by recovering materials from processes, extending the product lifecycle by repairing products, and extending product lifetime to increase the circulation of materials.

Permascand improved its sourcing of materials in 2019,

which reduced and eliminated cut-off waste. During 2020 the company's highest-volume product was re-designed and then brought to market in 2021. The new-generation model uses significantly less material, in particular composites, and will simultaneously increase transport efficiency.

The company endeavours to use noble metals more efficiently in products so as to reduce costs and improve its environmental impact across the value chain.

Energy & GHG emissions

Permascand is ISO 14001 certified. Nickel and titanium used for catalytic coatings in dimensionally stable electrodes improve the life span of the electrodes compared to previous technology (10-14 yrs. Industrial Solutions products typical) and lower the overall energy consumption of products.

Electricity procured by Permascand is generated from (renewable) hydropower. A bio-pellets heating system was implemented in December 2019 to replace oil-based heating and oil is now only used as a support fuel. The global nature of the company's operations requires business travel by air, however digital solutions are used to minimize travel to customers and suppliers whenever possible.

The data presented below demonstrates that Permascand has been somewhat successful in decoupling its growth from its carbon footprint in recent years. Differences in temperature between the years explain the slightly higher energy intensity from oil and pellet consumption in 2021 compared to 2020. Note that the 2021 oil emission factor was calculated using Naturvårdsverket's (Swedish Environmental Protection Agency) 2021 reference.

CARBON FOOTPRINT	2021	2020	2019
CO2 equivalent, direct emissions ton	214	199	966
Revenue MSEK/ emissions, ton CO2	1.9	2.1	0.5
Electricity GWh	2.4	3.4	6
Bio-pellets GWh	2.2	2	N/A
Fuel oil m3	65	54	329



Waste & wastewater

All waste from mechanical operations is sorted and sent for recycling. Hazardous waste streams are monitored and collected by a third-party licensed waste operator. These waste streams are generated in the onsite research laboratory and a few minor waste streams are generated during production (e.g. spray cans, machine lubricant, spent glues, WEE). A project is underway looking at recovering ruthenium and iridium from processes and waste streams. Two research activities in the noble metals area were completed in 2021. During 2022 the company will assess whether the research projects from the last few years can form the basis of a new recovery strategy, and also identify any further activity needed.

Since November 2020 wastewater treatment has been carried out off site by waste service providers. Re-establishing on-site wastewater treatment capacity was a major activity in 2021 and a new plant will be constructed in Q2 2022. The company assessed the feasibility of increasing the recovery of noble metals and titanium in the new plant, as well as including acid regeneration, but none of the techniques investigated were commercially viable at that point in time.

CONSUMABLES & EMISSIONS 2021	GOAL 2021	2021	2020	2019
Revenue MSEK/ consumable water, m3	>2020	0.07	0.06	0.04
Revenue MSEK/ consumable metals, ton	>2020	1.4	1.7	1.3
Revenue MSEK/ emissions, kg HCl	>2020	1.8	1.8	0.9
Revenue MSEK/ consumable electricity, m3	>2020	169	122	74
Revenue MSEK/ emissions, ton CO2	>2020	1.9	1.2	1.1



Promoting social responsibility

Permascand respects all internationally recognized human rights agreements and strives to provide good working conditions for all employees. Staff evaluations are to be regularly conducted to ensure that any misconduct is identified and addressed.

Permascand makes no distinction between gender, sexual orientation, age, race, skin colour, ethnic background, religion, trade union membership or physical ability.

Permascand works to ensure that the company does not use, directly or indirectly, forced labour, illegal child labour or unlawful migrant labour.

Role in society

Permascand has a significant role in the local community, which is in a rural location, by supplying skilled, high-quality industrial jobs in a region that has lost many such jobs. Ljungandalen was historically an industrial hub for the Swedish chemicals industry and Permascand is one of the few remaining companies.

- Employees are surveyed annually on how well Permascand manages to provide fair and equal-opportunity employment.
- Permascand has regular contact with the local authority to build and maintain good relationships.

- Permascand sponsors young sales talents and hires interns from the local high school in Ånge. Every semester the company takes in two students for the workshop and two economics students for specific internal projects.
- An annual environmental report is presented to the local authority providing information on emission levels that could potentially be harmful to the local population.

