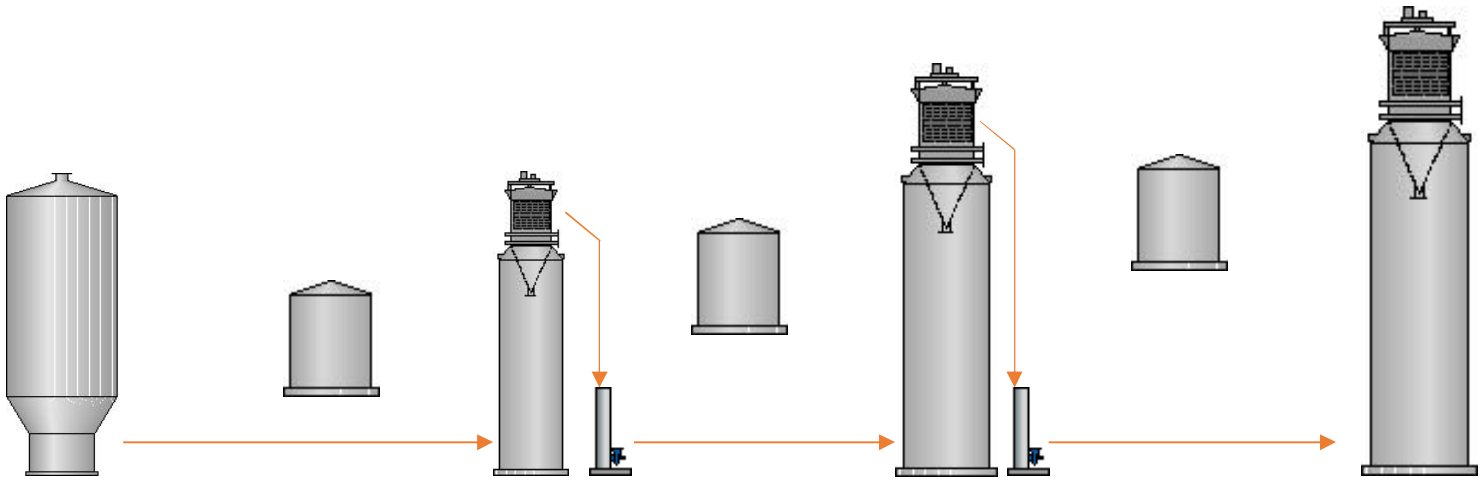
EOP Diffusion Washer Replaced with Evolution Press - Mill Results

Mona Henderson - Valmet

Original Bleach Plant
3-stage diffusion washer



Project Goals

- Lower bleaching chemicals consumption (ClO_2)
- Reduce the hot water usage
- Avoided maintenance costs and reduced maintenance time (diffuser)

Back To Basics

The Importance of Good Washing

Removes dissolved solids: organic and inorganic carryover …. “gunk” that negatively impacts the bleaching process

The Benefits of High Discharge Consistency Washing in the Bleach Plant

Removes most of the free water which makes it easier to change pH and temperature

