

## Cleaner Production Case Study: Right First Time (RFT) Improvement Through Process Optimization Evince Textiles Limited

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

Textile and readymade garment (RMG) factories are some of the most polluting industries. Resource consumption and waste generation in the textile and RMG industries are significantly high. It is estimated that the industry uses over five trillion liters of water to dye 28 billion kilograms of textile a year, which can be comparable to using water from two million Olympic-size swimming pools. Dyeing and treatment of textiles, it is estimated, directly causes approximately 20 percent of industrial water pollution. Environmental issues are now important at both national and global levels. Resource efficient production is, therefore, currently one of the biggest challenges in the textile and RMG sector. To meet sustainability targets in textile manufacturing, it is essential to focus on water, energy, and chemical savings.

### Right First Time (RFT)

Right first time (RFT) is the number of batches dyed in one short stint or without re-processing. Two types of RFT are measured in a dye house—lab-to-bulk and bulk-to-bulk. While the former represents laboratory performance, the latter is about bulk performance. Bulk-to-bulk RFT is vital to resource consumption. A dye house with poor RFT will need to reprocess a higher number of batches, requiring additional time, water, energy, and chemicals. A few simple changes in the production process, lab dip development, and chemical quality check can improve the RFT.

### Factory status

Of the 32 package dyeing machines at Evince Textiles Limited (ETL), bulk yarn production is carried out in 18; the remaining 14 are sample dyeing machines for small lots. The yarn dyeing machines are made by Tong Geng Enterprise Co., Ltd., a Taiwan-based manufacturer, with an installed bulk yarn dyeing capacity of 8.6 tons/day. Though all the machines are equipped with programmable logic controller (PLC), they are operated manually. Programs can be set for pre-treatment, dyeing and post-treatment processes. Water flow meters are also available in the dyeing machines to measure the water quantity.

### ETL's adoption of RFT

Following the implementation of PaCT recommendations, floor-level operators

and executives—in laboratory and dyeing—developed better awareness about RFT. This helped them maintain proper liquor ratio, ensure regular calibration, correct pH balance, increase lab-to-bulk correlation, and check dye quality, increasing the bulk-to-bulk RFT from 80 percent to 95.5 percent. ETL has invested \$215,980 for re-engineering process machineries that allow RFT improvement. After increasing bulk RFT, 15 percent of water baths no longer required re-processing, which also reduced time, energy, water, and chemicals usage.

### Environmental Benefits



**87,704 m<sup>3</sup>/year**  
**Water Saving**



**764,402 m<sup>3</sup>/year**  
**Natural Gas Saving**



**2,108,460 kWh/year**  
**Electricity Saving**



**117 tons/year**  
**Chemical Saving**



**3,148 tCO<sub>2</sub>e/year**  
**GHG Avoided**



“The PaCT team recommended improving RFT from 80 percent to 90 percent. Our CP team worked closely and followed the recommendations to improve the RFT. Process improvement and raising awareness helped us to improve RFT up to 95.5 percent. A positive mindset for change allowed us to improve the RFT. Since then, water, energy and chemical savings through improved RFT has been significant.” – ETL Factory Management.

**PaCT cleaner production experts suggested the following interventions to improve ETL’s bulk RFT from 80 percent to 90 percent.**

- Running a lab or sample machine trial to reduce post-treatment wash bath by using more efficient washing-off agents and dye fixer chemicals
- Testing dye lot against the standard and not against the running lot
- Setting pass/fail limit for the approval of lots
- Adopting auxiliary chemical testing
- Considering water absorption by yarns during refilling of baths
- Calibrating weighing machine daily for better RFT and to avoid human error
- Maintaining good practices for lab-to-bulk correlation
- Adopting auto-color dispenser and solution-maker systems for better accuracy and high RFT
- Comparing standard approved sample and sample dyeing for strength of other parameters
- Setting acceptance limits for dye quality
- Making sure that reports are prepared, checked and signed by the authorized person
- Checking parameters including moisture content and pH
- Passing on test results of conditional approval after lab dyeing to the concerned department
- Considering water quantity absorbed by yarn for each refill so that the material-to-liquor ratio (MLR) is similar to the first bath. This will help avoid disturbing the MLR
- Ensuring each box has a separate labeled spoon
- Ensuring each auxiliary drum has a separate labeled mug

 RFT Improvement



**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**



**CONTACT:**

Nishat S. Chowdhury, Program Manager;  
[nchowdhury2@ifc.org](mailto:nchowdhury2@ifc.org)

**BRAND PARTNERS**



**IMPLEMENTER**



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