



Water Conservation at Aveda Corporation

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Company Background

Aveda Corporation

- World headquarters in Blaine, MN
- 750 employees
- Division of Estée Lauder Companies
- Production, marketing, and research for personal care products
- Ethically source natural ingredients
- Environmentally friendly culture

AVEDA

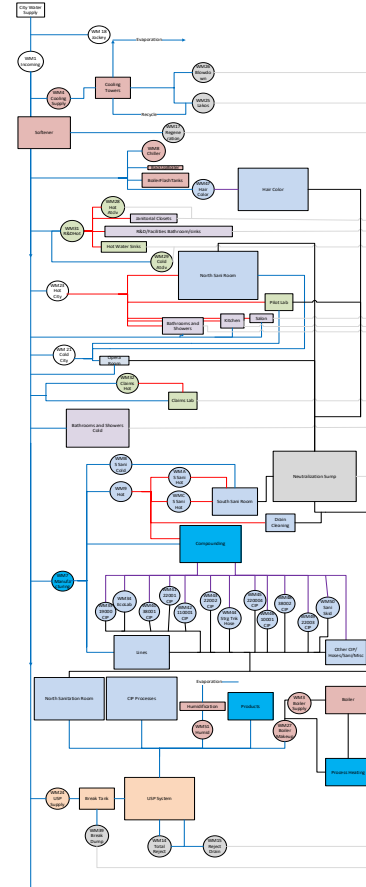
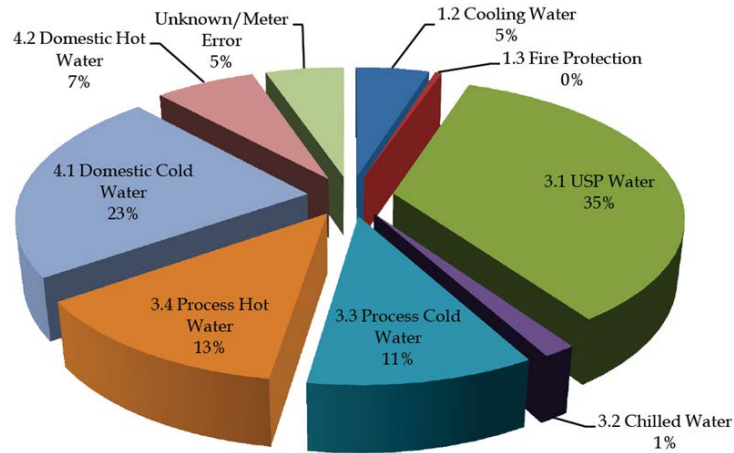
the art and science of pure flower and plant essences



Project Overview

Water Conservation Initiatives

- Facility water mapping
- 22 million gallons per year
- 25% cleaning



Approach

Data Collection

- Analyzing water meters
- Observation of CIPs and manual sanitization room
- Flow rate measurements
- Talking with workers
- SAP reports