Makes it easier to control consistency to the next bleaching stage

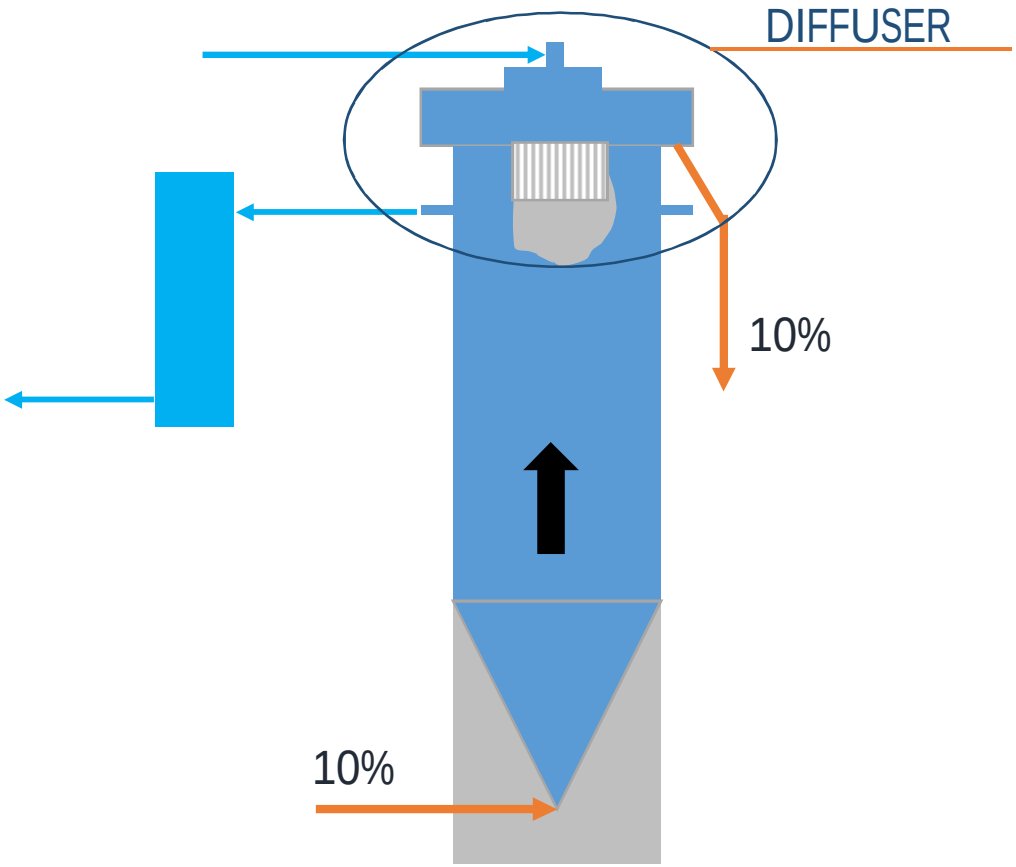
Creates a “water lock”

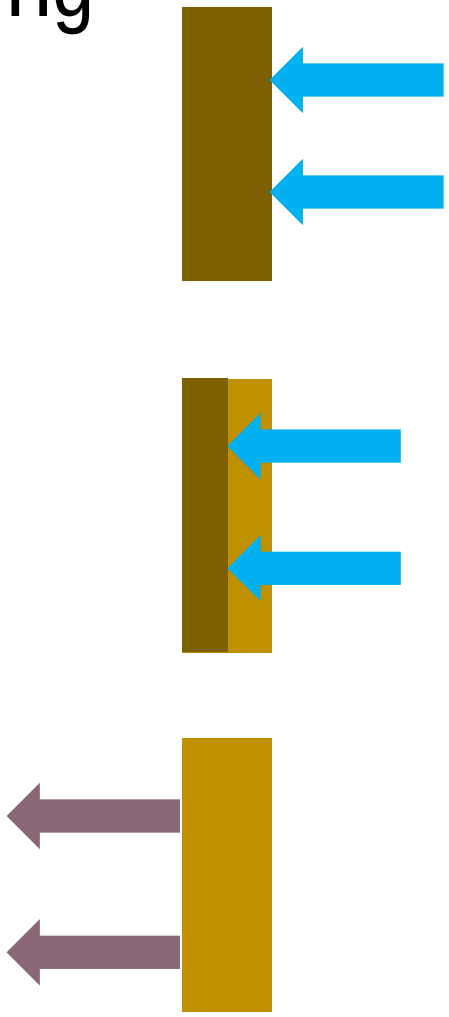
Allows savings in steam and water consumption

