



Water Conservation and Energy Efficiency at PTC Steel

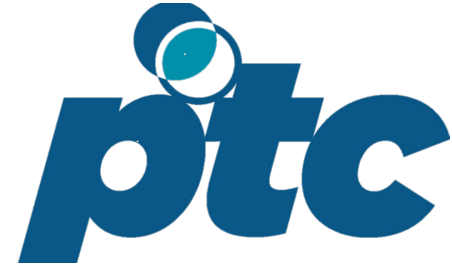
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UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

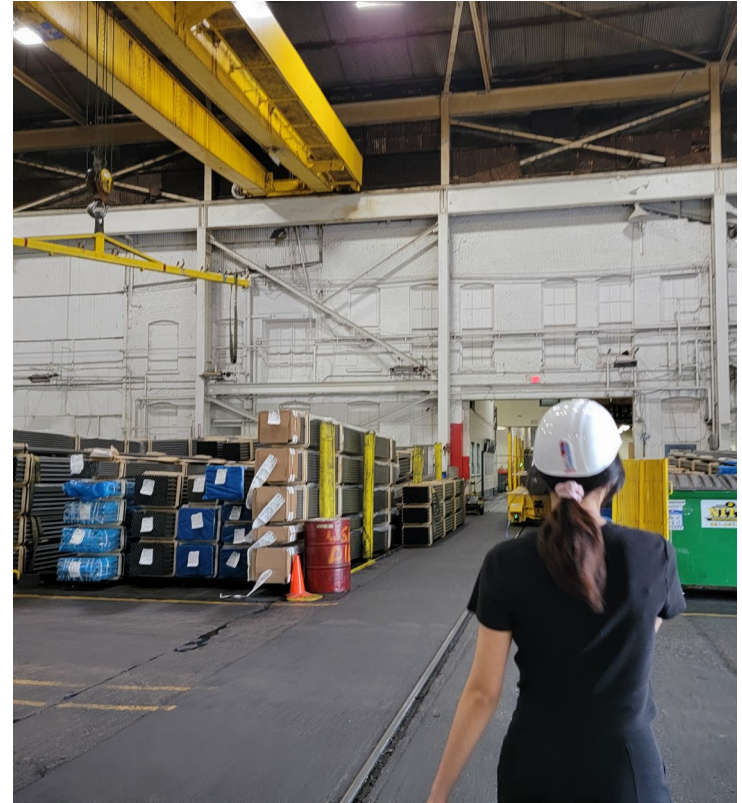
Company Background

- **PTC Steel: Minneapolis**
 - Products: steel tubes, pipes, and bars
 - Industries: agriculture, automotive, etc.
- **Area: 170,000 sq ft**
- **Employee count: 192**
- **Headquarters: Pittsburgh, PA**



Incentives to Change

- Consumer demands
- Commitment to environmental stewardship
 - Water-intensive industry
 - Understanding water usage



