

NYSERDA
Industrial Research
September 2007



NYSERDA

New York State Energy Research and Development Authority

- **A Public Benefit Corp established in 1975 by State Legislature.**
- **Mission: To identify solutions to State's energy challenges in ways that benefit the State's economy and environment.**
- **Forge public/private partnerships with businesses, municipalities, residents, and other energy stakeholders to accomplish this goal.**

NYSERDA

NYSERDA provides Co-Funding to Eligible Recipients to help:

- **Evaluate Options for Energy Efficiency Improvements.**
- **Purchase and Install Premium-Efficiency Equipment.**
- **Invent New Products to Grow NYS Manufacturing Jobs.**
- **Conduct Technology Transfer to Spur Marketplace.**

Help to Identify
What You Need
(Technical Assist / Feasibility Studies)



Help to Invent
New Technology
(R&D)

Help with
Early Adoption
(Demonstration)

Help to Buy
Mature/Premium
(Deployment)

Industrial Research Funding

~ \$28 million this year

Program Opportunity Notices (PONs)

- Competitive Solicitations
- Award Cost-shared Contracts
- Wide Technical Focus

Desired Benefits

- Energy
- Environment
- Economic Development

Emphasize

- Product Development
- Process Improvement
- Commercialization
- Teaming

Contract Terms

- Cofunding
- Recoupment (Royalties)

Industrial Process and Productivity Improvement

- Eliminate Production Bottlenecks.
- Reduce Scrap (Save on Raw Material, Processing, and Disposal).
- Enhance Operational Safety.
- Improve Product Quality.

Case Study: Pactiv Molded Fiber Mill, Plattsburgh, NY



Molded Fiber Process



Newspaper
(raw material)

Pulp Blender
(with lots of water)

Molded Product
(lots of drying)

Overlooking Beautiful Lake Champlain



Project Partners

- USDOE/NASEO/STAC Program
- Pactiv Corporation
- NYSERDA
- Michigan Department of Consumer & Industry Services
- Cellulose Products and Services
- Western Michigan University

Use of Pressurized Ozone and Compressed Air Flotation with Membrane Filtration for Industrial Process Water Treatment

- Phase 1 – Feasibility Study of Process Concept
\$25,000 NYSERDA
\$10,776 Pactiv
- Phase 2 – Demonstrate Full-scale Equipment
\$380,750 USDOE/NASEO/STAC Program
\$297,467 Pactiv
\$220,022 NYSERDA.

\$934,015 total (to date)

Background

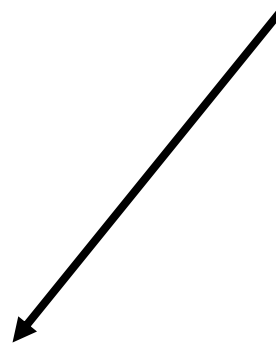
- Objective: Install, monitor, and demonstrate a novel integration of technologies for removal of total dissolved solids from pulp and paper mill process water.
- Sector: Pulp and paper mills are very water-intensive and energy-intensive industries.
- Status: Full-scale equipment has been installed, operated, and sampling has been performed. Ongoing optimization is underway.

Background (cont.)

- Pactiv Product: Facility manufactures 40 tons per day of recycled-fiber molded products.
- Wastewater: Facility discharges 250,000 gallons per day of “purged” process water (hot water).
- Experimentation: Conducted pilot-scale trials at WMU laboratory.
- Scale-up: Install full-scale system at Pactiv, optimize.

Transfusion -vs- Dialysis

Discard and replace -vs- Cleanse and recycle.



Challenge: Select rugged technologies, capable to:

- get rid of the bad,
- keep the good,
- make good, better, best recovered waters.

Cleanse and Recycle: Results

- TSS: Before = 1,250 mg/L → After = <4 mg/L.
- TDS: Before = 500 mg/L → After = 10 mg/L.
- Hardness: Before = 200 mg/L → After = <5 mg/L.

