DEPENDABLE ANTIFOUlANT PROTECTION FOR CRITICAL CGC SYSTEMS

EFFICIENT CGC PERFORMANCE THAT LASTS
Protection for the Heart of Your Ethylene Plant

CGC system efficiency declines over time as wear and deposits accumulate. Although you can’t prevent the process, you can slow it down dramatically with monitoring and treatment optimized by Dorf Ketal for your plant’s feedstock and operating conditions.

CGC Fouling Is Continuous and Costly

Fouling is a continuous process driven by free radical chain propagation, oxidative and catalytic polymerization, and Diels Alder reactions. Styrene, isoprene and related monomers in the process stream polymerize at typical CGC discharge temperatures of 80 °C (176 °F) or more. Catalytic action of iron oxide and oxygen or peroxides speeds the process.

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Typical Monomers in CGC Foultants

<table>
<thead>
<tr>
<th>Monomer</th>
<th>Boiling Point</th>
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<tbody>
<tr>
<td>Naphthalene</td>
<td>218 °C (424.4 °F)</td>
</tr>
<tr>
<td>Styrene</td>
<td>145 °C (293 °F)</td>
</tr>
<tr>
<td>Propynyl benzene</td>
<td>181 °C (357.8 °F)</td>
</tr>
<tr>
<td>Indene</td>
<td>177 °C (350.6 °F)</td>
</tr>
<tr>
<td>Cyclohexadiene</td>
<td>80 °C (176 °F)</td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>41 °C (105.8 °F)</td>
</tr>
<tr>
<td>Isoprene</td>
<td>34 °C (93.2 °F)</td>
</tr>
<tr>
<td>Vinyl acetylene</td>
<td>6 °C (42.8 °F)</td>
</tr>
<tr>
<td>1,3 Butadiene</td>
<td>-4 °C (24.8 °F)</td>
</tr>
</tbody>
</table>

Their relatively high molecular weights cause polymerized foulants to fall out and adhere. Over time these polymers dehydrogenate, turning to dense, brittle coke-like deposits. Critical tolerances degrade and high-speed rotating components become unbalanced. Vibration and wear increase.

Wash Water and Wash Oil Aren’t Enough

Although you can lower discharge temperatures with wash water, high injection rates can cause surface erosion and pH must be controlled to prevent corrosion that can damage system components and further catalyze the fouling process.

If aromatic content is high enough, wash oil can also act as a solvent that helps keep foulants in the process stream for later removal. But wash oil isn’t always available and it can be costly.

Your CGC systems will run cleaner, longer, whatever you’re feeding and whether you’re using wash water, wash oil or both.

Dorf Ketal’s Program Protects Three Ways

1. Highly Effective Chemical Treatment
2. Monitoring and Simulation
3. Exceptional On-Site Support

Highly Effective Chemical Treatment

Dorf Ketal antifoulants make wash water and wash oil treatment more effective by inhibiting polymerization. Unlike conventional amine-based formulations, Dorf Ketal’s proprietary low-nitrogen antifoulant chemistry terminates free-radical formation, even in the presence of H2S. The formulation includes a highly effective inhibitor that prevents solids/polymer formation in CGC systems.

Monitoring and Simulation

Fouling symptoms can appear suddenly and become severe very quickly. Monitoring and timely treatment with the right chemistry are critical. Dorf Ketal’s FAT™ (Fouling Assessment Tool) collects samples quickly and retracts to safely deliver foulants for analysis by Dorf Ketal R&D Laboratories where key fouling reactions are characterized.

Exceptional On-Site Support

On-site Dorf Ketal technical support is available on request and includes a wealth of clear, actionable reports and on-the-spot analysis and recommendations by experienced professionals.

Dorf Ketal’s Program Protects Three Ways

Improve Efficiency and Extend Run Length

Specify Dorf Ketal Antifoulant Protection for your Ethylene Plant
Innovation isn’t just what we do. It’s who we are.
E-mail: Innovation@dorfketal.com
www.dorfketal.com

Discover what Dorf Ketal can do for you.