Fairness

- The majority of employees are represented by unions in accordance with the Swedish Collective agreements between Permascand and the trade unions.
- > Employees are surveyed every year; appraisals are completed annually and cover topics such as work pressure and employee satisfaction.
- > The company complies with ILO standards.
- A staff questionnaire will be carried out to monitor progress on ESG issues. During 2020, a central plan for staff training was drafted, but implementation of much of the staff training was again severely impacted in 2021 by the Covid-19 pandemic. Training activities are expected to return to normal during 2022.



Employee health & safety

Permascand's number one priority is the safety of its employees and the company has a target of zero workplace-related accidents. Permascand is ISO 9001:2015 and ISO 45001:2018 certified, and welding activities are separately certified under ISO 3834-2 and 4. The QHSE (Quality, Health, Safety and Environment) manager is responsible for monitoring compliance with health and safety protocols in the company's operations. Health and safety is discussed during management meetings on a weekly basis. Permascand's accident rate has been at one per year for the last two years. Permascand uses external consultants to monitor air quality and noise exposure in relation to health and safety, vibration and electromagnetic fields, leading to improvements in working practices. In 2020, the automation of several processes (grinding, welding, buttoning) was completed. In 2021 further processes were fully automated including nibbling (cutting) flat material formats, flattening and welding electrode blades and BWT cells, plus all connected materials handling. Automation has reduced employee exposure to safety risks related to vibration, noise exposure, welding gas exposure, optical radiation exposure and manual handling.

Permascand provides and promotes all kinds of sports activities for employees. These include an annual running race, floor hockey once a week, and yoga once a month with the mandatory participation of management. Some of these activities are temporarily on hold due to the current pandemic. However, the company has largely managed to keep its on-site staff gym open for its employees during the time of the pandemic recognizing that opportunities for exercise have been curtailed elsewhere during this time.

HEALTH AND SAFETY	GOAL	2021	2020
Presence rate, %	97%	96,9%	96,5%
Leadership index	>80%	79%	74%
Bullying/harassment	0	3	3
Accidents leading to sick leave	0	1	1
Reported HSE deviations	>2020	42	37





Diversity and Equality

Permascand's diversity and equality policy states that the company values all people equally, regardless of gender, age, sexual orientation, disability or other ethnic, cultural and religious affiliations. This means that each individual is valued according to their own unique experiences and competence. The policy applies to employees, people who apply to work at Permascand, customers and suppliers.

The policy commits Permascand to ensuring that all people have the same rights, obligations and opportunities in connection with work, terms of employment, promotion and skills development. This includes equal pay for equal work and a commitment to create a working environment that is welcoming to all, regardless of gender, gender identity or expression, ethnicity, religion or other belief, disability, sexual orientation or age. Permascand strives for an equal distribution of men and women in all of the company's different professional roles and at all levels of the company.

Permascand has zero tolerance for discrimination or harassment, and retaliation is not permitted against employees for speaking out against, or reporting discrimination/harassment, or participating in any subsequent investigations. Permascand defines equality as men and women having the same rights, obligations and opportunities in all significant aspects of life.

Permascand's fundamental ethical principles are to:

- endeavour to make both the physical and psychosocial work environment suitable for all employees
- make it easier for all employees to combine work and parenthood
- > prevent harassment
- investigate all cases of discrimination and harassment in the workplace and take appropriate action
- provide all employees with the opportunity for development and training

- actively promote a more even gender distribution in the company's operations
- > provide all employees with equal pay and terms and conditions for equal performance, when the work performed is the same or of a similar nature and is of comparable level of difficulty

The policy is supported by an action plan which is revised every three years and the current version covers 2020-2022. It includes actions such as: an anonymous annual staff survey containing questions on harassment, discrimination and views on how well Permascand lives up to the goals in the policy; planning of opportunities such as training; important meetings outside school holidays; obligation for flexible working hours for parents; active recruitment targeting women from technical colleges; and regular pay structure reviews to assess equal pay. A mapping of gender and distribution is carried out as part of the plan.

According to the 2021 survey, which had a 90% response rate, almost all employees agreed that Permascand has zero tolerance towards discrimination and harassment and that the company provides equal opportunities regardless of background, beliefs, gender identity, age or disability.

FIGURES 2021		
Number of employees		110
New employees		7
Number of training hours		763
Distribution men/women	Women	Men
Distribution men/women Board of Directors	Women 2	Men 5
Board of Directors	2	

Responsible governance

Policies and policy documents

Permascand is committed to sustainable business practices, the continuous safeguarding and support of its employees and having a positive impact on the societies in which the company operates. The company has adopted several policies and other governing documents to guide sustainability activities.