TSS = Total Suspended Solids (particles)

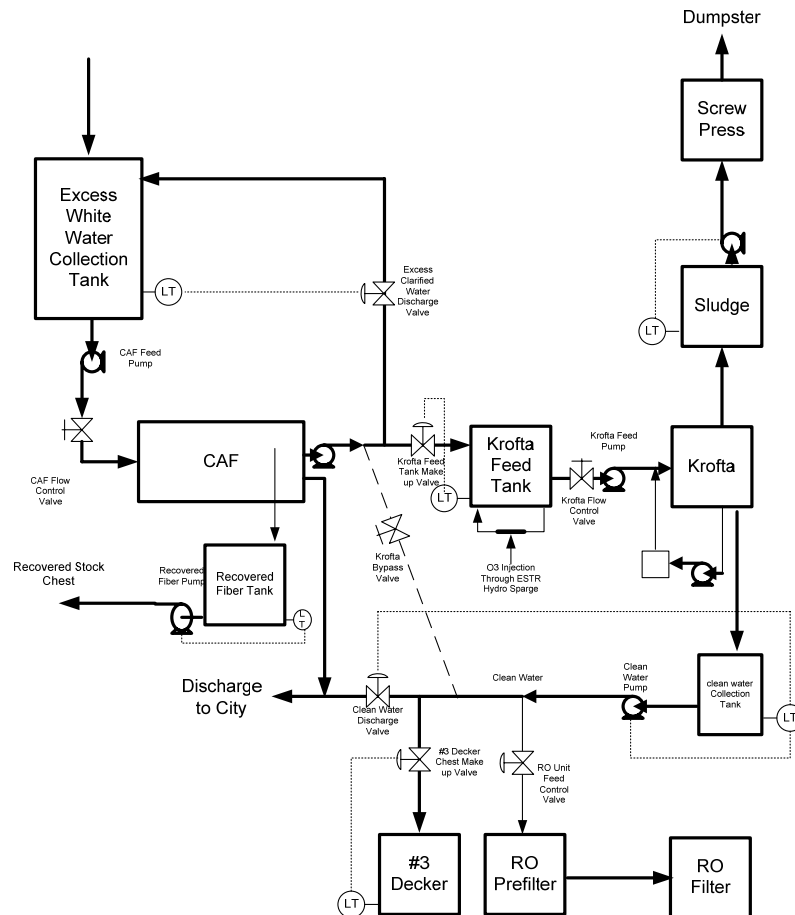
TDS = Total Dissolved Solids (inorganic & organic salts)

Hardness = Inorganic Salts (minerals)

Process Diagram

Recover wood fiber:

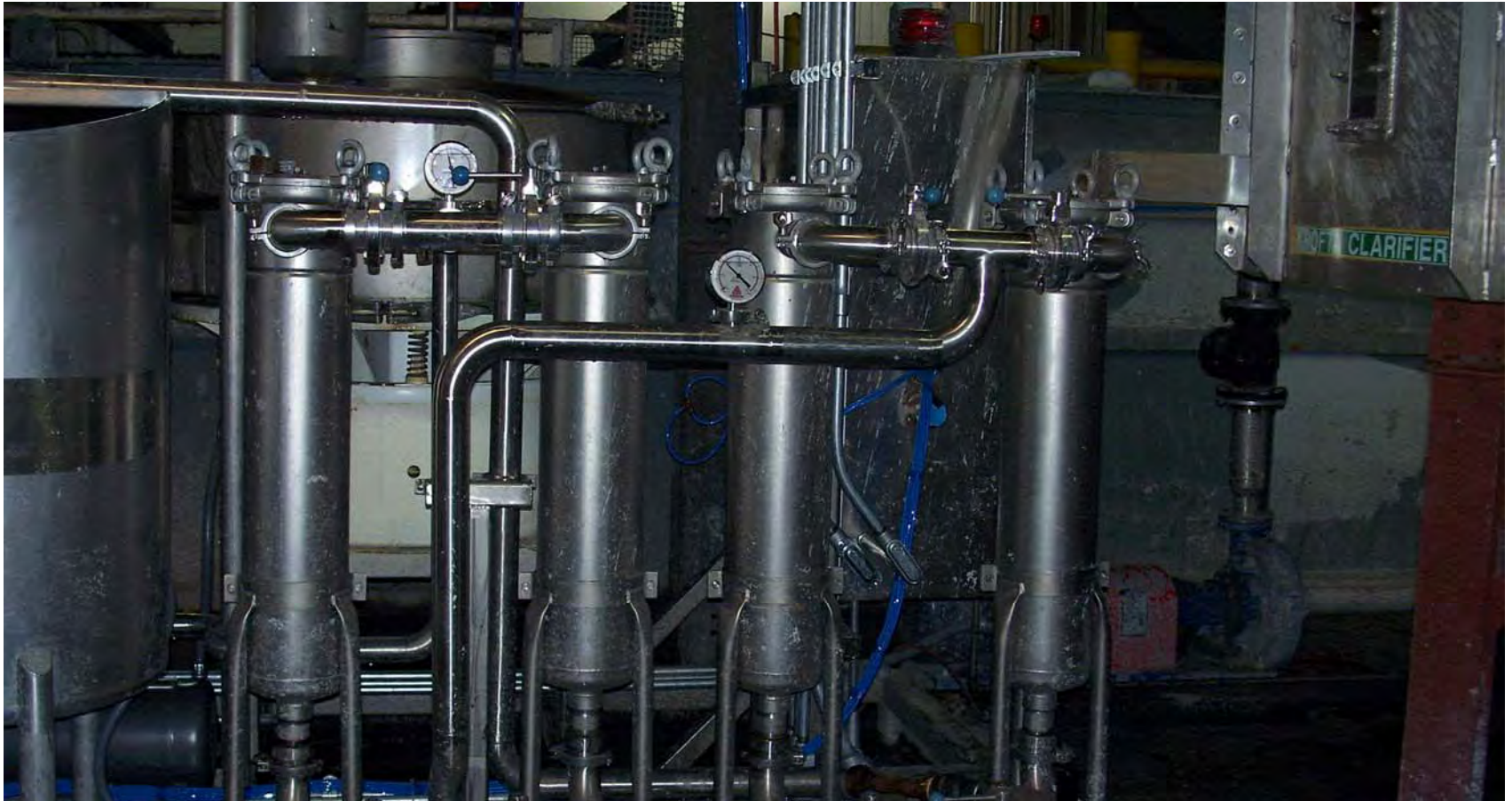
- keep the good.



Remove salt build-up:

- get rid of the bad.

Photos of Equipment



Photos of Equipment (cont.)



Photos of Equipment (cont.)



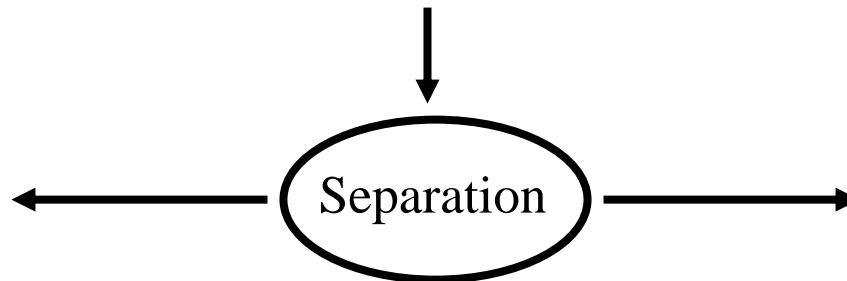
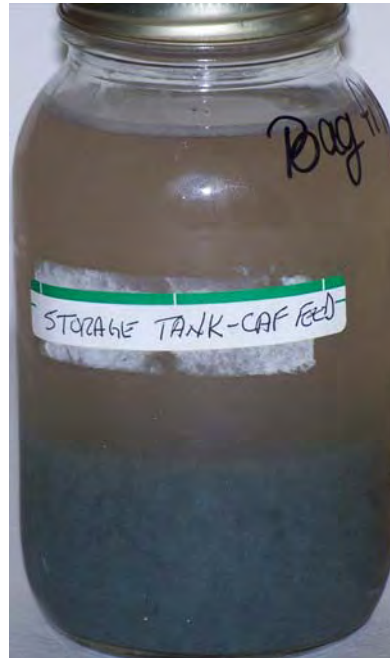
Photos of Equipment (cont.)



Photos of Mill Process Water



Photos of Mill Process Water (cont.)



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