

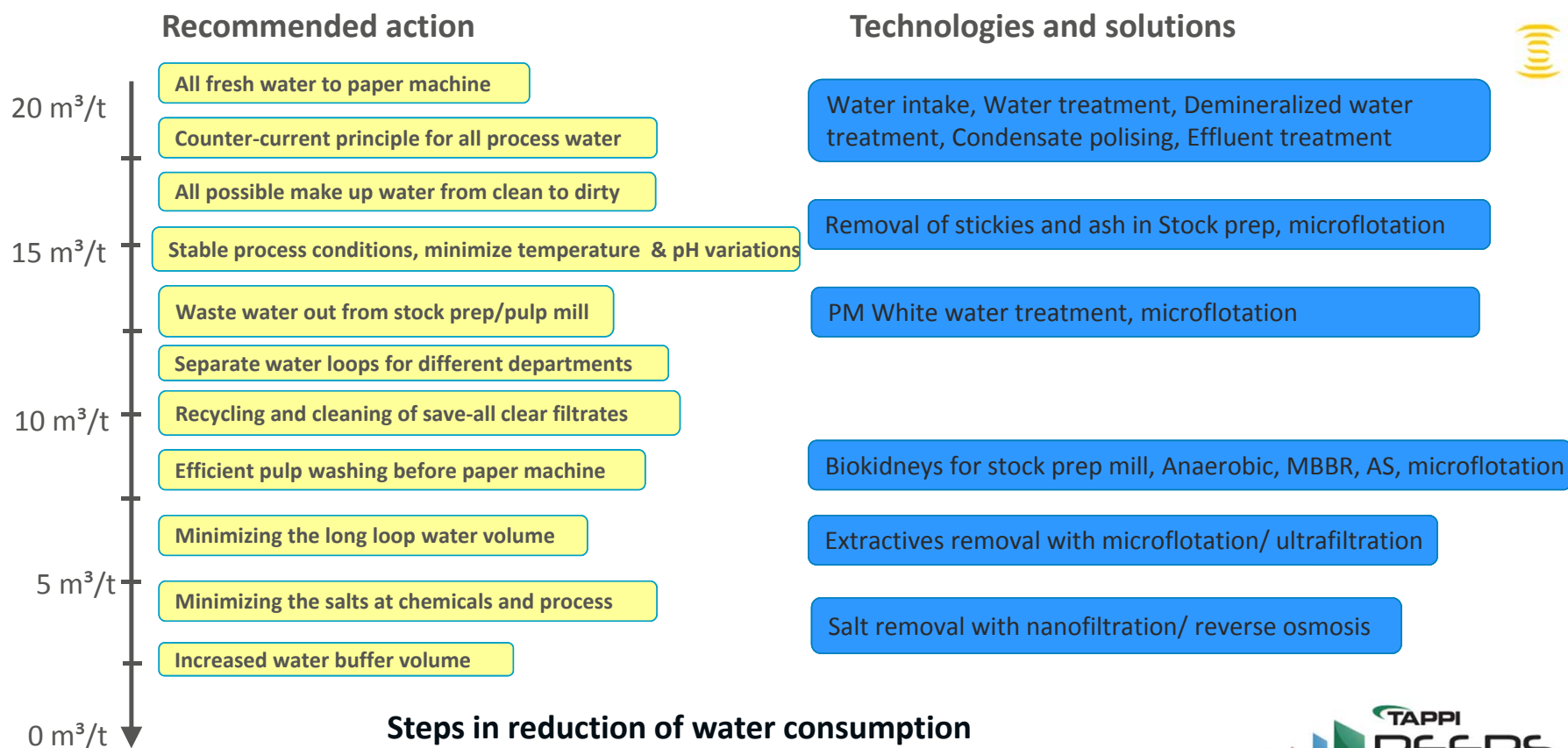


Advanced Water Treatment and Recycling Solution for Low Water Consumption Paper Mill