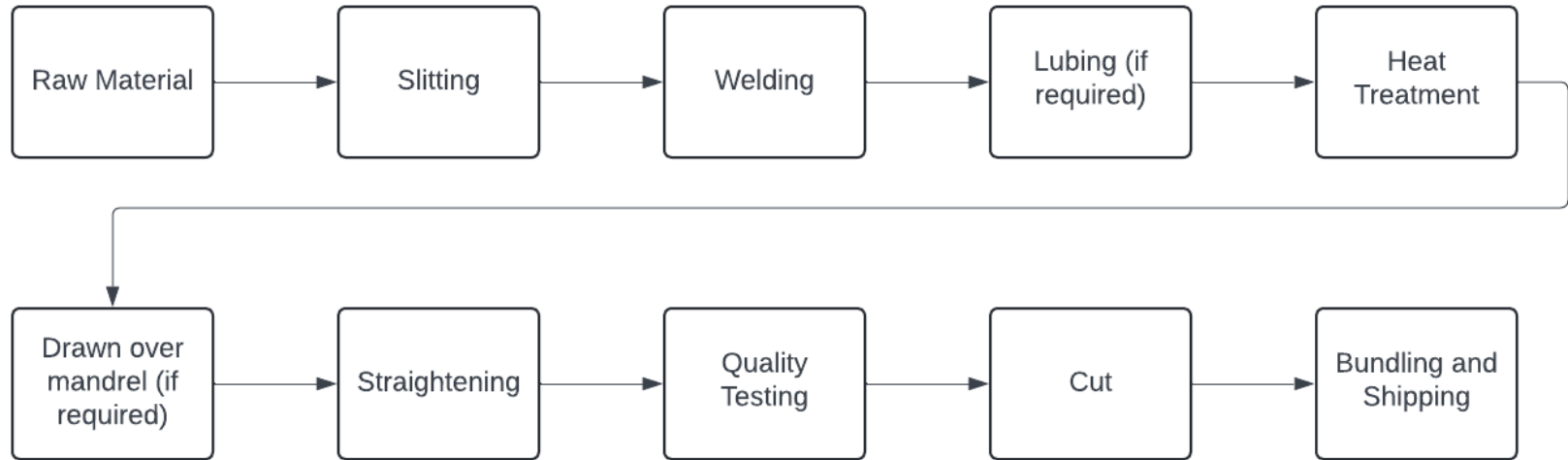
Start



Finish



Process Flow Diagram



Approach

- Pipe tracing
- Pipe tagging
 - Temporary paper tags
- Bucket test
- Water mapping

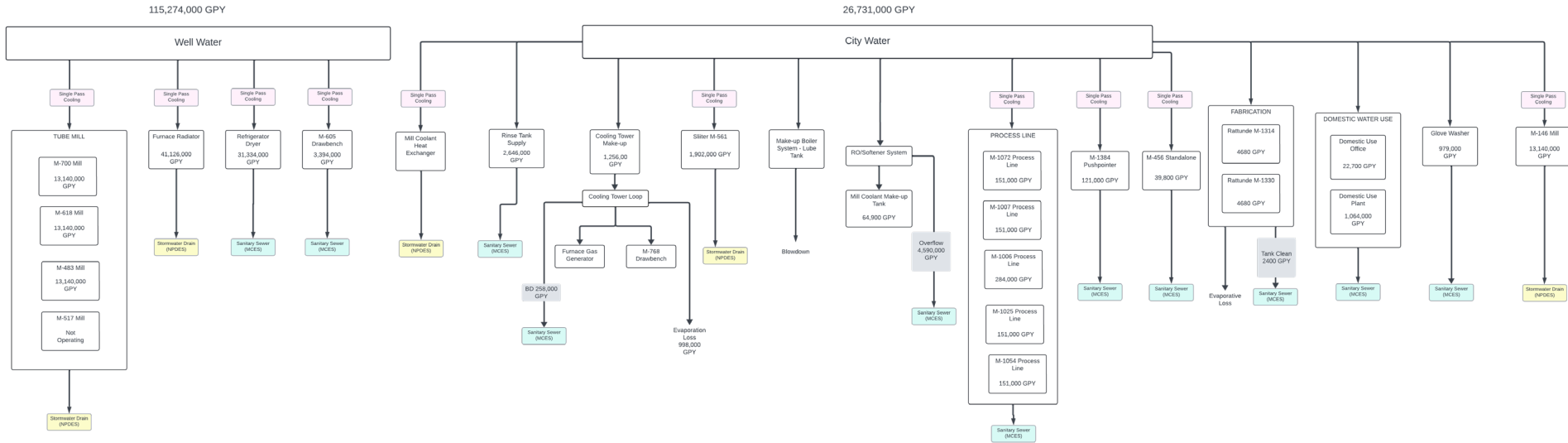
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Tagged