Permascand's Board of Directors has implemented a group-wide Sustainability Policy. The company applies a sustainability mindset in all corporate activities through the implementation of this policy and other governing documents, including its Code of Conduct and Whistle-blowing Procedure. Moreover, Permascand expects its customers, suppliers and business partners to adhere to standards similar to those in the Permascand Sustainability Policy and Code of Conduct in the performance of their own business.

The Sustainability Policy includes guidance in the following areas:

- > Protection of human rights and labour rights
- > Equal opportunities and prohibition of discrimination
- > Anti-bribery and anti-corruption
- > Environmental responsibility

In addition, Permascand has the following group-wide policies covering sustainability-related topics:

- > Risk Management Policy
- > HR Policy
- > Data Protection & Privacy Policy
- > Work Environment Policy
- > Equality Plan
- Discrimination Policy
- > Information Policy

The company's policies are implemented through ongoing communication to employees and mandatory training. The policies are reviewed annually.

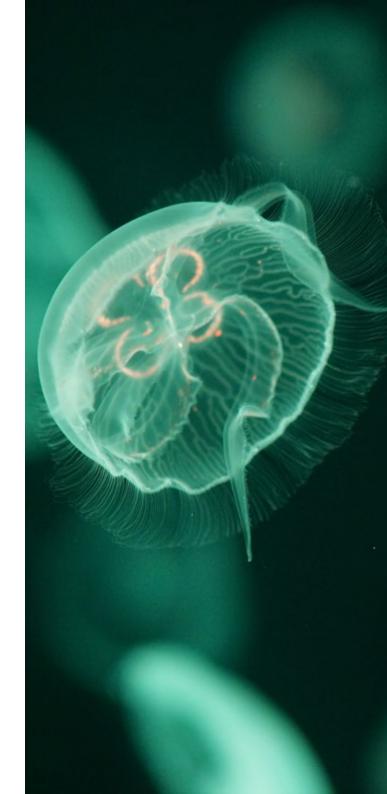
Supply chain management

Permascand's supply chain is managed via the company's Procurement Policy. The policy is applicable to all direct and indirect spend, (the purchase of goods and services not incorporated directly into Permascand's manufactured products). All Permascand employees and third-parties who are authorised to initiate or make purchases on behalf of Permascand adhere to this policy. The procurement process involves selecting and approving suppliers, negotiating contracts, establishing commercial terms, and managing the actual purchase transaction via the most appropriate purchasing channel. Permascand's procurement function's objective is to achieve the best overall value and prevent risk when acquiring or contracting for goods and services, while enabling growth for the business.

Furthermore all employees involved in procurement must follow related processes such as the Employee Travel & Entertainment Expenses Policy, Delegation of Authority (DoA), and Anti-corruption Policy.

Suppliers are managed in accordance with the certified procedures of ISO 9001/14001/45001, with the latest addition being the supplier development handbook, rolled out in 2020. Permascand classes all suppliers according to their relative importance and supply volumes. Higher ranked suppliers represent a larger portion of the company's cradle-to-gate sustainability impact, and they are therefore audited more often (once a year as a minimum) to monitor procedures related to suitability in quality, health and safety, and social and environmental performance, amongst others. Audits are carried out in person, by video link and by telephone.

In 2021 the in-person audit activity has once again been reduced due to the Covid-19 pandemic. Coordination with suppliers has been higher than usual due to increased planning risks from suppliers that have been impacted by the pandemic directly and indirectly, and to reduce the impact from Permascand's own rescheduling.





The auditor's opinion regarding the statutory sustainability report

To the general meeting of the shareholders
Permascand Top Holding AB co.reg. no. 559227-6124

Assignment and division of responsibilities

The Board of Directors are responsible for the preparation of the Sustainability report 2021 pages 1-15 and that they give a fair presentation in accordance with the Annual Accounts Act

The direction and scope of the examination

Our examination has been conducted in accordance with FAR's recommendation RevR 12 Auditor's opinion on the statutory sustainability report. This means that our examination of the sustainability report is different and substantially less in scope than with an audit conducted in accordance with International Standards on Auditing and generally accepted auditing standards in Sweden. We believe that the examination has provided us with sufficient basis for our opinions.

Opinion

A sustainability report has been prepared. Stockholm, April 12, 2022 KPMG AB

Helena Nilsson

Authorised Public Accountant

