

Environmental performance in 2016



UPM Caledonian

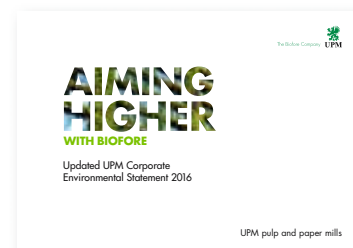


Through the renewing of the bio and forest industries, UPM is building a sustainable future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Paper ENA and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,300 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

UPM Caledonian

UPM's Caledonian mill is situated in Irvine on the West Coast of Scotland approx. 50 kilometres southwest of Glasgow. In production since April 1989 the Caledonian mill is capable of producing 280,000 tonnes of lightweight coated paper (LWC) for printing magazines, catalogues, brochures. The mill has a Biomass Combined Heat and Power (CHP) plant, a single paper machine line, a debarking plant, a pressurised groundwood (PGW) mechanical pulp mill and a primary effluent treatment plant. Effluent is then treated further in the neighbouring Municipal Waste Water Treatment Plant operated by Scottish Water.

Environmental issues are an integral part of everyday operations. Targets are set as part of our annual planning process with our key environmental aspects and impacts identified through our regulatory and business requirements to demonstrate continuous improvement. These are followed closely through the year. Our objective is to produce attractive and competitive paper with the lowest possible overall environmental impact. Through open communication we actively provide our customers, employees, environmental authorities, as well as our local community with information on environmental issues and knowledge of the mills operations.



UPM Caledonian Environmental Performance in 2016 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 2016. 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 2018.

Production capacity	up to 280,000 tonnes of paper
Personnel	295
Products	Coated Magazine Papers: UPM Cote H (+NA) UPM Ultra H UPM Ultra Silk H UPM Cote Blueshade H
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 9001 – Quality Management System Standard ISO 14001 – Environmental 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® <i>All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)</i>
Environmental labels	EU Ecolabel



The mark of responsible forestry

For FSC products, visit www.fsc.org



For PEFC products, visit www.pefc.org



EU Ecolabel : FI/011/001

Environmental year 2016

This Report gives information on the Mill's environmental performance and covers the most significant environmental impacts – emissions to Air and Water; Waste and Material consumption.

UPM Caledonian operates within the boundaries of an Integrated Pollution Prevention and Control (PPC) Permit. Our Annual Compliance assessment by the Scottish Environmental Protection Agency (SEPA) was judged to be 'Broadly Compliant' for 2016. This rating compares performance against two key parameters which are Environmental Limit Conditions and Environmental Management Conditions both of which are detailed within the PPC Permit. During 2016 there were two incidents which contributed to the results; the first being an elevated result for a specific pollutant which was deemed as a breach of an Environmental Limit Condition for the Irvine site. The breach was identified during compliance testing commissioned on behalf of the regulatory body, external testing commissioned by UPM before and after this regulator testing would suggest that the elevated result was not representative. The second incident concerned a zero calibration failure of both CEMS systems which resulted in incorrect readings for a period of 24 hours. This was deemed as a breach of an Environmental Management Condition. UPM have completed improvement actions in respect of this incident.

Management Systems

The management system was modified to the Quality First system which is a Microsoft Sharepoint package and now hosts all Caledonians management system documentation (including policy, procedures, chemical management, trials management) This system provides a common platform for all systems, and is common throughout many UPM sites and is available to all UPM employees globally.

The Quality Management system standard ISO 9001 and the Environmental Management system standard ISO 14001 were reviewed and published in 2015, Caledonian underwent successful recertification to these standards in 2016.

During 2016 UPM launched a new Safety and Environmental reporting tool called One Safety. This new Cloud based Global tool is used to record and manage all safety and environmental incidents and is available to all UPM employees and to contractors and visitors via an external portal. Use of One Safety can lead to appropriate preventive measures being taken before a potentially hazardous situation can lead to more serious consequences. Use of One Safety ensures that everyone throughout UPM has the ability to highlight unsafe situations by creating observations. The system allows actions to be allocated and tracked and feedback provided to the person who raises the incident when the action has been completed. The system promotes positive learning throughout UPM.

Energy

Energy management continues to be a key area of focus for the site. In quarter 4 of 2016 an energy audit was carried out by a team of UPM Energy and process experts. Several areas were identified where potential energy savings could be made. A local plan has been pulled together, and where possible progressed. A number of the opportunities identified may need investment proposals and request for funding will be prepared.

Due to external power supply issues during the first quarter of 2016 the production output was limited which resulted in a lower energy efficiency for the site during this period, this was rectified when the supply issues were resolved and power restrictions were lifted.

One of the key mill projects in support of improving UPM Caledonians energy efficiency was the installation of a heat recovery system at the Off-Machine coater which was installed in May 2016. This system reuses the waste heat from the Solaronics exhaust gas system to pre-heat the supply air to the Air Flotation dryers, previously this heat was lost to air. This system started up very well and has been successfully in reducing energy used, variable cost and has given significant reductions in CO₂ emissions.