Guide-lines for how COD carryover impacts chemical consumptions

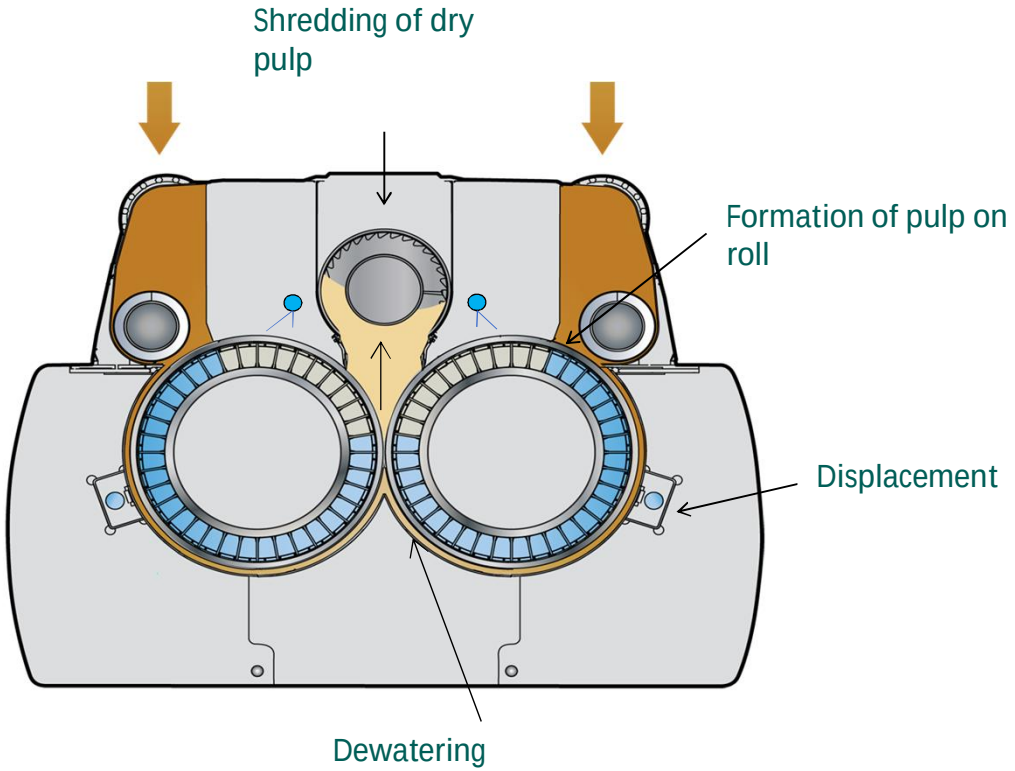
From….	To….	Impact (estimate)
O2	D0	0.6 kg act Cl / kg COD
EO	D1	0.3 kg act Cl / kg COD

