

UPM Hürth

Environmental and Societal Responsibility 2017



UPM Hürth

UPM Hürth (Rhein Papier GmbH) is located in the west of Cologne in the Hürth-Knapsack industrial zone. This central position between the agglomerations of Rhine-Main and Rhein-Ruhr provides short distances for raw material supplies, customer deliveries and waste management.

The mill was founded in 2001. UPM Hürth's PM 1 paper machine is producing high-quality newsprint and printing paper for advertising supplements since the start-up in 2002. Its raw material is sorted graphic recovered paper, e.g. newspapers, magazines, advertising supplements, catalogues and office paper. The mill's de-inking plant can process up to 400,000 tons of RCP per year.

Process effluents are pre-treated prior to entering the treatment plant in the neighbouring chemical industrial park. Waste is either energetically recovered or recycled. Thermal energy (steam) is delivered by the adjacent RWE power plant. Since the beginning of 2016 electrical power is drawn from the public grid.

The UPM Hürth mill focusses on safe ways of working, respect for the environment as well as high productivity and innovation for the benefit of its customers.



UPM Hürth Environmental and Societal Responsibility 2017 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental performance data and trends for the year 2017. The annually updated mill supplements and the UPM Corporate Environmental Statement together form the joint EMAS Statement of UPM Corporation. The next Corporate Environmental Statement and also this supplement will be published in 2019.

UPM leads the forest-based bioindustry into a sustainable, innovation-driven, and exciting future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Paper ENA and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,100 people and its annual sales are approximately EUR 10 billion. UPM shares are listed on NASDAQ OMX Helsinki. UPM – The Biofore Company – www.upm.com

Production capacity	Up to 330,000 to/a
Personnel	123
Products	Standard Newsprint UPM News C Heatset Newsprint UPM EcoBasic H
Certificates	EMAS – EU Eco-management and Audit Scheme ISO 14001 – Environmental Management System Standard ISO 9001 – Quality Management System Standard ISO 50001 – Energy Management System Standard OHSAS 18001 – Occupational Health and Safety System Standard PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility).
Environmental labels	Blue Angel EU Ecolabel



For FSC products, visit www.fsc.org



For PEFC products, visit www.pefc.org



www.blauer-engel.de/uz72



EU Ecolabel : FI/011/001

Review of the year 2017

Environmental concerns have always been embedded in our way of thinking. Continuously reducing energy and power consumption, high raw material yield to minimize waste and using sustainable chemical additives for the production processes are the primary focus of continuous improvement. This process has been driven by management systems for quality, energy and occupational health and safety since the mill's certification to international standards.

As a company of the Finnish UPM – The Biofore Company – we are committed to conserving the environment and operating our production facilities in such a way as to minimize the impacts on the environment and on our employees.

Certificates and administrative decisions

A big success for 2017 was the grant of EU Ecolabel for our products. Application became possible after changing sourcing of electrical energy in the beginning of 2016. This led to a noticeable decrease in CO₂ emissions related to paper production at Hürth.

A new permit for water extraction was applied for and granted. The total amount of water that may be drawn from Dirmerzheim well was reduced by 29% due to the excellent consumption figures.

White Pulp, a residue fraction that is separated from DIP sludge for recycling in the board industry, has been produced and delivered steadily during the year. We applied for "product status" at the authorities in order to increase the marketing possibilities of the material.

Utilisation of resources

Due to the external supply of energy we can influence the corresponding key figures mainly by increasing energy efficiency. After identifying the big potentials for saving over the years and implementing the biggest part of them we have now focus on optimization of the operating modus of the paper machine.

RCP quality was a vital topic during the year, especially in the summer months and in the last quarter. Low RCP availability did not only affect prices but resulted in the threat of lack of raw material which forced the mill to untighten quality standards. So we had to change the operating ways in the DIP, e.g. for dispergers and flotation, to decrease the number of paper breaks. Break number still remained above target. All in all the situation resulted in decreased energy efficiency and increased specific values for water usage, effluent and waste.

Environmental performance

Environmental reporting is done in a global data base. Incidents are categorized from 1 (insignificant) to 5 (serious impact on environment). In 2017 as in 2016 we did not have any incident with impacts outside the mill's premises (cat. 3 or higher). There were only smaller incidents like oil losses and small spills of chemistry not affecting any effluent.

There was one inquiry from the adjacent power plant regarding increased solids in the rain water sewage. Several measurements assured normal figures.

These good results are based on the constant work of sensitizing our employees for environmental topics. This year we additionally organized an "Environmental Week" dealing with hazardous substances at home and at work.