Social Developments

Health and Wellbeing, Caledonian Paper offers a comprehensive health and wellbeing service for all employees ranging from onsite gym; onsite nurse; access to physiotherapists, doctor and stress counselor. The Medical Centre has key areas of focus throughout the year one of which was early identification of prostate cancer within men. In general the Medical Centre team:

- Aim to carry out medicals for ALL employees over 45, but these are also be available to all ages.
- Continue with the audiology program and to ensure all drivers of vehicles/cranes have 2 yearly eyesight check.
- Continue with drop in clinic to monitor employee health.
- Encourage employees to take responsibility for their own health and aim for a healthy lifestyle both in the workplace and at home.
- Aim to raise employee awareness that like accidents, a lot of illness is preventable.

Other Areas of Focus during 2016

In conjunction with the UPM Bioforce graduate program Caledonian employed a summer student to work on an emissions modelling profile for the CHP boiler which will allow for future development of fuels. Caledonian has employed students from this program over the last three years and has benefited from the range of projects in which they were involved.



Gordon Mitchell, General Manager

Air

During 2016 there were no failures against the permitted ELV's (emission limit values). Emissions for NO_x and CO₂ were both at a lower level in comparison to 2015.

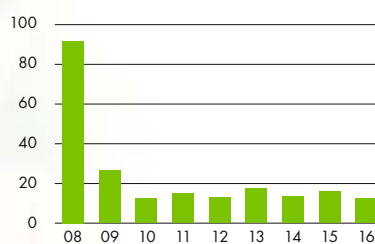
Particulate emissions from the CHP boiler were at a higher level than 2015, due to both access and maintenance issues with the bag house filters during the year. These filters which are used to capture the particulates from the flue gases will undergo further maintenance and replacement in 2017.

We continue to work closely with our biomass supplier for the CHP boiler and have made excellent progress on improving the overall quality of all fuel deliveries allowing the boiler to operate on a more uniform level.

Some further development work with the continuous emissions monitoring (CEMS) which was upgraded in 2015 was carried out during 2016 which included aligning the reporting requirements to the consolidated PPC permit which was issued in Dec 2015.

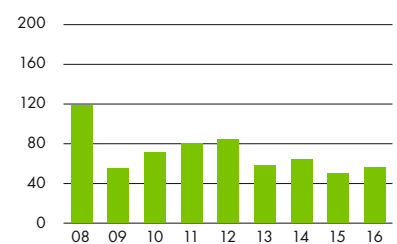
Fossil carbon dioxide, CO₂

1,000 t/a



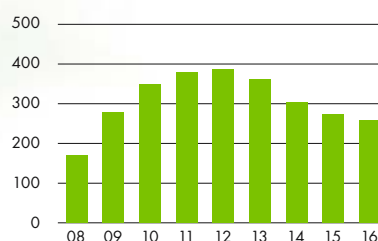
Sulphur dioxide, SO₂

t/a



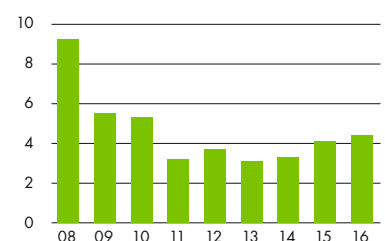
Nitrogen oxides, NO_x

t/a



Particulates

t/a



t/a refers to tonnes per annum

Water and Effluent

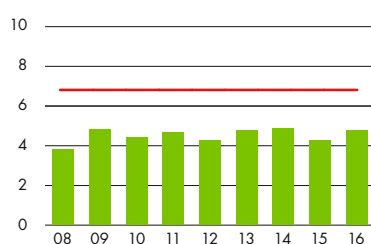
Both fresh water usage and effluent volumes are of key focus in the papermaking process with a reduction in effluent volumes achieved in 2016. Unfortunately due to an external curtailment of available electrical power to site during the first quarter of 2016 the specific fresh water consumption increased due to the plant continuing to operate albeit at a reduced production volume. Water savings will continue to be an area of focus for the site.

The operation of the effluent treatment plant was very good during 2016 with continued reduction in total suspended solid levels and chemical oxygen demand remaining steady. We had one

failure of BOD₅ against our agreement with the operator of the municipal effluent treatment plant. As a result of the municipal treatment facility being under additional scrutiny from the regulatory body Caledonian were requested to carry out daily BOD₅ testing from mid March to mid September before reverting to twice weekly testing. All results during this time period were within the agreed parameters.

