

UPM Hürth

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2020



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 2020 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2020. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next Updated UPM Corporate Environmental Statement and also this supplement will be published in 2022.



UPM delivers renewable and responsible solutions and innovates for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. As the industry leader in responsibility we are committed to the UN Business Ambition for 1.5°C and the sciencebased targets to mitigate climate change. We employ 18,000 people worldwide and our annual sales are approximately EUR 8.6 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore - Beyond fossils. www.upm.com

Up to 330,000 to/a		
125 (total number on Dec 31, 2020)		
Standard Newsprint UPM News C Heatset Newsprint UPM EcoBasic H		
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 ISO 45001 – Occupational Health and Safety Management System 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).		
Blue Angel according to RAL UZ14 and UZ72 EU Ecolabel		



The mark of responsible forestry

For more information about FSC certification visit www.fsc.org



For more information about PEFC certification visit www.pefc.org



www.blauer-engel.de/uz14



Review of the year 2020

Sustainability is deep-seated in UPM's company strategy "Beyond Fossils", spanning from economic and ecologic to social tasks. These have been taken in account in the mill's operative targets, which combine economic success with sustainable actions and respect for the interests of society, standing in multiple interrelations to the company. UPM Hürth's certifications according to international standards document this way of working.

Environmental Audits

During the reporting year several audits regarding environmental topics have taken place: recertification audit according to EMAS, a control audit regarding compliance to WHG (Federal Water Act) and an internal audit reviewing FSC® und PEFC™ standards. The tasks derived from the audits are a key for the continuous improvement process at UPM Hürth.

On January 10 the District Council Department 55 "Safety at Work" controlled OHS organization and actions taken after legionella exceeding intervention value. Both were evaluated well. Environmental inspection on legionella had already taken place in 2019, with equal

Renewed applications for EU-Ecolabel and German "Blauer Engel" were done for 2021.

Effects of CoVid-19 Crisis

Already in the second half of 2019 demand drop for newsprint speeded up. The machine's alternative operating mode at reduced speed was kept up in order to avoid too frequent or too long shutdowns. Longer shutdowns are undesirable not only from the economic but also from the ecologic point of view. During shutdown times energy is consumed without paper production, with the correspondent negative effect on specific energy. Tanks are emptied for cleaning, water is used for rinsing. After start-up, the system needs time to obtain optimal conditions (e.g. temperature, stable concentration of additives).

In the beginning of the second quarter the CoVid-19 crisis caused a sales collapse that could not be balanced any more by a slower operating mode. Frequent and long standstill periods resulted having a remarkably negative impact on specific values for energy, water, sewage water and additives.

Resources

Due to decreased sales of graphic paper and simultaneously increasing production in the packaging sector supply of high-quality grades on the RCP market declined remarkably. The resulting pricing pressure forced us to work with lower quality grades, especially during the summer. This caused increased sludge amounts due to necessary adjustments in flotation operating mode, increased reject amounts and all in all in a decreased yield.

Nevertheless the quality protection system, which had been built up in the preceding years, worked very well: There was one case of consequent refusal of load which made the supplier aware of a problem at his sorting plant.

Due to the external supply of energy we can influence the corresponding key figures mainly by increasing energy efficiency. Optimizing steam consumption obtains highest priority: Steam is still delivered from the neighboring power plant. Here the CO₂ footprint is higher than for electrical energy with a higher share of renewable sources.

Resulting from the poor operating rate which could already be foreseen in the end of 2019 we decided on a remarkable decrease in machine speed for the following year. For this speed we didn't have a comparator basis for energy key figures and energy objectives could not be defined before March. Deviating from the planned production scenario we had to stop the machine frequently, in addition to the reduced speed. This resulted in energy use clearly above the set target. Even if the stoppage of facilities during shutdowns has been optimized, energy is still needed while the machine stands still (e.g. heating, ventilation, light). Start-up causes increased energy usage, too, because the whole system must be heated up.