Cooperative research

There is a joint research project regarding bioeconomy that is supported by UPM Hürth. "TexKoMBZ" is a project working on textile electrodes for microbial fuel cells. Three dimensional

woven carbon fibre fabrics are an ideal environment for bacteria growth. Some bacteria can metabolize organic matter from industrial effluents and extract free electrons from that. The electrons are conducted to the carbon fabric which work as an electrode, so electricity can flow. The field trials are done in UPM Hürth's sewage system. The project which is driven by two universities and several industrial companies won an award for innovation endowed by the German State Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg and Wirtschaftsförderung Region Stuttgart GmbH in October 2017.

Energy targets

Since we have already more than achieved our targets for 2020 we shaped new targets reaching out for 2030: Increase energy efficiency by 35%, decrease CO₂-emission by 70% and increase usage of alternative energy sources by 20% (all in comparison to 2005). The new targets will be an incentive for new ideas and ongoing engagement!



Armin Schmidt,
General Manager

Guido H. Clemens,
Manager Technology & Environment

Responsibility figures 2017

Waste



All production waste from Hürth paper mill is

100%

thermally exploited or recycled.

Air



Carbon dioxide emission has been reduced by

62%

due to changes in energy mix.

Water



Specific water usage has been decreased by

22%

during the past 10 years.



Energy

Specific energy consumption has been decreased by

24%

during the past 10 years.

Safety



0 accidents

in 2017.

Community



We have organised

4 events

supporting the interest of young people for the paper industry.

Health



We want our personnel to be active.

32%

of the employees take part in our sport program.

Certified Fibre



Hürth raw material is

100%

certified according PEFC™ and FSC® Chain of Custody.

Employment



The mill offers

159 working places

with UPM and its partner companies for logistics and security.

Air

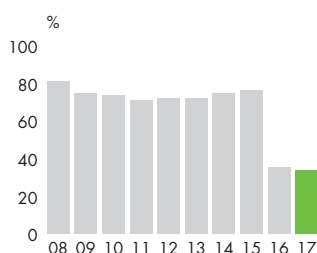


Fossil CO₂ emissions for steam are reported by our energy supplier RWE/ Kraftwerk Goldenberg, for electrical power by supplier Lechwerke.

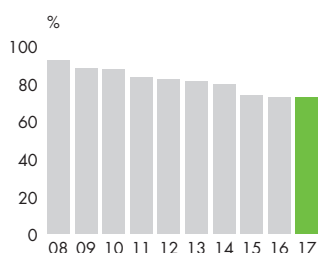
The change of sourcing electrical power has resulted in a remarkable decrease in CO₂ emissions related with paper production at Hürth. Besides sourcing UPM Hürth can only indirectly influence energy related emissions by increasing the energy efficiency of its production. The targets set on this purpose are followed up constantly, the most important tools being optimisation of heat recovery and the paper machine's operation mode.

In September 2017 the project for a new power plant on UPM Hürth mill's premises was presented to the public. EVA 1 and 2 will be built by Blue Energy Europe (BEE), a company specialized in rebuilding of power plants for energetic optimization. A modern biomass power plant will be transferred from Finland to Hürth (EVA1) with a back-up by a gas turbine plant (EVA2). We have been co-operating on the preparation of the approval documents with BEE during the year. Dismantling of the plant in Finland has begun in November 2017. Construction in Hürth shall start in the second half of 2018. The new power plant will reduce CO₂ emissions related to steam for paper production to zero.

Specific CO₂ emission
(t CO₂/t Paper) in % compared to 2005



Specific Energy Consumption
(MWh/t) in % compared to 2005



Waste

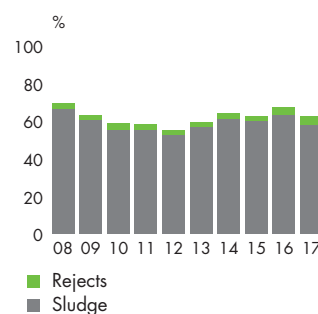


UPM Hürth uses 100% recovered paper as raw material. So most of the waste generated in the process consists of fibres not suitable for recycling, printing ink and mineral residues (sludge). The second important waste type is material like plastic foil, staples, inlays and CDs (rejects). These two kinds of waste account for almost 99% of the waste generated. Due the shortage of recovered paper in the last two years it has been necessary to accept lower paper qualities for the process which lead to an increase of the specific figures for waste and a decrease of yield.

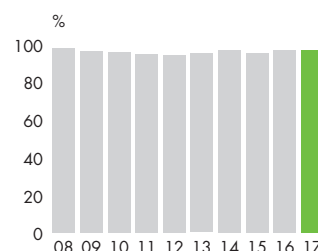
Since some years sludge is used not only for heat exploitation in power plants but is recycled in three different ways:

"White Pulp" is separated from the sludge during the de-inking process. This material contains fibres which are not suitable for Hürth's paper machine and small plastic particles. It is a perfect raw material for board production and delivered to a board factory nearby.