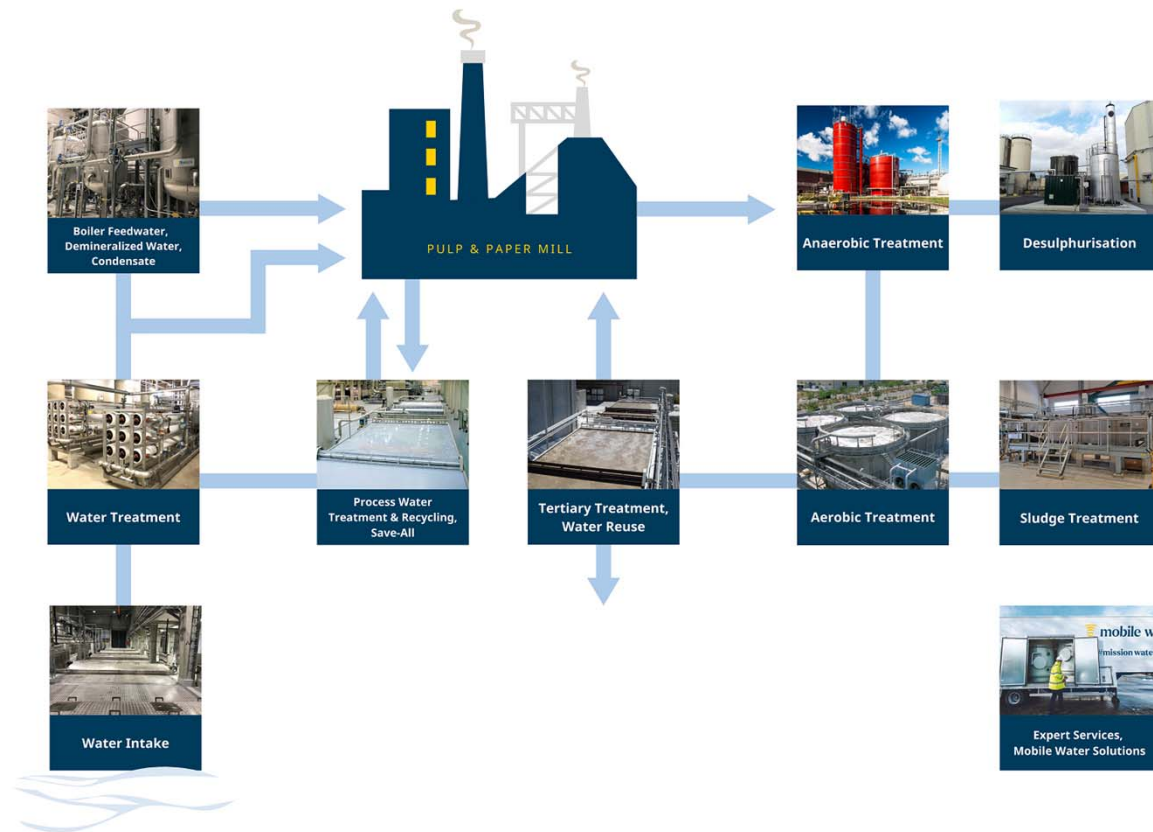




Steps in reduction of water consumption



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BAT emission levels, summary