Effects resulting from the environmental projects described below can be proved in detail, but they are not visible in the usage over the year. Since the targets are calculated as yearly values, targets regarding energy have been missed.

Consumption of additives has also increased due to the effects of the poor RCP quality on whiteness. The operation of the dithionite bleaching, which had been installed in 2019, made it necessary to install a neutralization device for sodium chlorite to keep the biocide system stable. Additionally, the bleaching plant did not lead to the planned saving of peroxide, because the bleaching changed the chromaticity coordinate of the paper. The addition of color resulted in a new whiteness loss. This problem will be solved until next summer by changing from luminosity to brightness as a quality parameter.

Environmental Performance

Environmental reporting is done in a global data base. Incidents are categorized from 1 (insignificant) to 5 (serious impact on environment). As in the last years we did not have any incident with impacts outside the mill's premises (cat.3 or higher).

We had one deviation Clean Run cat. 2 when legionella exceeded the given intervention value. All actions that had been agreed with the District Council were immediately taken in place and the neighboring companies were informed about the incident.

The drinking water pipes in the administration building could not yet be approved, because the installed water chlorination device doesn't reach the needed dosing. The supplier is reworking the device.

Regarding additives a recycling-based urea could be qualified which is regu-



larly used. A recycling-based phosphoric acid was positively tested, but the product is not on the market any more. Further testing and qualification will follow in 2021.

The biocide system was rebuilt at the end of the year. From 2021 onward a new component will be taken into use, which will keep stable in the process for a longer period. Thus it can contribute to decrease biocide usage. The decomposition products can be metabolized as nutrition in the wastewater treatment plant.

The isolation of the fiber material "White Pulp" for recycling was stopped from the second quarter of the year. Since White Pulp wasn't approved as a side product by the authorities, an economically justifiable delivery of the material was no longer possible.

Environmental projects

In 2020 the following environmentally relevant projects were worked on:

- Planning for integrating the new biomass power plant was largely completed. The infrastructure for the construction site (electricity, water, wastewater) was installed. The construction work has begun in the meantime.
- The second step of the project "yield increase in sorting" is continuously active since November. The recirculation of the reject fine sorting to presorting had resulted in misfunction of the screw press at the sludge tank, because the sludge didn't contain enough fibers. A modified operating mode of the plant now made implementation possible, resulting in ten tons sludge less per day. Simultaneously there is a positive effect on RCP yield (Recycled Paper yield) of seven tons per day and water is returned to the cycle.
- Warm water pump and warm water cycle are turned off during shutdown to save thermal and electrical power.
- Mutual turn-on of only one stirrer at winder 1 for savings in electrical energy
- Turning off the hood ventilation during shutdowns for savings in electrical energy
- A new adjustment possibility in the process control system inhibits water

- loss at the cooling water collecting sump. If the tank is filled to overflowing the water efflux is directed to splash water tank instead of the wastewater drainage.
- The use of a defoaming agent in the foam tank preflotation prevents overflow, decreases wastewater amounts and increases yield.
- Changing the quality parameter "luminosity" to "brightness" was started. The change shall prevent excessive chemistry consumption, when RCP quality or other process-based incidents cause a loss of brightness in DIP stock (Deinked Pulp). For 2021 an automatic control cycle for brightness was proposed as a project.
- UPM Hürth takes part in the group-wide project Fiber to Source (F2S). The projected is targeted at an optimized RCP quality control in order to minimize process deviations. In addition we try to raise acceptance for the necessity of control measurements on supplier's side to prevent refusals and unnecessary truck traffic. In this way the project will increase environmental performance in logistics and simultaneously decrease the usage of additives and increase fiber yield.

Amendments of law and compliance

All amendments of law and changes in jurisdiction are taken into consideration. This is done via the index of legal provisions delivered by Uniconsult, information letters from the German Paper Association (Verband der Deutschen Papierindustrie VDP) and from the Employer's Liability Insurance Association (BGRCI), as well as from UPM networking and the participation in VDP professional bodies.

