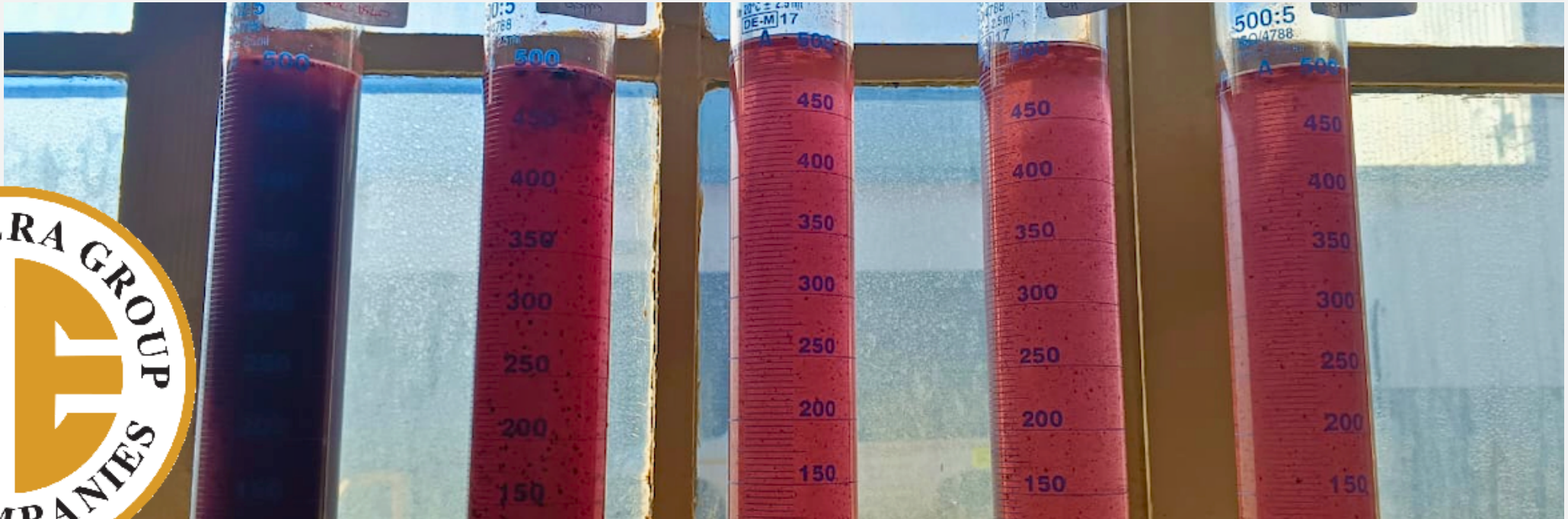




Case Study

Packaging Industry

Treating ink contaminated water



Problem Statement

Golden Era Packaging faced a major challenge in treating its ink-contaminated wastewater, one of the most persistent problems in industrial wastewater treatment.

Ink-based wastewater is highly coloured & colloidal, with particles so fine & negatively charged they cannot settle naturally under gravity. This led to:

- Poor clarity of discharged water
- Elevated suspended solids
- Inefficient results from conventional treatment methods

Solution

Our R&D team designed a controlled study to test the ability of coagulants & flocculants to:

- Suppress particle surface charges to allow micro-floc formation.
- Bind and consolidate micro-flocs into larger agglomerates.
- Optimise settling rates to achieve clarity within minutes.
- Analyse treated water quality, including pH, conductivity, total dissolved solids (TDS), and total suspended solids (TSS)

Tools & instruments used included a VIS spectrophotometer (HACH DR6000), pH/EC/TDS meter, analytical balance, and controlled stirring equipment



FINDINGS

After systematic testing, we identified the optimal treatment parameters:

- **Best-performing coagulant:** H6550 at ≥ 5.75 ppm
- **Best-performing flocculant:** H6605 at ≥ 1.9 ppm
- **Settling rate achieved:** ± 3.6 m/hr



WATER QUALITY IMPROVEMENTS

- Conductivity reduced from 585.7 $\rightarrow$ 385.4 $\mu\text{S}/\text{cm}$ (**~34% improvement**)
- TDS reduced from 424.8 $\rightarrow$ 265.6 ppm (**~38% reduction**)
- TSS dropped from immeasurable to 92 mg/L, and as low as 1 mg/L post-filtration
- **Colour completely removed**, producing a clear effluent comparable to demin water



UNEXPECTED LEARNINGS

- Some residual micro-floc particles didn't fully settle. But they were easily captured via filtration using filter media in the 25–75 μm range, **making ultra-fine filters (5–8 μm) unnecessary.**
- This means future plant-scale applications **can prioritise flow rate efficiency** over ultra-tight filtration, reducing operational costs



BENEFITS FOR THE COMPANY

- Cleaner effluent water, enabling **safe environmental discharge** or reuse
- **Cost savings**, thanks to optimised chemical dosages and simplified filtration requirements
- **Compliance assurance**, aligning with environmental and industry standards