De-inking waste,
specific data, against 2005:
sludge and rejects in %



Spec. RCP usage
per tonne in % against 2005



Water



Noise

Some sludge is used by brick manufacturers as a porosity additive: During stoving of bricks the fibre fraction is burned and leads to small holes in the brick which improves isolation of the walls built from it. The ashes remain as high quality filler in the brick.

A specialized facility that combines thermal and material recycling produces a special cement by sludge burning.

Only rejects are exploited for traditional thermal recycling.

All in all our waste recovery rate is nearly 100%. No waste is brought to a landfill.

Hazardous waste is handled by a licensed contractor for disposal and is disposed off according to governmental regulations.

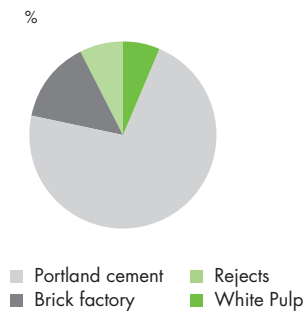
The water for the production process comes from a deep well and is recirculated to keep consumption on a low level. The well water has a low temperature and is first used for cooling, and then for the production process. Here it runs several cycles of usage in the different water cycles of paper machine and de-inking plant. After pre-treatment in the mill it is directed to the water treatment plant in the adjacent chemical industrial park.

The consistent usage of the water from the PM cycle in the DIP cycles and for dilution of additives has led to a continuous reduction of the fresh water need for the paper production over the years.

Noise measurement has been renewed in 2017. Noise emission from the mill was hardly measurable.

There have been no complaints regarding noise since the start-up of the mill in 2002.

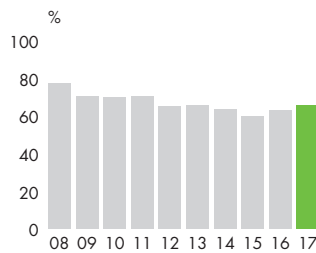
Waste recycling 2017



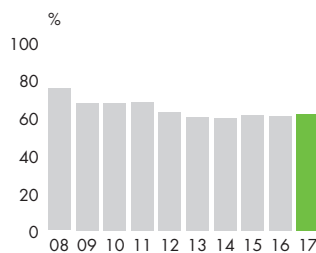
Amount of white pulp delivered to board industry, against start-up in 2015



Specific Water usage
(m³/t) in % compared to 2005



Specific Waste Water
(m³/t) in % compared to 2005



Societal responsibility

Safety First!

Occupational safety is first priority at Hürth as at all UPM production sites. Since 2012 we have constantly worked on safety management with a focus on behavior based safety and identification of high risk works.

In 2017 we have developed a new instruction system for the employees: Theoretical schooling is done by online teaching with free timing within the working hours. So the yearly training days can be used for practical exercises. Equipment for working at height and handling of mobile devices including a skill test in fork lift driving were this year's themes.

Regarding high risk we have pushed the implementation of the six "UPM Life Saving Standards" with high demands on safety organization and individual awareness for the risks. The results of our work were controlled by an external

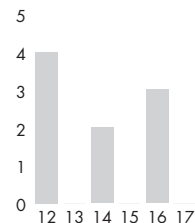
UPM audit group; we reached a high score which we are proud of – as we are proud of the length of the period we worked without accidents.

Biofore Share and Care Programme

Building and maintaining good relations with local communities close to our operations and supporting the vitality of these communities are essential for us and for our business success. One way of engaging with society is through sponsorships and donations.

UPM's Biofore Share and Care programme reflects our commitment to building a sustainable, innovation-driven future by sharing our expertise and assets for causes we care about. The focus areas are: Reading & learning, engaging with communities, responsible water use and boosting bioinnovations. UPM's support can take different forms in different projects. It can be a cash contribution to support community pro-

Accidents at work with 24 hours or more lost working time



Breakfast for the homeless in Cologne, organized every Sunday at two sites in the city.





All employees could take part at the control of the inner eye pressure to identify a glaucoma risk. About 30% of the participants were advised to consult an ophthalmologist for further diagnosis.

jects, membership of community-related organisation or it can be donations of products or materials or employee volunteering or fundraising. Local sponsorship is target-oriented and long term involvement in the community where UPM operates.

The Hürth mill sponsors daily regional newspapers to three schools at Hürth with the intention to give young people the opportunity to get a deeper insight to the facts instead of just believing "fake news". We also support nearby nurseries and elementary schools with paper donations for drawing.

Yearly donation

We support the Peter Deubner Stiftung with a yearly donation. The organization cares for the homeless by providing them a breakfast each Sunday, often combined with a cultural event. Beside that they have a house where homeless people can live and prepare for the restart into a "normal" life.