During the year reviewed an environmentally relevant amendment of law for UPM Hürth was the supervision of filling of the biocide system. The new legal requirements are being implemented.

Contacts to authorities were necessary regarding the legionella values and were done according to legal procedures. The requested measurements resulting from changed regulations in BImSchG regarding formaldehyde were done. The results are many times lower than the limit.

General regulations regarding compliance are framed by UPM group. All employees were trained according to their authority to decide.



Armin Schmidt,

Armin Schmidt, General Manager Guido H. Clemens, Manager Technology & Environment

Responsibility figures 2020*

Waste



All production waste from Hürth paper mill is

100%

thermally exploited or recycled.



Water

Specific water usage has been decreased by

32%

since 2005.

Safety



1.446 days

we worked without any accident. In November we had the first accident at work causing time off after almost 4 years.

Air



Carbon dioxide emission has been reduced by

68%

since 2005.

Total energy

Specific energy consumption has been decreased by

25%

since 2005.

Certified Fibre



Hürth raw material is

100%

recovered paper and certified according PEFC™ and FSC® Chain of Custody.

^{*}Reference year for all usage data is 2005

Air



Waste



Fossil CO₂ emissions for steam are reported by our energy supplier RWE/Kraftwerk Goldenberg, those for electrical power in the UPM global environmental report by supplier Lechwerke.

The change of sourcing electrical power has resulted in a remarkable decrease in CO_2 emissions related to paper production at Hürth. Besides sourcing actions UPM Hürth can only indirectly influence energy related emissions by increasing the energy efficiency of its production. The related targets are followed up constantly, the most important tools being optimisation of heat recovery and the paper machine's operation mode.

Energy company E.ON will build a new biomass power plant on UPM Hürth mill ground. The new power plant will deliver steam to the mill. This will significantly decrease the CO_2 footprint of paper production at Hürth and make production at Hürth almost climate-neutral.

UPM Hürth uses 100% recovered paper as a 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 to the shortage of recovered paper grades of high quality it has been necessary to accept lower paper qualities for the process which had a negative impact on specific usage values and the yield.

For several years sludge has not only been used for heat exploitation in power plants but has been recycled in three different ways:

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

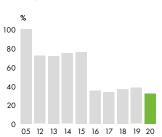
A specialized facility that combines thermal and material recycling produces a special cement by sludge burning.

Waste fraction "White Pulp" has not been approved as a side product by the authorities. After this decision the delivery to a board manufacturer was not possible any more due to the unfavorable economic conditions. Delivieries were stopped in March. White Pulp is now used for sludge thickening in the mill, which got necessary after the consequent work for increasing fibre yield. The increase of specific sludge amount during the previous years is still continuing. It is due to the change of the RCP grades offered in the market. The same is true for the reject amounts. These are exploited thermally in power plants.

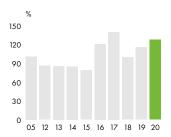
No waste is brought to a landfill.

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

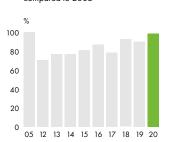
Specific CO₂ emission (t CO₂/t Paper) in % compared to 2005



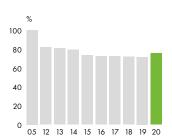
Rejects, specific Data in % compared to 2005



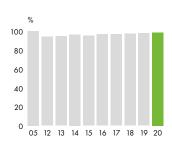
Sludge, specific Data in % compared to 2005



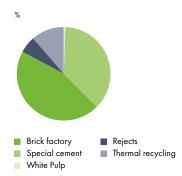
Specific Energy Consumption (MWh/t) in % compared to 2005



Spec. RCP usage per tonne in % against 2005



Waste recycling 2020



Water 🔵

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.

