

**ENVIRONMENTAL AND CORPORATE SUSTAINABILITY
REPORT 2017**

AS ESTONIAN CELL

PULP MILL



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1. Foreword

Environmental consciousness represents an increasingly significant aspect of the pulp and paper market. One of the reasons for this development is provided by the demand of a growing number of customers for products bearing certification, which states that they are manufactured from wood emanating from sustainably managed forests and therefore meet climate protection stipulations.

The fact that the Estonian Cell has PEFC and FSC accreditation represents just one example of its active commitment to environmental protection. Thus, our business partners can be certain that wood flow standards are complied with during the entire production process and that all the required social, ecological and economic principles are adhered to from the forest to the final product.

These stringent certifications not only furnish the Company with decisive arguments in relation to consumers and partners, but are also important from a general perspective with regard to a related heightening of ecological awareness and the standardization of environmental protection measures.

Moreover, sustainability for the Estonian Cell goes far beyond simple compliance with external directives. For example, throughout the years the company has continued to work on optimizing the energetic value of all waste materials, and the most important milestone is the production of biogas from waste water from 2014. Last year we managed to increase the biogas production due to skilful management once again by another 3% to a new record level at 7.9 million cubic meters. The innovative project has gained recognition in recent years both in Estonia and in Europe. Estonian Cell has awarded "Annual Innovator 2016" title organized by Enterprise Estonia on the business award ceremony.

Comprehensive and sustainable thinking has long been an established part of all Estonian Cell's processes and is considered to be a key factor in its success. This approach not only includes the conservation of natural resources, but also the extension of sustainable conduct to include a fair and open approach to employees, customers, suppliers and all other stakeholders.

In addition to striving for the highest efficiency, we put our main emphasis in all activities on protecting the environment and minimizing the impact of our business operations on the environment. We have a fully implemented quality and environmental control system, certified in accordance with the norm of ISO 9001 and our environmental management standard is certified in accordance with ISO 14001. In addition, health and safety of our personnel is equally important for us. In February 2016 we received the OHSAS 18001 certificate. Last year, the company carried out a comprehensive energy and resource efficiency audit and received confirmation that the company operates in accordance with the ISO 50 001 standard.

We are keen to demonstrate our social responsibility to the environment with openness, direct communication and a willingness to provide adequate information about our mill, strategy and goals - and also with a ready admission of minor problems. Only a direct and honest dialogue and cooperation between all interested parties can bring about successful long-term cohabitation in a world as brimming with technology as ours is today.

We respect the environment and aim to reduce our business impact to environment to a minimum.

2. General information

AS Estonian Cell is an aspen pulp mill located in Kunda, which started production in April 2006. The mill produces Bleached Chemo-Thermo-Mechanical aspen Pulp (BCTMP).

Owner of AS Estonian Cell is Heinzel Holding GmbH.

AS Estonian Cell does use the best available modern technology and its main advantage compared to similar processes is low fresh water and energy consumption per ton of pulp. One of the advantages is the effluent treatment plant that enables removal of most (90%) chemical oxygen demand (COD) and 96% of biological oxygen demand (BOD₇).

Our environmental advantages compared to traditional chemical pulp production are:

- chlorine free bleaching;
- sulphur free production;
- main raw material is otherwise invaluable aspen;
- high yield for wood consumption.

Main raw material is aspen wood, which has been considered less valuable to this point. Energy sources in our production are electricity and natural gas.

The mill's annual production capacity is above 170 000 tons of aspen pulp. This pulp is a raw material for various high quality paper and tissue products. The production in 2017 was 171 708 air-dried ton (2016: 173 099) of pulp.

The produced pulp is exported mainly to Western Europe. Main clients are located in France, Germany and Italy. We sold 73 % to European customers and 27 % to Asian customers with biggest customers in India.

Turnover of the mill in 2017 was 80.7 MEUR.

In 2017 we transported 34% by land and 66% of the pulp by sea (including break bulk 42% and container 24%).

Structure

All activities in the mill are coordinated by Management Board, which consists of CTO and CFO. Estonian Cell employs 86 people; majority of them is working in production.

EC consists of following departments:

- **Production**, all activities from log storage to packing the pulp in the baling line is the responsibility of production department. The production department is coordinated by mill manager to whom senior shift supervisor reports. There are four shifts in production and each shift is led by shift supervisor, whose responsibilities are to coordinate production process and shift crew. Shift consists of– shift supervisor, log lift driver, wood room log lift driver, wood room operator, BCTMP operator, drying line operator, baling line operator and utility person.