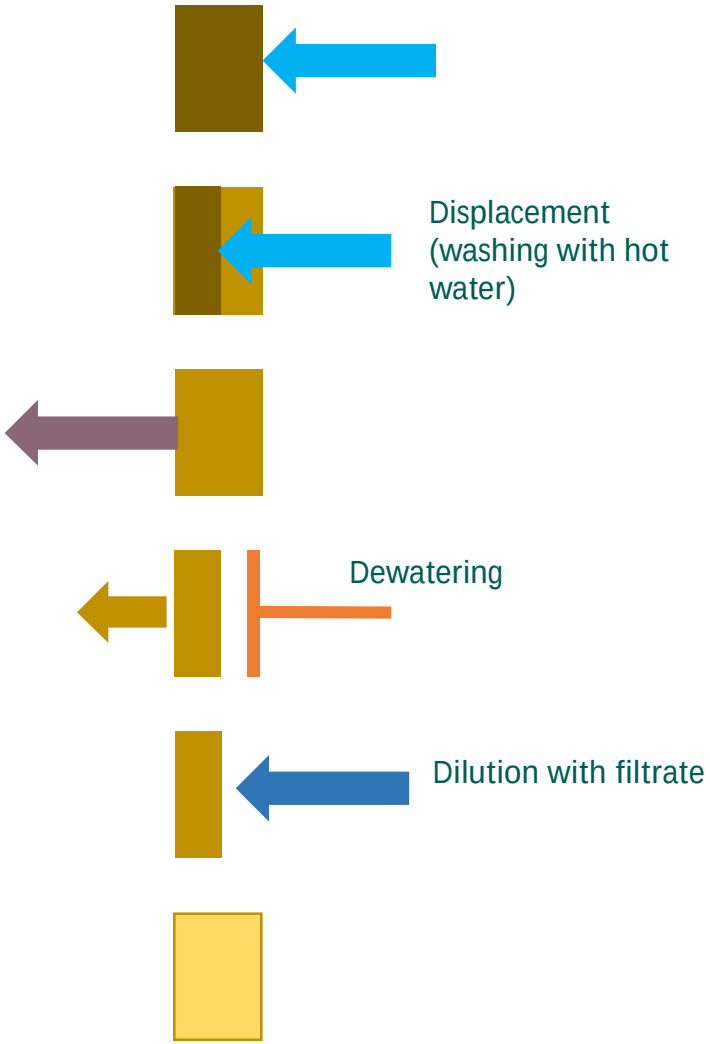
Principles of Diffusion Washing





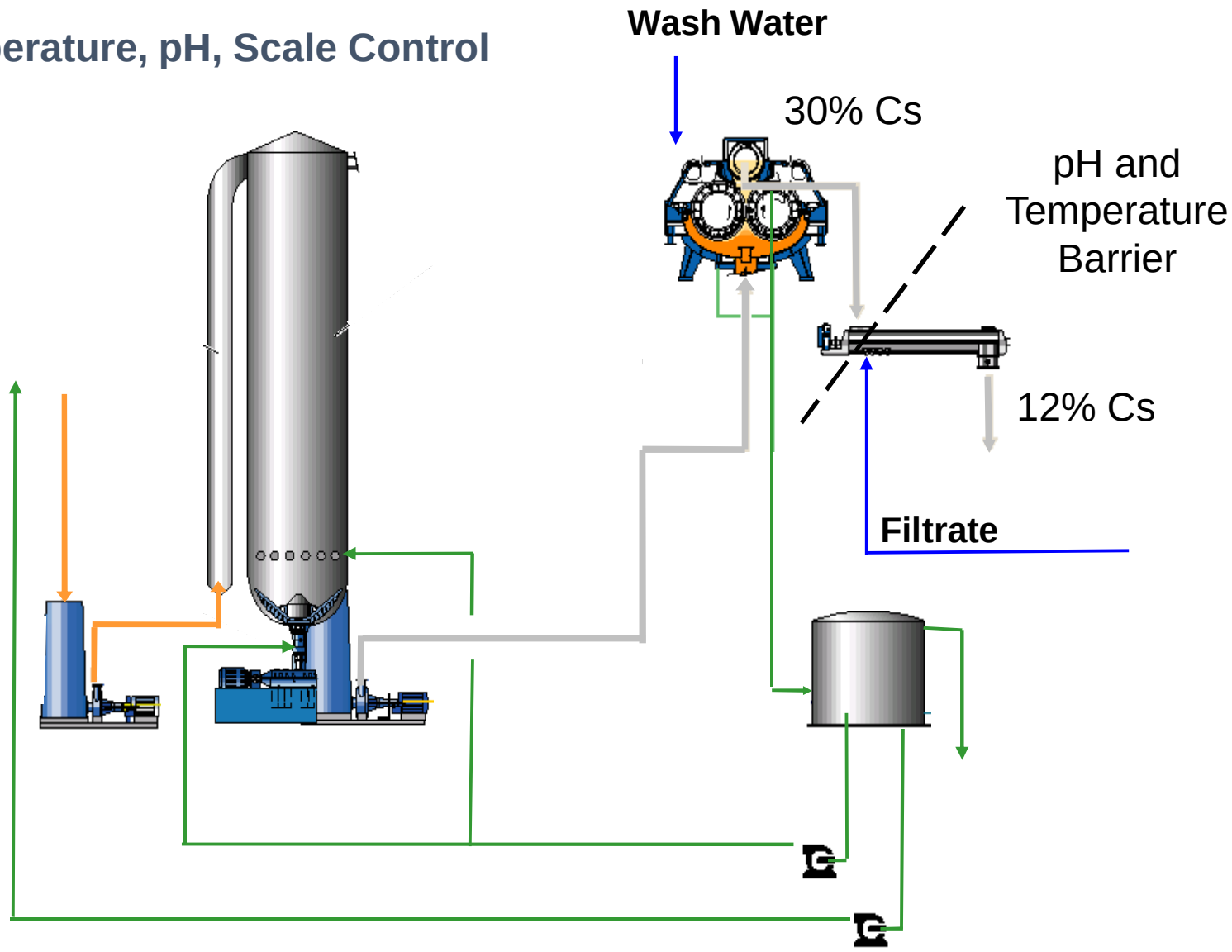
Principles of Displacement Press Washing