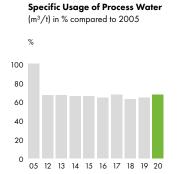
The limits set by the authorities (450 m³/h and max. 30°C) were not exceeded. The decrease of temperature in PM water cycle since 2015 has effectively prevented passing the temperature limit. There also were no violations of limits by the chemistry park's waste water plant.

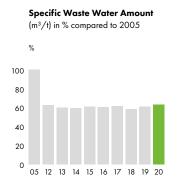
The consistent usage of the water from the PM cycle in the DIP cycles and for dilution of additives has led to a continuous reduction of the fresh water need for the paper production over the years.

The slight increase of process water and wastewater usage is caused by the low

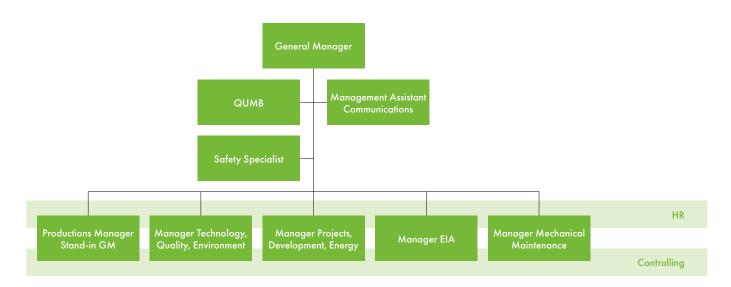
operating rate of the machine: During shutdowns a lot of water is used for cleaning, without paper being produced and negatively impacting specific figures.

Projects for water savings are described in "Review of the Year 2020".





Line and Emergency Organisation



Authorized representatives have been appointed for production facilities and minor facilities relevant for environment.

Statutory representatives advise the General Manager and the departments about fire protection, waste, dangerous goods, radiation protection and rail traffic on mill grounds.

There also are representatives for the management systems quality and environment ("QUMB") and for energy, OHS and data security.

For emergencies of all kind – e.g. fire, accidents or environmental incidents – detailed emergency plans are defined. Specifications for the whole process from the alarm system and immediate actions until the wrap-up help to mini-

mize the possible outcomes of the emergency case. At the shift coordinator's office there are checklists and detailed flow charts for different cases. For major incidents a crisis team is defined that decides about the necessary actions and cares for implementation.

In 2020 all employees were trained regarding fire protection and emergency management.

Societal responsibility

Sustainable business management today is not restricted to environment friendly ways of production but is extended to many other business areas as compliance, human resources management, OHS or the contributions to societal life outside of the company itself.

The bigger part of this responsibility is managed by the UPM Group for its companies, but the individual business units have their own share in it, too.

Coping with CoVid-19 Situation

Covid-19 pandemic caused the necessity of extensiv technical and organisational actions which have been summarized in a pandemic protection concept for the mill.

The crisis team continously observed the current legal situation and adjusted mill procedures accordingly. Examples for the numberous regulations are the temporary ban of visitors to the mill, the possiblity for mobile working and establishing singular working places or barriers where singular working places are not possible, e.g. in control rooms.

Specific work instructions were put in place and all mill personnel were schooled. Actions were complemented by an intensive communication including posters, board notices and weeky infomails from the crisis team.

All employees were equipped with textile face masks, from October they additionally got an allotment of surgical masks for professional and private use.

In line with an UPM campaign we donated 20.000 surgical masks to the Rudi Tonn Senior Citizen Center in Hürth.

Occupational Health and Safety

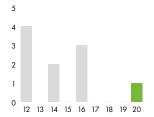
Safety first. This imperative is valid for every work in the mill and under all circumstances. A management system for OHS is the basis of our daily work and gives everyone his roll and his responsibilities – from the General Manager to the superiors and the operators at the machine.