- **Laboratory**, which is coordinated by environmental- and quality manager to whom are responsible five pulp laboratory technicians and water laboratory technician.
- **Water and effluent treatment**, which is coordinated by environmental- and quality manager to whom are responsible water treatment supervisor and eight operators. The responsibilities of water treatment operators are to control the operations of fresh water treatment, effluent treatment and sludge removal.
- **Pulp warehouse**, which is coordinated by logistics manager, to whom dispatcher, dispatcher-forklift driver and four forklift drivers report. All activities from storing pulp to dispatching it to a client are the responsibility of pulp warehouse.
- **Maintenance Department**, which aim is to plan preventive maintenance and execute repair works. Maintenance manager coordinates the maintenance department. Mechanical, electrical, automation and instrumentation engineer and technician are directly responsible to maintenance manager. There are eight mechanics and five electricians working in shifts.
- **Administration** consists of chief accountant, financial controller, personnel and safety manager, sales manager and sales- and purchase assistant, logistics manager and purchase manager and spare parts storekeeper.

3. Environmental Complex Permit and legislation

Lääne-Virumaa Environmental Board issued on the 3rd of January 2003 Environmental Complex Permit to Estonian Cell, the permit was amended on the 15th of October, 2012. Complex permit regulates emissions to ambient air, water and soil also waste management. Environmental Board initiated the renewal process of our Complex Permit in October 2017 due to the need to update the data with actual situation.

The renewal process is still on-going, the deadline for new permit has been extended until 28/02/2018.

The conditions stipulated in environmental complex permit must assure the protection of water, air and soil also waste management in the way that decontamination will not be carried from one environmental element to another (water, air and soil).

4. Environmental management system

The company's quality and environmental management system complies with ISO 9001:2015 and ISO 14001:2015 requirements. First certification of management systems was carried out by Bureau Veritas Certification Eesti OÜ in May 2007, recertification audit was carried out on February 2018.

The environmental management system is a part of general management system which is created to control and minimize negative environmental impact of our activities and to increase company's competitiveness via good reputation as an "environmentally friendly company".

At the end of the year, the Company experienced an unexpected setback with the information that the deep-sea outlet pipe had been broken by more than 0.8 kilometers from the shore. In spite of the number of broken places, we believe that leakage of the outlet pipe is not dangerous to the environment, as the treated effluent meets the requirements of the environmental permit. Also, the Marine Observation Report, which reached the company in the last days of the year and was carried out by researchers at the Marine Institute of the University of Tartu in 2017, confirms that the Company's effluent has no negative impact on

the native flora and fauna of the Gulf of Finland in the observed area. In addition, the concentration limits for heavy metals have not been exceeded and there is no effect of waste- water on the oxygen content of water and sediments. The report confirms that all measurements have been made less than 3 km from the point where the effluent actually reaches the sea and therefore reflects the impact of wastewater on the overall environmental status of the area. All in all, we can confirm that the Company met the highest environmental standards also in 2017.

4.1 Environmental policy

The aim of the environmental policy is to improve continuously our activity in line with the principles of sustainable development.

EC follows environmental policies and principles:

- we implement suitable working methods and technologies and improve these constantly in order to control and minimize the environmental impact of our activities;
- we follow the legal and other requirements imposed on our activity related to environmental aspects;
- we avoid or try to reduce pollution and use natural resources in a rational manner and conserve energy;
- we use environmentally friendly materials and methods in our production process;
- we prefer environmentally friendly suppliers;
- we reduce quantities of waste and make sorting more effective, preferring recycling;
- we pre-empt and address potential environmental problems openly and publicly in cooperation with official agencies and proprietors, guaranteeing information and transparency of our actions concerning the environment.

Environmental policy serves as basis for bringing up environmental goals and tasks; this has been presented both within company and to partner companies and is made available to interested parties (more information www.estonianceell.ee).

4.2 Environmental goals and tasks

Environmental goals and tasks have been established on the ground of environmental policy and execution is planned according to Environmental Scheme.

Important environmental aspects of the company, requirements of applied acts of law and other requirements accepted (also those of the clients), also companies business demands and technological possibilities are considered when establishing environmental goals and tasks.

Environmental goals and tasks are following:

- to assure high yield of wood consumption;
- to consume electricity economically;
- to assure economical use of natural gas;
- to consume ground water resources economically and recirculate water;
- to increase the percentage of FSC certified wood;
- to increase the environmental awareness of the public and the awareness about the company and its products;
- not to exceed noise limitations;
- to assure efficient surveillance and measurement of substantial environmental aspects;
- to inform public about the result of our environmental activities;

- to prefer the habitants of Lääne-Viru county in recruitment process;
- to assure stabile production.

