

This series showcases success stories of PaCT (Partnership for Cleaner Textile) partner factories in the Bangladeshi textile sector that have implemented cleaner production projects.

Mercerizing is an alkaline treatment with caustic soda (NaOH) under tensile strength which can improve the luster and strength of a fabric, giving it a permanent shine. Mercerizing uses a lot of caustic soda along with other wetting agents. At the end of the process, the mercerized fabric is washed with water to remove the excess caustic soda. The large quantities of rinse water produced in this process — which is essentially diluted caustic soda (weak lye) — is normally drained, resulting in a substantial loss of caustic soda. Neutralizing the wastewater in an Effluent Treatment Plant (ETP) requires significant amounts of acid, considerably increasing the ETP's load.

Envoy Textiles Limited (ETL) is the first denim manufacturer in Bangladesh with a rope-yarn dyeing facility for production. The factory's modern technologies ensure that a superior quality of dyed yarn is produced through a faster production process and that fewer resources are consumed during manufacturing. The factory recorded an average daily production of 52 tons per day (TPD) between July 2017 and June 2018. At ETL, ball warping is carried out to wind up the yarn in the form of rope. Down the line, the denim greige fabric undergoes different processes including singeing, de-sizing, mercerizing, softening, sanforizing, and stentering.

Factory Status

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Caustic Recovery Plant

A Caustic Recovery Plant (CRP) converts weak lye (wash liquor) into a concentrate by passing steam through heat exchangers to evaporate excess water from the solution. The concentrated lye can then be reused for mercerizing. The water vapor generated from the weak lye is condensed with cooling water, creating a slightly alkaline soft water. While condensing the weak lye, the cooling water is heated and this hot water can be used in other processes throughout the factory. By doing this, nearly the same amount of steam, which is used to recover the mercerizing lye, can be saved in the hot water generation. Moreover, since there is no direct contact between the heating steam and the lye, the steam remains uncontaminated and can be reused as boiler feed water without additional treatment.



Caustic Recovery Plant (CRP) at Envoy Textiles Limited

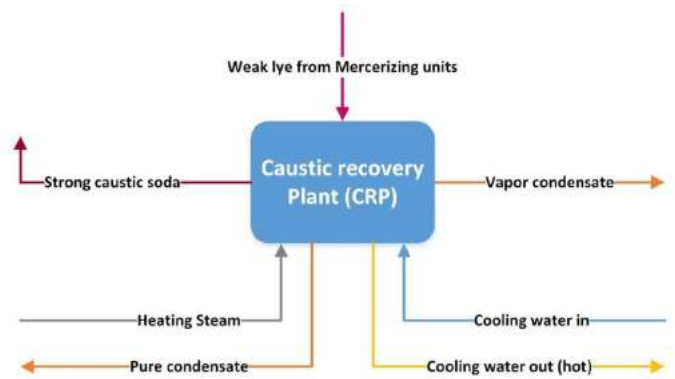
Caustic Recovery at ETL

ETL was draining the rinse water produced by mercerizing machines without recovery or treatment. Recovering this weak lye could reduce the factory's ETP load and its consumption of large quantities of acid (sulphuric acid and H₂SO₄) used for neutralizing the drained caustic soda. The concentration of the drained weak lye was around 5.0 Be.

Caustic Recovery Plant

PaCT recommended that ETL install a caustic recovery plant that would potentially save the factory substantial amounts of caustic soda and hot water by recovering at least 90 percent of caustic soda. After installing the CRP, the concentrated caustic soda (around 22 percent NaOH) is being reused in the mercerizing process.

ETL's initial investment for the CRP was \$200,232 (BDT 17,220,000). After installation, it is achieving annual savings of around \$71,700 (BDT 6,170,000).



Economic Benefits

 **\$200,232**
Investment

 **\$71,700**
Annual Savings


33.5 month
Payback Period

Environmental Benefits

 **411 tons/year**
Chemical Saving

IFC-led Advisory Partnership for Cleaner Textile (PaCT)

is a holistic program that supports the entire textile value chain – spinning, weaving, wet processing and garment factories – in adopting cleaner production (CP) practices. PaCT engages with brands, technology suppliers, industrial associations, financial institutions, and the government to bring about systemic and positive environmental changes to the Bangladesh textile sector and contribute to its long-term competitiveness and environmental sustainability.

WHAT PaCT DOES:

- Chemical Management Assessments
- Basic Cleaner Production Assessment
- In-Depth Cleaner Production Assessment
- Water & Energy Management
- Rooftop Solar PV Pre-feasibility Study
- Rooftop Solar Calculation
- Online Resource Monitoring

DEVELOPMENT PARTNERS



IMPLEMENTING PARTNER



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IMPLEMENTER