Main pillars of the system are the UPM Safety Standards, the superior's safety walks which ensure the proper ways of working and the employee's safety observations. Especially the latter are important – on one hand to review rules and facilities for safe working, on the other hand to derive preventive measures against accidents, just as by the analyses of accidents or near misses. In 2020 we could register more than 500 such observations in spite of short time work and mobile working from home.

Unluckily after almost four year years without accident a smaller accident causing time off work occurred in November.



Accidents at work with 24 hours or more lost working time



EXPENSES FOR WORKPLACE HEALTH PROMOTION 2020	EUR
Support sports club	14,106
Free water supply	3,725
Shutdown beverages	4,215
Weekly fruit basket*	1,583
Health Day	1,678
Individual protection or screen glasses / ear protection	2,369
Medical Service	12,125

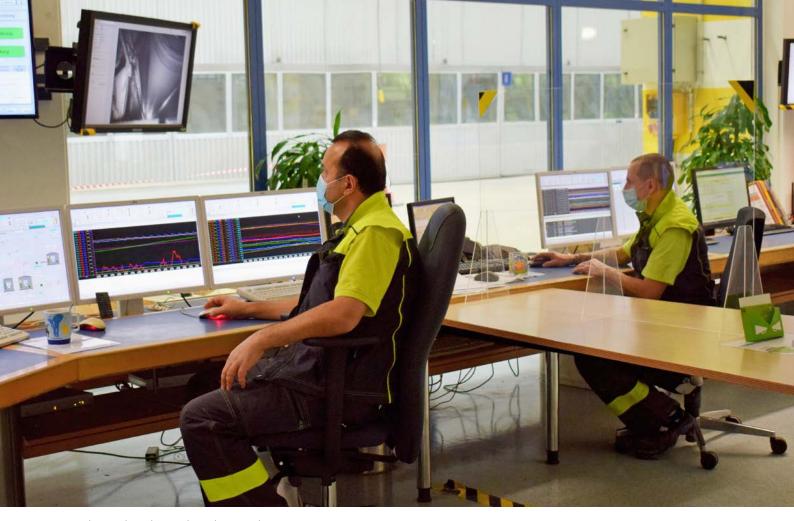
EXPENSES FOR COVID-19 PREVENTION	EUR
Dividing walls	6,276
Face masks for personnel * *	34,773
Disinfectants and dispenser	837
CO ₂ measurement device	96
Summe	81 783
·	

^{*}stopped during Covid crisis due to hygienic standards



UPM Hürth gives 20,000 surgical masks to Rudi Tonn Senior Citizen Center in Hürth

 $^{^{*\,*}}$ including mask donation to home for the aged



Control rooms have been adopted to CoVid-19 protection concept

We think it is important to support our employees in a healthy way of life. We do this in several ways ranging from water free of charge to vaccination offers and health events promoting disease prevention. In 2020 we organized skin and and bowel cancer prevention control at the mill. About a quarter of the personnel took part.

Biofore Share & Care Programm

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

projects, 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 longterm involvement in the community where UPM operates.

The Hürth mill sponsers 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.

Promotion of young talents

The apprentice program in cooperation with an service provider for education is working well, In the meantime another apprentice has started his period of training.

The regular events for young talents – e.g. the VDP Education Day or the Rhein-Erft Night of Techniques – had to be cancelled due to the pandemic situation.



Due to CoVid-19 situation yearly safety trainings were partly organised outdoors (training in correct cargo control)

Environmental parameters

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 and Societal Responsibility Statement.