Production	Flow m³/t	COD kg/t	TSS kg/t	N tot kg/t	P tot kg/t	AOX kg/t	BOD mg/l
Kraft pulping process							
- Bleached kraft pulp	25 - 50	7 - 20	0,3 - 1,5	0,05 - 0,25	0,01 - 0,03 Euca: 0,02 - 0,11	0 - 0,2	≤ 25 (as a 24-hour composite sample)
- Unbleached kraft pulp	15 - 40	2,5 - 8	0,3 - 1,0	0,1 - 0,2	0,01 - 0,02		
Sulphite pulping process							
- Bleached sulphite paper grade pulp	25 - 50	10 - 30	0,4 - 1,5	0,15 - 0,3	0,01 - 0,05	0,5 - 1,5	≤ 25 (as a 24-hour composite sample)
- Magnefite paper grade pulp	45 - 70	20 - 35	0,5 - 2,0	0,1 - 0,25	0,01 - 0,07		
- NSSC pulp	11 - 20	3,2 - 11	0,5 - 1,3	0,1 - 0,2	0,01 - 0,02		
Mechanical and chemimechanical pulping process							
- Integrated mechanical pulping	9 - 16	0,9 - 4,5	0,06 - 0,45	0,03 - 0,1	0,001 - 0,01		≤ 25 (as a 24-hour composite sample)
- CTMP or CMP pulp	9 - 16	12 - 20	0,5 - 0,9	0,15 - 0,18	0,001 - 0,01		
Integrated RCF paper and board mills							
- Integrated RCF without deinking	1,5 - 10	0,4 - 1,4	0,02 - 0,2	0,008 - 0,09	0,001 - 0,005	0,05 for wet strength	≤ 25 (as a 24-hour composite sample)
- Integrated RCF with deinking	8 - 15	0,9 - 3,0	0,08 - 0,3	0,01 - 0,1	0,002 - 0,01	0,05 for wet strength	
- Integrated RCF with deinking for tissue	10 - 25	0,9 - 4,0	0,1 - 0,4	0,01 - 0,15	0,002 - 0,015	0,05 for wet strength	
Non-integrated paper and board mills							
- Non-integrated (excluding speciality paper)	3,5 - 20	0,15 - 1,5	0,02 - 0,35	0,01 - 0,1	0,003 - 0,012	0,05 for decor and wet strength	≤ 25 (as a 24-hour composite sample)
- Non-integrated tissue	3,5 - 20	0,15 - 1,5	0,02 - 0,35	0,01 - 0,15	0,003 - 0,012	0,05 for decor and wet strength	
- Non-integrated speciality paper	3,5 - 20	0,3 - 5	0,1 - 1,0	0,015 - 0,4	0,002 - 0,04	0,05 for decor and wet strength	



BAT emission levels

Integrated production of paper and board from recycled fibres
pulp without deinking on site



Parameter	Yearly average kg/t
Chemical oxygen demand (COD)	0.4 ⁽¹⁾ – 1.4
Total suspended solids (TSS)	0.02 – 0.2 ⁽²⁾
Total nitrogen	0.008 - 0.09
Total phosphorus	0.001 – 0.005 ⁽³⁾
Adsorbable organically bound halogens (AOX)	0.05 for wet strength paper
⁽¹⁾ For mills with completely closed water circuits, there are no emissions of COD. ⁽²⁾ For existing plants, levels up to 0.45 kg/t may occur, due to the continuous decline in the quality of paper for recycling and the difficulty of continuously upgrading the effluent plant. ⁽³⁾ For mills with a waste water flow between 5 and 10 m ³ /t, the upper end of the range is 0.008 kg/t.	

The BOD concentration in the treated effluents is expected to be low (around 25 mg/l as a 24-hour composite sample).





BAT emission levels

Integrated production of paper and board from recycled fibres
pulp with deinking on site



Parameter	Yearly average kg/t
Chemical oxygen demand (COD)	0.9 – 3.0 0.9 – 4.0 for tissue paper
Total suspended solids (TSS)	0.08 – 0.3 0.1 – 0.4 for tissue paper
Total nitrogen	0.01 – 0.1 0.01 – 0.15 for tissue paper
Total phosphorus	0.002 – 0.01 0.002 – 0.015 for tissue paper
Adsorbable organically bound halogens (AOX)	0.05 for wet strength paper

The BOD concentration in the treated effluents is expected to be low (around 25 mg/l as a 24-hour composite sample).