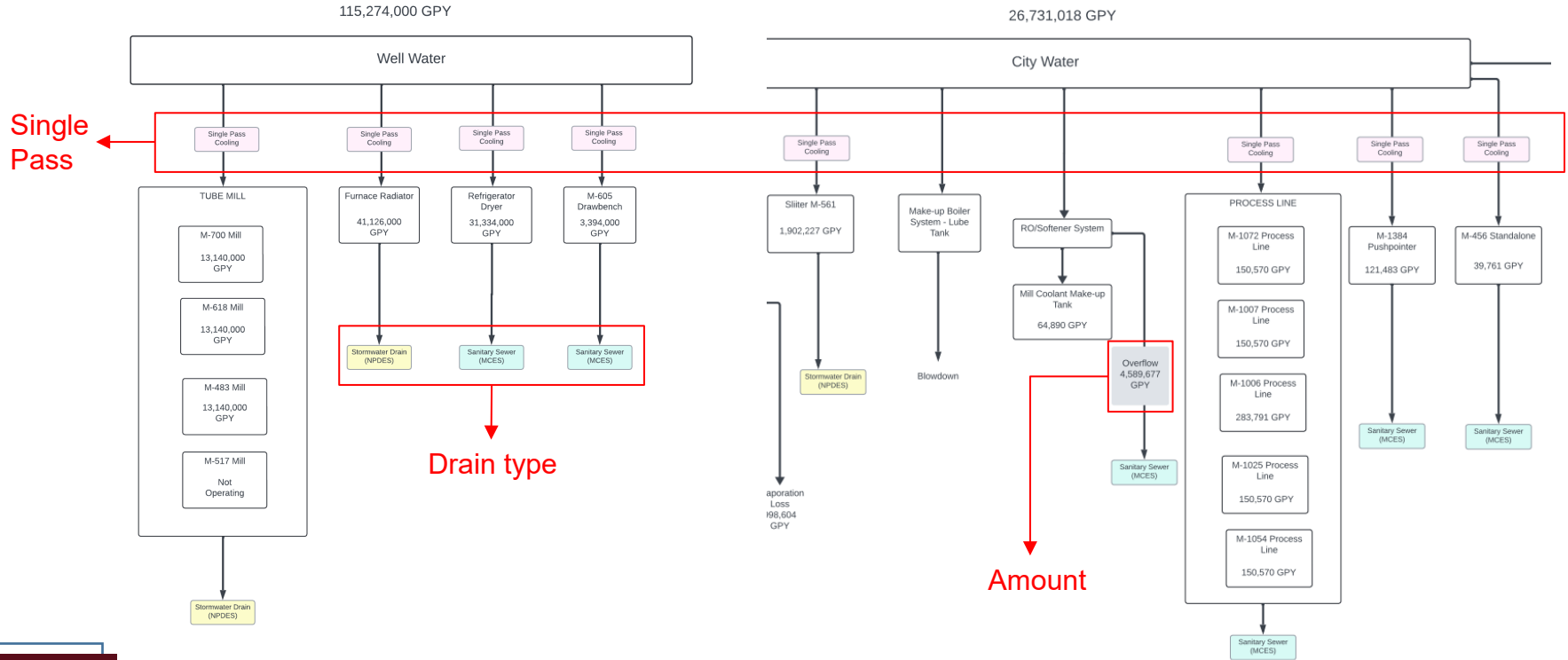


Water Map



Stay tuned for the zoomed in version ➡

Water Map



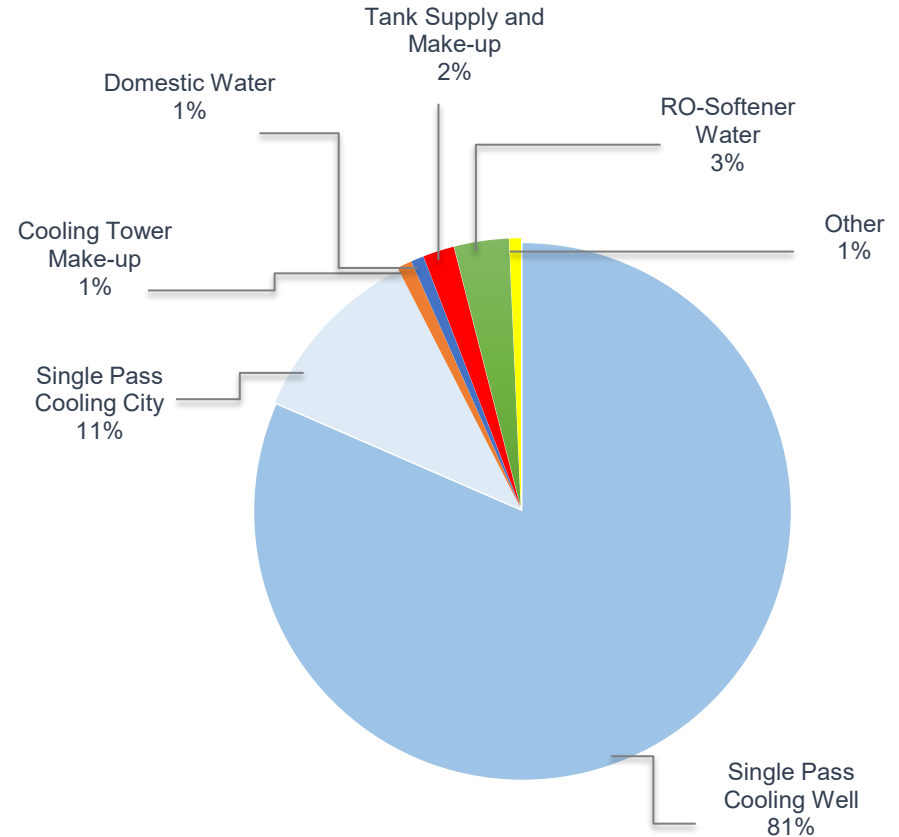
Facility Water Usage

- **Total Water Use:**

- City water: 27,000,000 GPY
- Well water: 115,000,000 GPY

- **Major opportunity in conserving water:**

- Single pass cooling (92% total use)



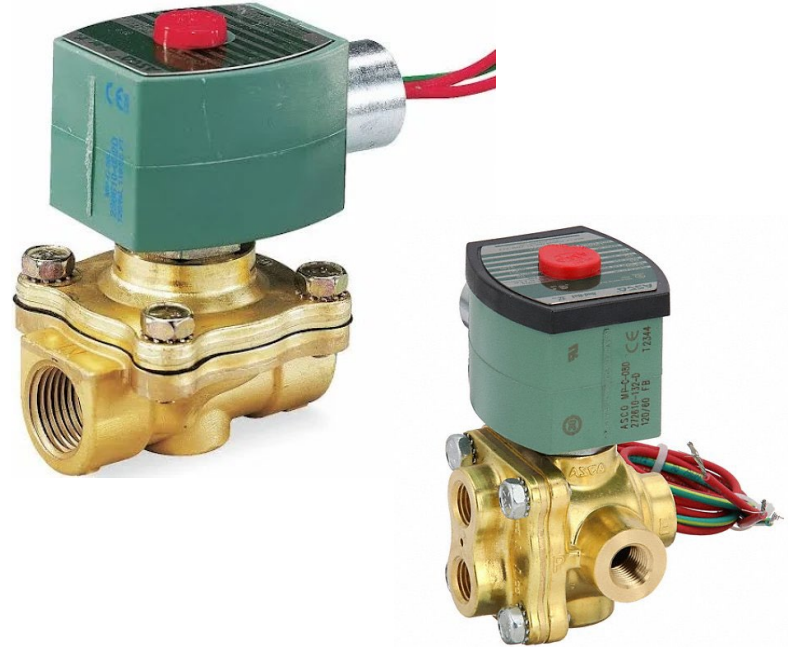
Single Pass Cooling



- Water drain: 24/7 flow

On-off Automated System

- **Option 1: Solenoid Valves**
 - Annual water savings:
25,000,000 GPY
 - Annual cost savings:
\$133,000



Temperature-based Automated System

- **Option 2: Temperature Modulating Valves**
 - Annual water savings: TBD
 - Annual cost savings: TBD



Solutions

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Install solenoid valves	25,000,000 gal	\$3,750	\$133,000	Immediate	Reccommended
Install temperature modulating valves	TBD	TBD	TBD	TBD	Researching
Repair the water softener and RO system	4,500,000 gal	\$353	\$55,000	Immediate	Implemented
Turn off rinse tank on off-days	674,000 gal	N/A	\$8,200	Immediate	Recommended
Turn off tank line burners on off-days	3,600 therms	N/A	\$1,050	Immediate	Recommended

Personal Benefits

- **Project Management**
 - Time management
- **Communication, Teamwork, and Creativity Boost**
- **Technical Experience within the Industry**
 - Hands on experience
- **PROBLEM-SOLVING!**



My favorite internship ever 😊