		2018	2019	2020
Production capacity		330,000 t	330,000 t	330,000 t
Raw materials	Recovered paper			
(and additives)	Additives	See UPM Corporate Environmental and Societal		nd Societal
Energy	Fossil fuel	Responsibility Sto	atement for more info	rmation
	Purchased power			
Emission to air	Carbon dioxide, CO ₂ (fossil) 1)	64,076 t	64,907 t	57,441 t
	Nitrogen oxide, NO _x ¹¹	39.5 t	31.6 t	27.32 t
	Sulphur dioxide, SO ₂ ¹⁾	15.7 t	19.75 t	19.13 t
	Particulate	1.5 t	1.52 t	0.68 t
	Carbon monoxide, CO ¹⁾	2.4 t	2.2 t	2.7 t
Water intake	Process water	2,212,554 m ³	2,099,624 m ³	1,716,603 m ³
Waste water discharge to	Effluent volume from process	1,771,730 m ³	1,772,152 m ³	1,404,942 m ³
external effluent treatment	COD	1,953 t	1,696 t	1,758 t
	Phosphorus	1.173 t	1.488 t	1.614 t
	AOX	0.417 t	0.328 t	0.272 t
Non-hazardous waste	Waste to recycling, energy recovery and/or composting			
	– White Pulp	6,429 t	4,857 t	729 t
	- Sludges	99,982 t	97,633 t	84,311 t
	– De-inking residues, not fibrous	6,092 t	6,046 t	5,289 t
	– Bark and wood waste	36 t	39 t	26 t
	– Metals	347 t	328 t	247 t
	Waste to incineration without energy recovery			
	- Domestic waste	36 t	38 t	33 t
	- Others	167 t	132 t	136 t
Hazardous waste		31 t ²⁾	37.3 t ²⁾	19.97 t ²⁾
Land use	Total area	12.75 ha	12.75 ha	10.58 ha
	sealed area, incl. buildings and roofs		8.45 ha	8.45 ha
	nature oriented area on site		4.3 ha	1.73 ha
	not defined			0.4 ha

¹⁾ Values for carbon dioxide resulting from heat consumption. For information about electrical power see UPM Corporate Environmental Statement.



²⁾ Bone dry tons

Performance against targets in 2020

TARGET	ACHIEVEMENT	COMMENTS
Preparation and planning for project Green Steam Hürth	yes	Planning has been done, UPM's work on schedule
Usage of electrical energy: Jan-Feb 0,8275; ab März ≤ 0,86 MWh/t	no	see Review of the year 2020
Steam usage ≤ 0,7513 MWh/t	no	see Review of the year 2020
Water usage ≤ 7,2 m³/t	no	see Review of the year 2020
Clean Run Kat. ≥ 3 = Null	yes	see Review of the year 2020

Targets for 2021

TARGET	DEADLINE	RESPONSIBLE
Planning and integration of project "Green Steam Hürth"	31.12.2021	Further planning, award of contracts, completion of work Manager Energy
Power consumption ≤ 0.850 MWh/t	31.12.2021	Optimizing operation mode adopted to production, Optimization after evaluation of SEU Manager Energy / Manager Production
Steam consumption: ≤ 0.780 MWh/t	31.12.2021	Optimizing operation mode adopted to production, calibration of press and drying section at reduced speed Manager Energy / Manager Production
Water consumption: ≤ 7.2 m³/t	31.12.2021	Continue actions started in 2020, operation mode with less shutdowns in spite of reduced production Manager Technology, Environment, Quality
Clean Run Cat. ≥ 3 = 0	31.12.2021	Further encouraging of environmental observations, consistent follow-up of these incl. necessary actions, inspection rounds with changing focus themes Manager Technology, Environment, Quality



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 2020 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 as amended by Commission Regulation (EU) 2017/1505 and the Regulation (EU) 2018/2026 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 2020 of UPM Hürth/Rhein Papier GmbH reflect a reliable, credible

Environmental verifier's declaration on verification and re-validation Rhein Papier GmbH, within the scope mentioned in the updated Environmental Statement 2020.

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, March 30, 2021

Astrid Günther Environmental verifier

TÜV NORD CERT Umweltgutachter GmbH

We reduce the world's reliance on fossil-based materials by developing renewable and responsible products and solutions in all our businesses. **UPM Biofore – Beyond fossils.**



UPM Hürth

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