5. Environmental activities

Environmental improvements in 2017

- Predesign of aerobic treatment stage pilot test with different aerators;
- Finalize the renewal of Complex permit ;
- Optimization of biogas plant and increasing the rate of biogas usage in burners up to 33 %;
- Pilot test with a bark scanner to improve the debarking processes;
- Continuation of the project for bleaching efficiency;
- Preparation of the Strategic capex program to extend the mill production capacity by 20% to meet 200 000 tons.

Planned environmental improvements in 2018

- Construction and start-up of renewed and expanded aerobic treatment stage for waste water;
- Finalize the repair works of the marine pipeline.
- To start the investments into projects to increase the bleaching and energy efficiency and to start the debottlenecking of the existing production line;
- Continuation the research and experiments on biofuel production ;
- Finalize the renewal of Complex permit.

6. Environmental aspects

We have assessed environmental aspects from our activities and the environmental impact of those aspects. Below is the list of aspects that have significant environmental impact (positive or negative) which the company can affect.

We consider significant environmental aspects to be:

- Usage of water which is divided into fresh water consumption, constructing a dam on the Kunda River and effluent emission to the Gulf of Finland;
- Usage of electric energy in the production process and heating, lighting and ventilation;
- Usage of natural gas and partial replacement with biogas;
- Noise emission from production;
- Ambient air pollution;
- Waste management- that has both negative and positive impact. The negative impact is creation of waste during production process. The positive impact is composting bark and biological sludge to be used as organic fertilizer;
- Usage of chemicals on the production process;
- Wood consumption in the production process, which has both positive and negative impact. Negative impact is usage of renewable natural resources and affecting forest ecosystem by deforestation. The positive aspect is stimulation of management of aspen forests;
- Positive impact by using bark and sawdust mixture as fuel (green energy), increase employment in the area and sales of pulp and by-products.

6.1 Influence to the water

Fresh Water

The daily usage of fresh water is approximately 7 000 m³. Water is pumped from Kunda River to raw water treatment plant where it is treated with chemicals (sodiumhypochlorite and polyaluminiumchloride) and clarified in flocculated-clarifier. Smaller fraction of impurities is captured in sand filters and the water is softened by ion exchange softening filters. Treated water is pumped to the mill according necessity of production process.

Fresh water treatment plant treated 2 573 thousand m³of water in 2017. Environmental Complex Permit allows us to use 3,0 million m³ of fresh water per year.

Effluent water

Effluent treatment plant consists of following steps: mechanical pre-treatment (coarse screen, 3 rota screens), flotation, buffer tank, cooling towers, anaerobic reactor, biological active sludge process, clarifier and tertiary flotation. All effluent water from pulp production, bark storage and fresh water treatment is collected and lead to the effluent plant.

There was 2 426 thousand m³ of effluent water treated in the effluent plant in 2017. Some of the water used in BCTMP process vaporises in the production process, mainly in flash drier.

Effluent plant works in several steps: in primary flotation excess solids (fibres, sawdust and high molecular weight compounds) are removed. Primary sludge is removed to the sludge dewatering system. Water is cooled in cooling towers down to 38°Cto assure optimum temperature for biological process.

In 2014 we installed the anaerobic technology- effluent water processed in reactor, where the conversion of the biodegradable compounds to biogas takes place.

The secondary treatment is based on biological removal of organic compounds. Process is based on air activated sludge process with an aerobic selector. One part of excess sludge is removed in secondary clarifier and pumped back to the aeration basin. The other part of excess sludge is removed with dewatering sludge system. Mixed sludge is dewatered with belt filter presses and centrifuges.

Treated wastewater is pumped to the Mahu Gulf. Outlet of pipeline is located 2,4 km from the coast in the depth of 12 meters.

The Company's waste water treatment meets the requirements applicable to the best available technology (BAT) for mechanical pulp and the average waste emission has been the following:

	water m ³ /adt	COD kg/adt	BOD7 kg/adt	SS kg/adt	N-tot kg/adt	P-tot kg/adt
CTMP mill *in case of H ₂ O ₂ - bleaching	15-20*	10-20	0,5-1,0	0,5-1,0	0,1-0,2	0,005- 0,01
2016	14,6	11,0	0,34	0,43	0,13	0,006
2017	15,0	9,2	0,70	0,45	0,14	0,008

6.2 Use of electricity and natural gas, biogas production

The mill uses a great deal of electricity and natural gas in the production process. Estonian Cell is the largest electricity consumer in Estonia, consuming approximately 3% of the electricity used in whole Estonia.

The cost of energy takes over 25% of total production costs. We are continuously optimizing the production process in order to decrease the usage of electricity.