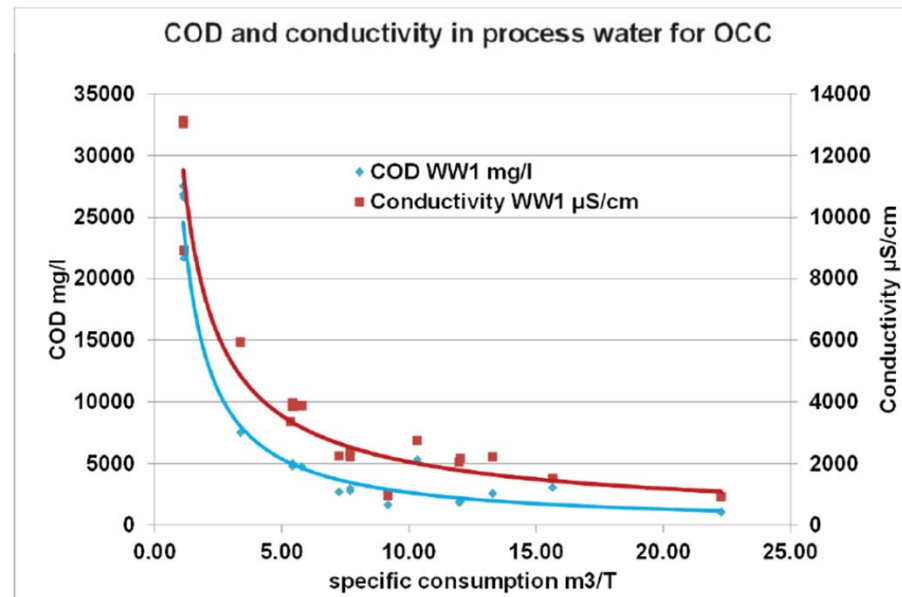




OCC ww COD vs water consumption

OCC Liner Fluting white water COD vs water consumption

Consequences of circuits closure



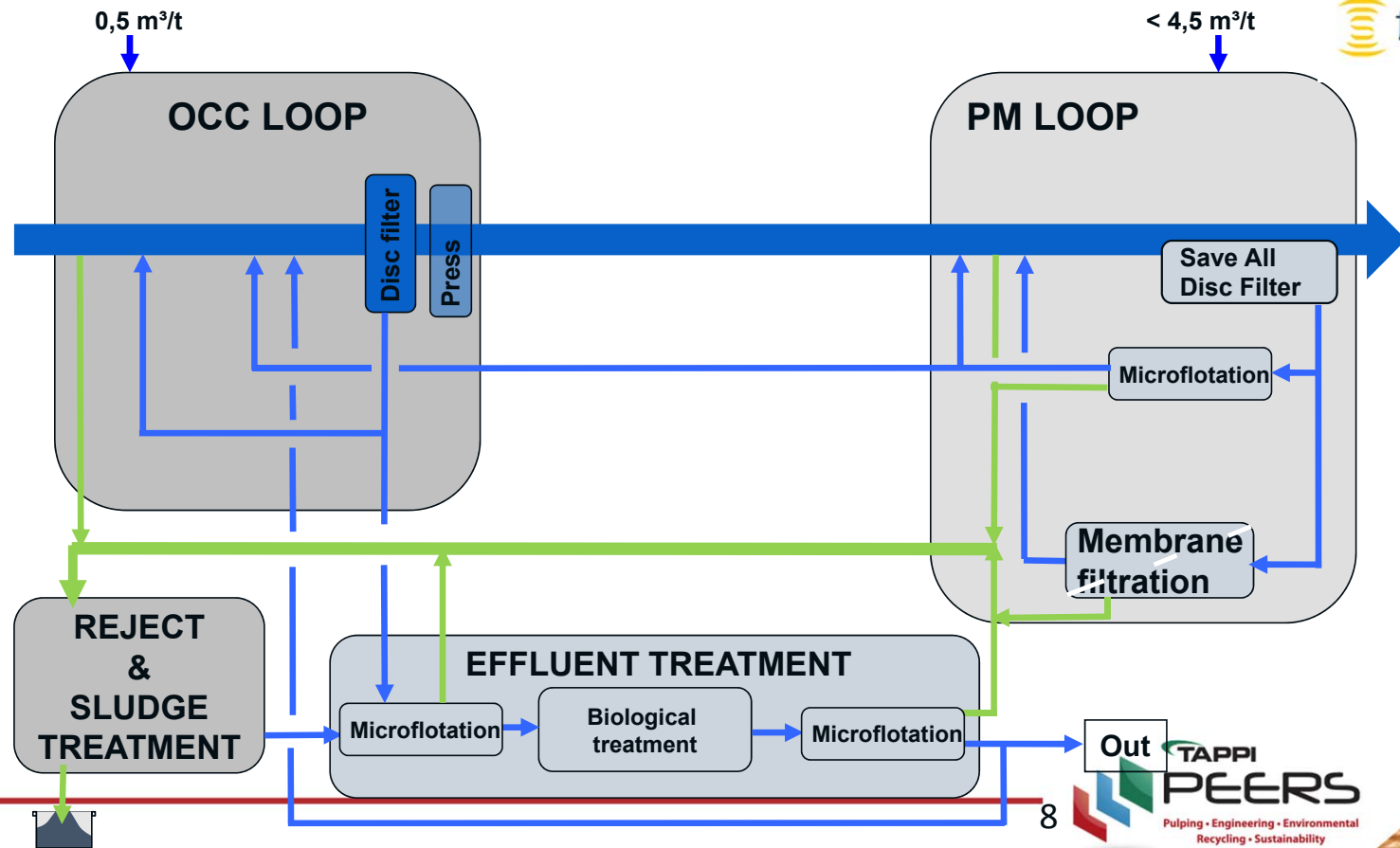
SpotView Presentation/ Aviles / CTP/ 4 October, 2018