The First Washing Principle

Temperature, pH, Scale Control

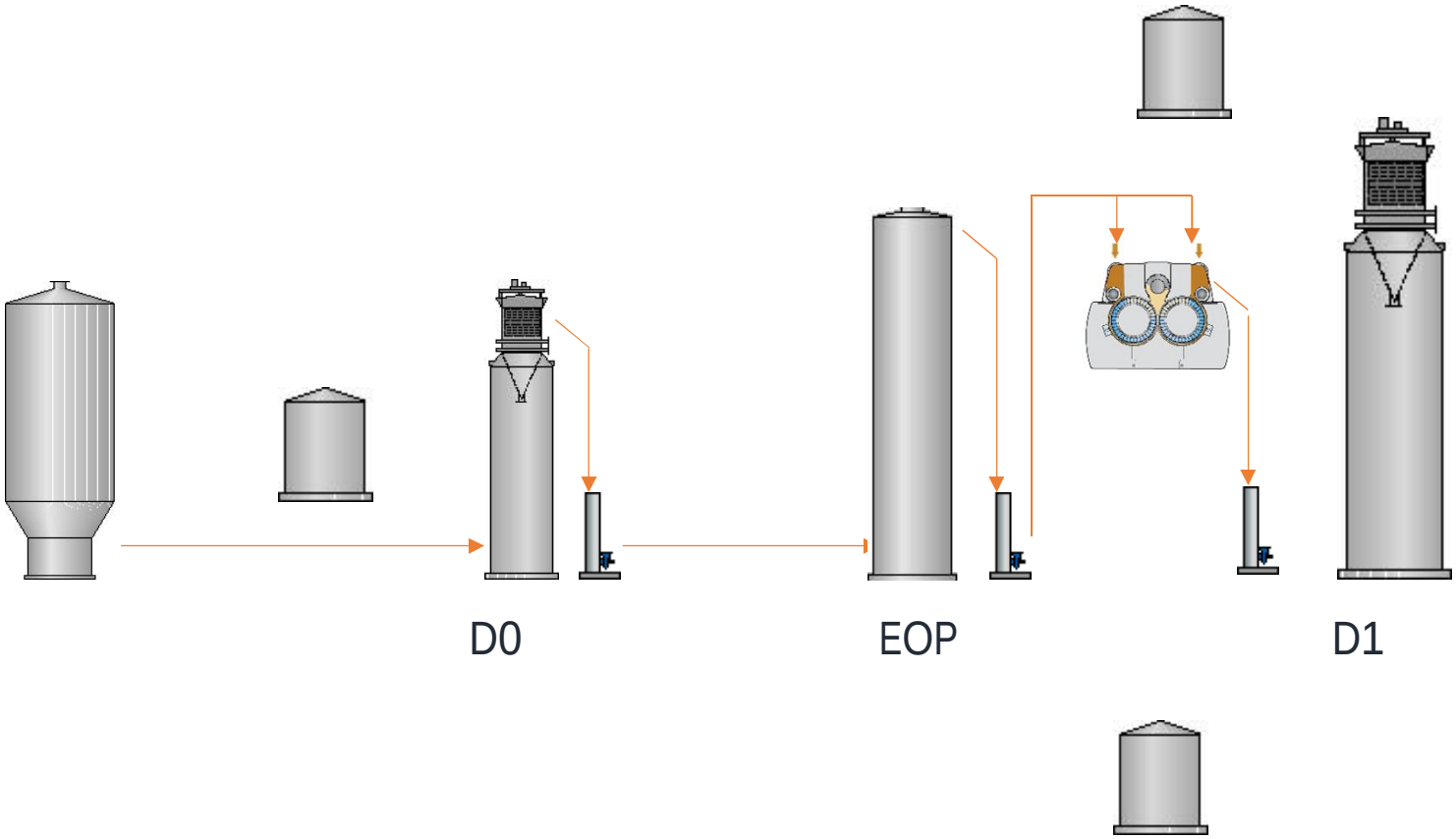


Case Study:
Implementation and Results

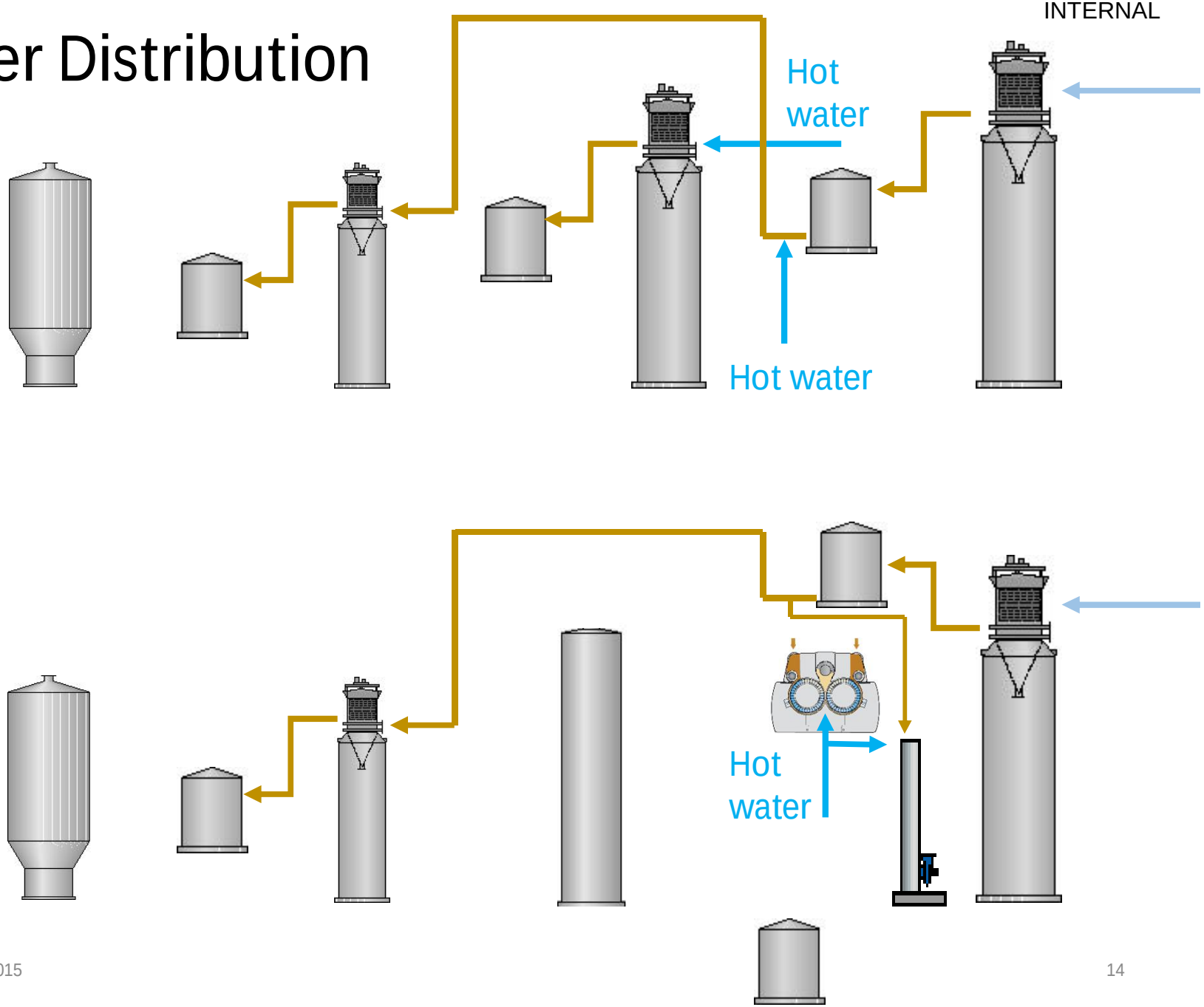
System Modifications

Before	After	Result 1	Result 2	Result 3
Diffuser	Press	Better washing	Higher discharge consistency	T and pH “Barrier” between EOP and D1