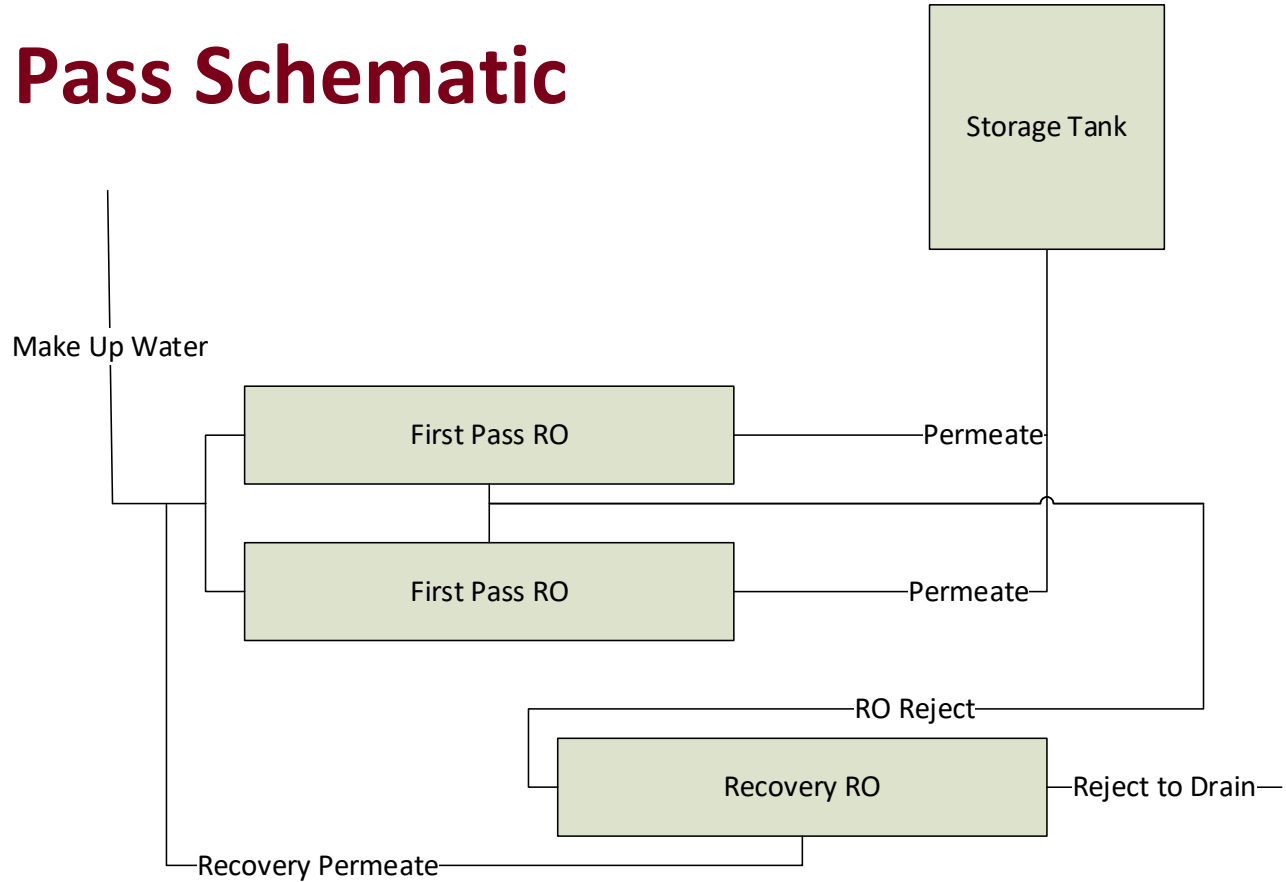
Primary Recommendation

Purified Water System Upgrade and Waste Stream Reuse

- Production bottlenecks → need higher flow system
- New carbon filter, dual pass RO membranes, deionizer, and ozone generator
 - 70% to 90% efficiency
 - Redundant system
- Storage system for waste streams and pump to nearby bathrooms
 - RO reject, softener discharge, autoclave discharge
 - Potential first pass cooling



Dual Pass Schematic



Primary Recommendation Analysis

Recommendation	Annual Reduction	Total Cost	Annual Savings	Payback Period	Status
Purified Water System Upgrade	1.46 million gallons 32,000 kWh 11,000 lbs NaOH	\$667,000	\$7,700 >\$3,200 \$26,000 + increased capacity	18 years	Recommended
Waste Stream Reuse	1.25 million gallons	<\$203,000	\$6,600 + ability to expand reuse	<30 years	Recommended

Additional Solutions

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
New nozzles on pre-rinse bucket washer	640,000 gallons 3,400 therms 31,000 kWh	\$664	\$3,400 \$2,100 \$3,200	<1 month	Implemented
New spray nozzles in storage tanks	544,000 gallons 3,300 therms 28,000 kWh	\$30,000	\$5,800 \$2,500 \$2,800	2.7 years	In Progress
Temperature probes in recycle line	247,000 gallons 24,000 lbs detergent	\$37,000	\$2,400 \$23,000	2.5 years	Recommended
New cleaning method with new spray nozzle	629,000 gallons 37,000 lbs detergent	Unknown	\$6,000 \$34,000 + 256 batches	Unknown	Investigating
Add VFD pump to RO train	24,500 kWh	\$4,600	\$2,500	1.8 years	In Progress
Countercurrent water softener	692,000 gallons 78,000 lbs salt	\$64,000	\$3,700 \$8,000	7.3 years	Recommended

Takeaways

- Information is dispersed
 - Self-start
- Investigate all angles
 - Plugged hair color tank