Water management for OCC mill

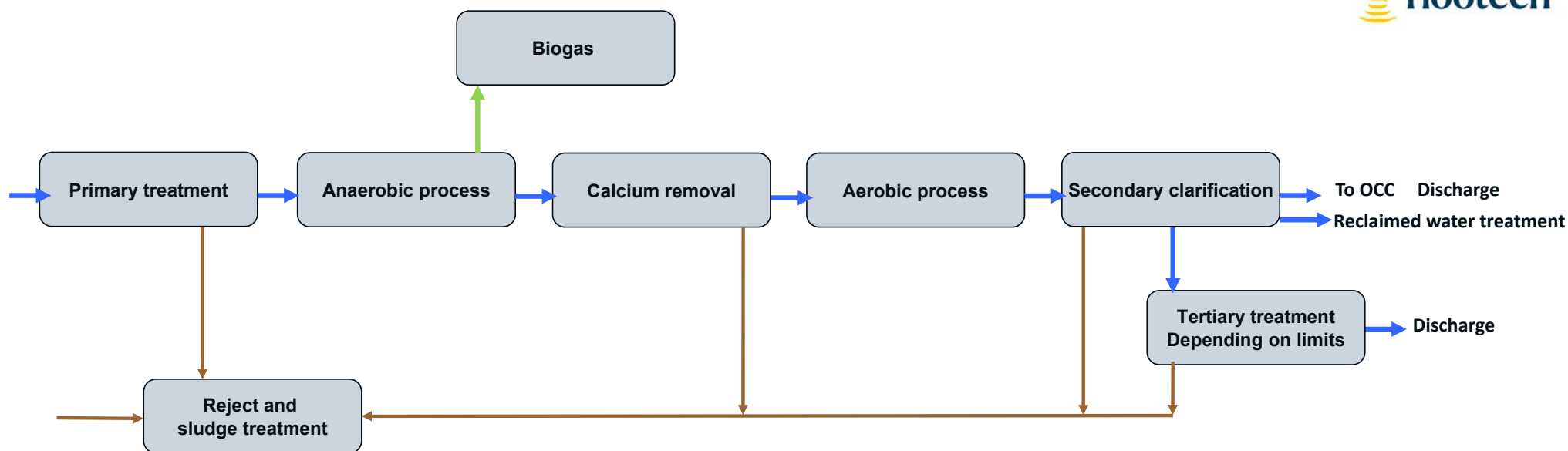
Water management for OCC based BM-lines , Water consumption < 5 m³/t - Low