Hot water to D1 tank	No hot water to D1 tank	Lower hot water consumption		

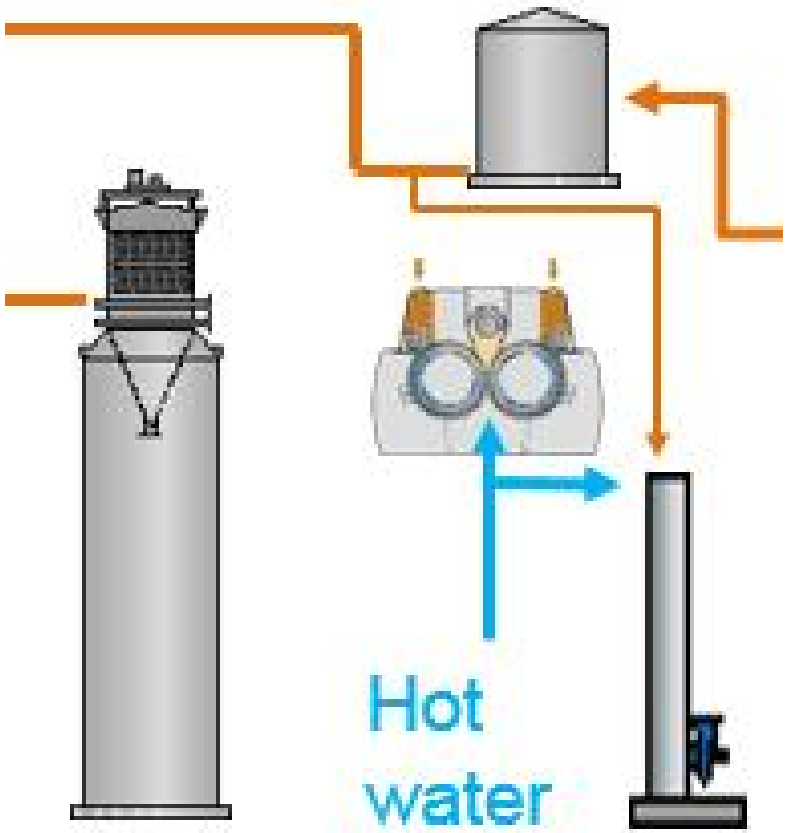
Modernized Bleach Plant
EOP diffuser replaced with press



Water Distribution



Close – up of water distribution



No hot water added to suction side of D0 tower wash water

➡Hot water savings

Recover D1 filtrate as dilution

➡Dilute with right pH (H_2SO_4 savings)

➡Dilute with right temperature for D1 stage

Results
(first year after TwinRoll Press installation)

Lower bleaching chemicals consumption (ClO_2 and sulfuric acid)

>>> almost 20% ClO_2 reduction

>>> ~55% H_2SO_4 reduction

Reduced hot water usage

>>> 340 m^3/h

Avoided maintenance costs and reduced maintenance time

TARGETED SAVINGS MET OR EXCEEDED

THANK YOU!