Actual usage in 2017 was 225 508 MWh (2016: 227 295 MWh).

In 2014 the Company completed the investment into new pre-treatment of waste water and anaerobic reactor to give considerable contribution to the saving of energy and to reduce the environmental footprint even further. The innovative biogas plant is not only equipped with the biggest single unit reactor in Europe but is also the first to be used in tandem with mechanical pulp production in Europe.

As result of the investment, Estonian Cell became the biggest biogas producer in Estonia from 2015. In 2017 we replaced already more than 35 % of natural gas with the biogas in flash dryer burners.

Usage of natural gas in 2017 was 10 342 th.Nm³ (2016: 11 302 th.Nm³).

6.3 Ambient air pollution

The sources of atmosphere pollution are technological equipment of the BCTMP plant and steam boiler.

Primary source of pollution is the flash drier where pulp is dried with mixture of air and natural gas burning products. Total capacity of the gas burners is 2*13 MW. Gas mixture emitted to the ambient air consists of usual burning products of natural gas, mixed in the flash drying process with water vapours and pulp dust. Majority of the dust is removed by the catching devices in the drying line. The steam boiler which generates necessary steam to process start-up is also source of ambient air pollution.

From the production process the ambient air is also polluted by chips impregnation and refining which take place in high temperature and added chemicals. The steam-gas mixture is purified and condensed in scrubber, which collects most of the additives. The plant processes only aspen and sulfuric compound is not used in impregnation process which means that pollutant to the ambient air does not contain badly scented sulfuric compounds and terpenes created in softwood treatment.

6.4 Waste management

There are five different types of waste created in production process: bio sludge from the effluent plant, bark, sawdust, municipal waste and hazardous waste. Majority of the created waste is bio sludge from effluent treatment plant. Quantity of bio sludge depends of the effluent concentration that depends on the specific product and production capacity.

Composting

Bio sludge is mixed with bark and composted on the mill's composting area. With composting we manage two of our productions side products and as a result we get compost to be used as a soil in agriculture and landscaping. As in previous years, Estonian Cell continued to distribute the compost free of charge to farmers. The purpose of composting is to make biodegradable waste useful through fermentation process. Aerobic fermentation process in loose swathes is used in the mill territory.

Waste

Majority of waste is sorted in order to increase recycling and to decrease the waste load to waste ground.

6.5 Wood consumption

The technology used at the plant allows lower quality wood to be used, some degree of colour variation and rot are permissible. Our plant is able to handle both coarse and fine material (6-60 cm). Compared to the high quality wood used at mills pulp production creates advantages for using lower quality aspen wood – which has to this point been considered less valuable.

The annual growth of aspen wood is 800 000 m³per year in Estonia. Average wood consumption per ton of pulp is 2.6-2.7 m³/adt.

Wood consumptions	2017	2016
Purchased wood (m ³)	398 717	433 292
Including FSC certified wood (m ³)	283 949	273 256
Wood consumption (m ³) per year	443 557	454 563
Wood consumption (m ³) per ton of pulp	2,59	2,62

Our suppliers of pulpwood are RMK (State Forest Organization), Nor-Est Wood AS and LatvijasValstsMeži SSC (LVM). Important environmental aspect to our customers and us is the proportion of the certified wood from all wood supplies.

Proven origin wood means that excluded is the wood that is:

- from genetically modified trees;
- harvested from the forest areas where traditional and civil rights are violated;
- illegally harvested;
- harvested from forests where high conservation values are threatened;
- harvested from natural forests which have been harvested for the purpose of converting the land to plantations or other non-forest use.

We received the updated FSC certificate NC-COC-009128 on 13th of June 2011. We have also the certificate -*Chain of Custody* from March 2012 (NC-PEFC/COC-000002).

The goal of implementing the standard is to promote sustainable forest stewardship, creating a market edge.

6.6 Hazardous enterprise

AS Estonian Cell is classified as a hazardous enterprise because of quantities and properties of the chemicals used. We use following chemicals in our production: Hydrogen peroxide, sodium hydroxide, sodium silicate, sulphuric acid, EDTA. At the water treatment plant we use hydrochloric acid, phosphoric acid, sodium hypochlorite, urea, polymers.

Chemicals used at the pulp production:

- Hydrogen peroxide is used for bleaching the pulp;
- Sodium hydroxide is used to create an alkaline environment which will improve bleaching reaction. Also adding sodium hydroxide will help improve pulp's strength properties;
- EDTA is used to also improve hydrogen peroxide reaction and avoid negative impact from heavy metals;
- Sodium silicate is used to stabilize hydrogen peroxide.