Effluent treatment for OCC mill

Effluent treatment for OCC based BM-lines , Water consumption < 5 m³/t - Low





Example of an OCC mill water recycling

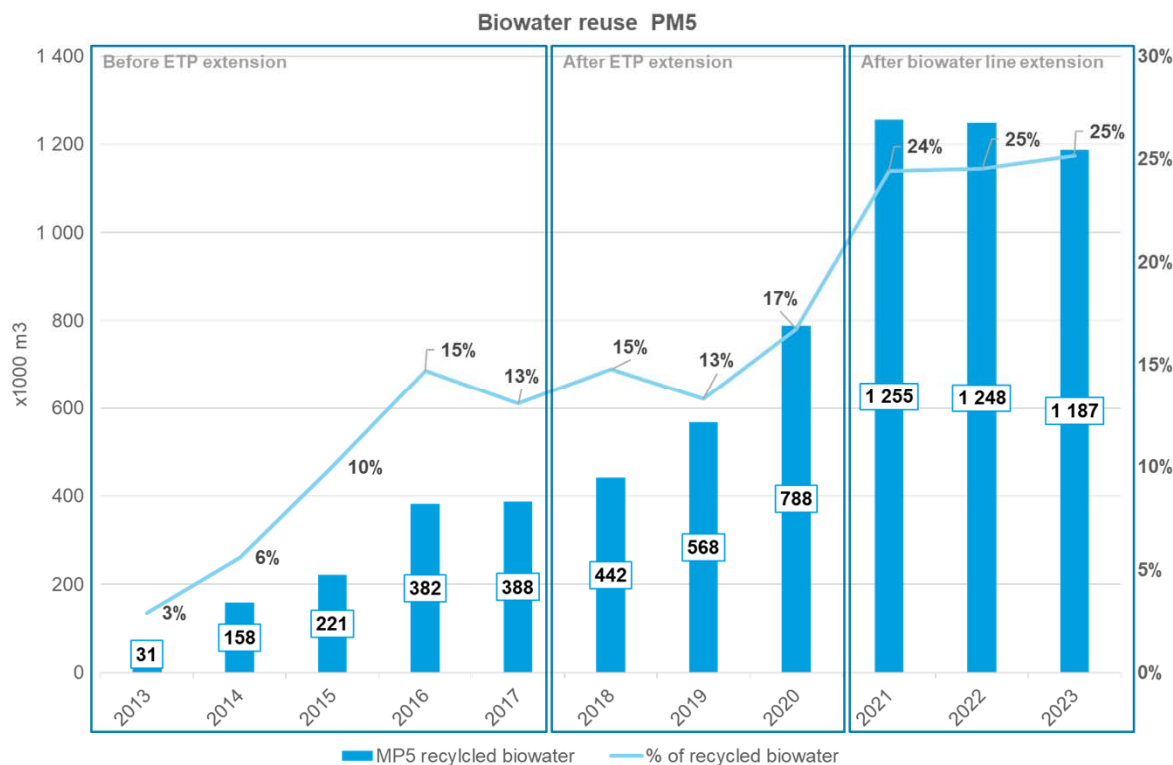
Example of an OCC mill with external water recycling
= biologically treated effluent back to production





Example of an OCC mill water recycling

Example of an OCC mill with external water recycling
= biologically treated effluent back to production





Thank You