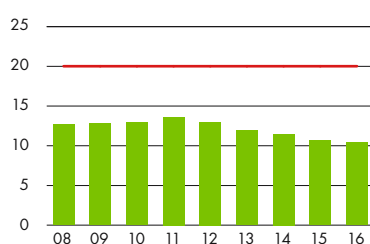
Biological oxygen demand, BOD₅

Average tonnes/day



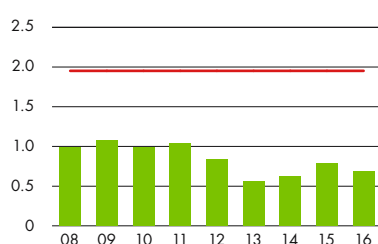
Chemical oxygen demand, COD

Average tonnes/day

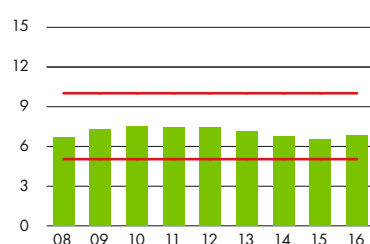


Total suspended solids, TSS

Average tonnes/day



Effluent PH



— Limit value

— Upper and lower limit

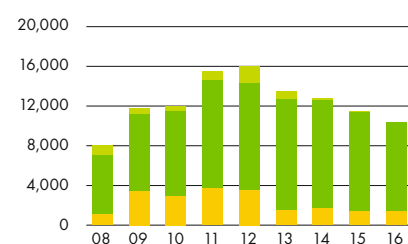
Waste

This is the second year that all waste leaving site was recycled or reused by our waste contractor with zero waste to landfill. Additional training was carried out via an e-learning package re-enforcing that all waste should be segregated onsite ensuring that it can be reprocessed for reuse or recycling at the waste depot.

Combustion process residue waste which is produced during combustion in the CHP boiler is classified as hazardous waste however this is used in the consolidation of liquid hazardous wastes at the waste contractor's site to minimise the environmental impact. An additional disposal route for flyash was sourced in 2016 which involves screening of the flyash and reusing a proportion for construction purposes, this will be progressed further in 2017.

Solid waste

BDt/a



Landfill
Recovered/Recycled

All waste volumes based on dry tonnes

Environmental parameters 2016

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 LWC	280,000 t
Raw materials (BDT)	Pulp Pigments Process Chemicals	See UPM Corporate Environmental Statement for more information
Energy	Biogenic Fuels Fossil Fuels Electricity	See UPM Corporate Environmental Statement for more information
Emissions to air	Sulphur Dioxide, SO _x Nitrogen Dioxide, NO _x Carbon Dioxide (fossil) Carbon Dioxide (biogenic) Particulates	56 t 258 t 12,243 t 267,240 t 4 t
Water intake	Fresh Water	3,386,985 m ³
Discharges to water	Chemical Oxygen Demand (COD) Total Suspended Solids Biological Oxygen Demand (BOD ₅) Effluent Volume	3,810 t 248 t 1,738 t 2,859,885 m ³
Controlled waste*	Landfill Materials Recycling – Boiler Ash – Metals – Bark & Other wood Residues – Other Energy Recovery Composting Hazardous Waste	0 t 10,128 t 9,003 t 136 t 718 t 526 t 231 t 24 t 7.5 t
Size of mill area		33.1 ha

* Dry weight



The CHP plant which was commissioned in 2009 has had a major impact on fossil fuel emissions. The plant produces all of the mills heat requirements and a significant proportion of the mills electricity requirements.

Performance against targets in 2016

Target	Achievement	Comments
Clean Run Deviations – Zero category 3, 4 or 5 deviations	Yes	No deviations reported in 2016
Compliance with New Legislation: – Energy Savings Opportunity Scheme	Yes	– Very good audit carried out which identified several areas for energy savings
– Renewables Obligation: Sustainability Audit Report	Yes	– Audit carried out in Spring 2016 and submitted to authorities
Review of site emergency planning and preparedness	Yes	Complete review of the Business Continuity plan was carried out in April 2016
Pulp and Paper BAT Ref document to be reviewed	Yes	Gap analysis carried out with no significant changes required

Environmental targets 2017

- Zero Clean Run Deviations – zero failures against PPC (Pollution Prevention Permit) and TE (Trade Effluent Agreement) agreement. Managing High Bright Runs.
- Carryout review of legislative compliance with respect to Legionella and Asbestos.
- Implementation of dust extraction system in Fuel Handling implemented and operational ensuring improvement to dust levels.



Verifier's declaration on verification and validation activities

BSI, with EMAS verifier registration number UK-V-0002 accredited or licensed for the scope NACE 17 & NACE 16 declares to have verified whether the site(s) or the whole organisation as indicated in the environmental statement of the organisation UPM Caledonian with registration number FI-000058 meet 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 this 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 environmental statement of the site reflect a reliable, credible and correct image of all the sites activities, within the scope mentioned in the environmental statement.

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.

Done at UPM Caledonian on 24/03/17

Richard Edmond
BSI Environmental Specialist Client Manager
Strategic Delivery UK
EMAS Verifier Registration No. UK-V-002.

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