Possibilities for young professionals

Since Hürth is a smaller entity in the UPM world we don't educate apprentices at the mill. Nevertheless we are

active in interesting young professionals for working in the paper industry. We give several universities the opportunity to visit the mill with student groups interested in papermaking, recycling or automation. Once a year we host the VDP (Association of the German Paper Industry) Education Day. Young students are told about jobs offered in the paper industry, a professor introduces the course of studies and after a mill tour they have the opportunity to ask all their questions to young engineers working at the mill.

Our cooperation with RWTH University of Aix-la-Chapelle in the TexKoMBZ project has been mentioned before. Furthermore we offer summer jobs and internships for students.

Healthy employees

We take great interest in supporting our employees in sustaining a good health. There are several measures we take for that – these range from the free supply with fresh fruit and water or offering vaccinations to action days to prevent sickness. This year our themes were "Managing Stress", "Heart Attack Risk" and "Glaukoma".

EVENTS FOR YOUNG PROFESSIONALS 2017	DATE
School of Applied Sciences, Cologne, branch mechanical engineering	May 16
Visit by Berufsförderwerk Cologne	April 9
University of Applied Sciences, Munich, branch paper engineering	June 8
Paper Professions Information Day, VDP	November 14



Environmental parameters 2017

The figures related to production as well as raw material and energy consumption are published as aggregated figures on group level in the UPM Corporate Environmental Statement.

Production capacity	Paper	330,000 to
Raw materials (and additives)	Recovered paper Additives	See UPM Corporate Environmental Statement for more information
Energy	Fossil fuel Purchased power	See UPM Corporate Environmental Statement for more information
Emission to air	Carbon dioxide, CO ₂ (fossil) ** Nitrogen oxide, NO _x Sulphur dioxide, SO ₂ Particulate Carbon monoxide, CO	48,565 to 30.6 to 15.2 to 1.7 to 2.6 to
Water intake	Process water	2,175,767 m ³
Discharges to water	Effluent volume COD Phosphorus AOX	1,752,655 m ³ 1,882 to 1.046 to 0.603 to
Waste (and by-products)*	Total volume (without hazardous waste) of which: – Sludge – Fiber residues (White Pulp) – Bark and other wood residues – Rejects – Metals – Other Recovery rate Hazardous Waste	100,248 to 85,743 to 6,533 to 37 to 7,415 to 302 to 217 to 100% 27.130 to
Size of mill area		12.75 ha

* incl. moisture

** Values for Carbon Dioxide resulting from heat consumption.

For information about electrical power see UPM Corporate Environmental Statement.



Performance against targets in 2017

TARGET	ACHIEVEMENT	COMMENTS
Power consumption \leq 0.822 MWh/to	No	Power consumption was slightly above target due to dissatisfying machine run, related to RCP quality.
Steam consumption \leq 0.779 MWh/to	Yes	Achieved: 0.759 MWh/to
No wrong entries to waste containers	No	One wrong entry was documented as a Clean Run Incident 1. The target wasn't followed up because Logistics Manager left the mill and has not been replaced for the time being.
Clean Run Cat. \geq 3 = 0	Yes	No Clean Run incident with impacts outside the mill. Clean Run 2 incidents could be reduced from 6 to 2.
Organize an Environmental Day	Yes	An Environmental Week took place in September, with focus on hazardous substances at work and at home.

Targets for 2018

TARGET	DEADLINE	RESPONSIBLE
Energy consumption \leq 1.5866 MWh/to – steam \leq 0.7558 MWh/to – electric power \leq 0.831 MWh/to – energy action day	31.12.2018	Energy Manager
Clean Run Cat. \geq 3 = 0	31.12.2018	Manager Technology, Quality & Environment
Water consumption: $<$ 7.3 m ³	31.12.2018	Manager Technology, Quality & Environment
CO ₂ reduction/support for the project CO ₂ -free power plant for Hürth Mill	31.12.2019	General Manager



Environmental verifier's declaration on verification and re-validation activities

Environmental verifier, Astrid Günther (DE-V-0357), acting for TÜV NORD CERT Umweltgutachter GmbH, licensed for the scope NACE Code 17.12 (papermaking), declares to have verified whether the site UPM Hürth/Rhein Papier GmbH, Bertramsjagdweg 12, 50354 Hürth, Germany, as indicated in the updated Environmental Statement 2017 of the mentioned site (registration no FI-000058), meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS).

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information of the updated Environmental Statement 2017 of UPM Hürth/Rhein Papier GmbH reflect a reliable, credible

Environmental verifier's declaration on verification and re-validation activities and correct image of all the activities of UPM Hürth/Rhein Papier GmbH, within the scope mentioned in the updated Environmental Statement 2017.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Essen, 18.05.2018

Astrid Günther
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