Chemicals used at the water and effluent treatment plant:

- Polyaluminiumchloride is used to precipitate impurities from the fresh water;
- Hydrochloric acid is used to regenerate freshwater softeners;
- Urea and phosphoric acid is added as nutrients to the biological wastewater treatment process;
- Polymers are used to improve coagulation reactions and to dewater the bio sludge.

During production process the employee's exposition to chemicals is avoided. The exposition with chemicals is only possible during maintenance and repair work. Chemicals are supplied to the mill in container trucks and unloading is carried out by the truck driver. There are instructions for the unloading and chemicals safety data sheets are available in all control rooms.

7. Employees safety and development

Employment overview

The company employs 87 full-time employees (2016: 86 employees). More than 500 people get jobs on the entire value chain from the forest collection to the logistics to the customers.

The company conducts employee's satisfaction surveys on an annual basis in order to take into account employees' feedback in providing a motivating and safe working environment. In 2017, for the first time, the development interviews were held with all employees. Previously the development interviews were only held with all levels of management and leading specialists.

Occupational health and safety

We have an occupational health and safety specialist (office manager) appointed at the mill and the employees have elected their representative within every shift. Office manager conducts monthly health and safety audit and in the audit report documents the nonconformities and necessary measures and deadlines for eliminating those nonconformities. The audit report is distributed to all shift supervisors and heads of departments.

Health and safety instructions are implemented for all equipment and all works carried out, the instructions are available in all control rooms and electronically in the information system. With the suppliers we have signed an "Agreement for joint activities in occupational health and safety". Also we have issued "General safety rules in AS Estonian Cell mill site", where are information about all hazards and accident preventive measures.

Trainings

Estonian Cell conducts the safety days for all employees on annual bases. In 2017 the topics in the agenda were fire safety and the use of extinguishing agents, first aid in the mill territory, emergency plans and safe usage on internet.

In April 2017 the management was involved in crisis management training, where the emergency plans were tested. Secondary goal for the training was to exercise the communication procedures in crisis management.

In May the first aid training was conducted to update the skills of workers. Nearly half of the company's employees participated the training. In December 2017 a regular evacuation exercise was carried out to practice the fire detection and initial extinguishing procedures.

Fortunately there were no work accidents with Estonian Cell employees 2017.

8. Cooperation and communication with external parties

Estonian Cell values the life of Kunda and the Lääne-Virumaa community, by being one of the supporters of the local community's educational, cultural and sporting projects for the past 10 years. Throughout the years, the company has been working continuously to increase the safety standards, employees' satisfaction, care for the environment and contribution to the community support and providing information about the Company's activities.

We are keen to demonstrate our social responsibility to the environment with openness, direct communication and a willingness to provide adequate information about our mill, strategy and goals - and also with a ready admission of minor problems. Only a direct and honest dialogue and cooperation between all interested parties can bring about successful long-term cohabitation in a world as brimming with technology as ours is today.

Every year we are publishing the Estonian Cell Environmental newspaper where we provide information about company's strategies and goals, cooperation projects with community and overview about working environment. We distribute the newspaper to our region habitants, environmental and governmental authorities.

In 2017 AS Estonian Cell supported the project to publish the book "Picnic in Kunda". Now there is a book that gives a short overview of different locations in Kunda area with beautiful pictures and food recipes.

Estonian Cell has supported the robotics trainings of Kunda Gymnasium, which will enable all elementary school students to participate in technology education from the 2017 school year. In support of the robotics trainings, Estonian Cell wants to popularize technology education amongst of the young people.

Throughout the years the Company has supported different running events in Kunda with prizes and also the establishment of sports tracks in Kunda.

At the beginning of June 2017, Estonian Cell hosted a family day, during which children of the employees could visit their parents' work places. Excursions took place on the mill's site and a paper bridge was built in the workshop on the art of the science. The attendance was positively high - 90 people visited the plant, including children from infants to adults.

Regocnition

In 2017, the company's endeavors were recognized with the silver level award of a Responsible Business Index. Innovative investments into on increase of efficiency and reduction of environmental impact have been honoured at various competitions already in the past years. Early in 2015 the Company was awarded the winner of "The Environmentally Friendly Company 2014" at the competition organised by the Estonian Ministry of Environment. In October 2016 the Company was awarded with the „Innovator of the Year“ title at the competition of Estonian Enterpreneurship Awards.

Certificates

In 2017 Estonian Cell energy management procedures were revised and audited. As a result, Estonian Cell was sixth company in Estonia to receive the ISO 50001 certificate. AS Estonian Cell initiated a procedures for applying the certificate ISO 50 001 which covers the energy management. Certificate was issued to the company in December 2017.