

## Dehydration Unit Contamination Evaluation & Troubleshooting

In order to meet specifications, maintain throughput, and avoid product losses, glycol dehydration units in every plant must operate with minimal deficiencies. To avoid such deficiencies, contaminant ingress and recirculation in glycol units must be minimized or eliminated. Proper separation equipment design and operation is vital to the efficiency and stability of the glycol system, and informed testing protocols and engineering evaluations must also be practiced regularly.

Without proper contaminant separation equipment or contamination control procedures, a number of deficiencies can occur, such as glycol decomposition as seen in the figure to the right. Nexo Solutions offers a variety of services for identifying and resolving these contaminant related deficiencies and improving unit performance. Capabilities include on-site testing systems, software for separation equipment evaluation and specialized analytics.



Glycol Unit technical services include:

- Foaming (product losses)
- Glycol degradation (downtime)
- Salts ingress (corrosion)
- Solids entrainment (filtration costs)
- Liquids entrainment (solvent losses)
- Fouling (equipment reliability)

### Case Study

A glycol unit was faced with a challenge concerning the effects of contamination in the lean triethylene glycol stream. Suspended solids were suspected as possible contaminants, although gravimetric analysis of the solvent was inconclusive. Gel-like contaminants in the lean TEG solvent that form a sticky and tenacious deposit on filter elements caused rapid media blinding and terminal differential pressure (dP) occurrence, frequent filter replacement, and high operational costs.

*Problem Identification* – Analysis and evaluation revealed that increased contamination in the unit was due to dissolved hydrocarbon compounds. Extraction and quantification of the contaminants showed over 7,500 ppm of aromatic hydrocarbons, including BTEX and naphthalenes. These aromatics have many detrimental effects on process operations causing foaming, changes in solvent properties, and deposition/fouling in combination with suspended solids. A number of effective solutions were hence determined for removal.

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