Introducing PRICAT PD 608
Introducing **PRICAT PD 608 series**

- Johnson Matthey have an mature legacy in base and precious metal catalysis
- Over the past few years we have leveraged our expertise to develop a full range of selective hydrogenation catalysts for olefins
- **PRICAT™ PD 608 series** developed for tail end acetylene hydrogenation
- Catalyst properties optimized to give stable performance over time, which has been proven at an industrial scale
Reference plant operation

Make-up hydrogen

De-ethaniser overhead feed

Feed-product interchanger

Inter-bed coolers

Pre-heater

Product cooler

To product splitter

Position | Acetylene
---|---
Feed | 1.6 – 2.0 mol% 
Bed 1 exit | <1 mol% 
Bed 2 exit | <100 ppmv 
Bed 3 exit | <1 ppmv
## Feedback on performance

<table>
<thead>
<tr>
<th></th>
<th><strong>Cycle 1</strong></th>
<th><strong>Cycle 2</strong></th>
<th><strong>Cycle 3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>Cycle 1 run within expectations from previous catalyst.</td>
<td>Move towards more selective operation. Forced to return to conservative operation due to issues not related to the catalyst.</td>
<td>Challenging conditions due to continuous changes in hydrogen supply.</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
<td>&lt;1 ppmv performance specification achieved during steady state operation.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Selectivity</strong></td>
<td>Catalyst operated conservatively. Selective operation not targeted.</td>
<td>Move towards more selective operation. Forced to return to conservative operation due to issues not related to the catalyst.</td>
<td>Selectivity profile matched cycle 2 despite challenging conditions</td>
</tr>
<tr>
<td><strong>Operability</strong></td>
<td>Stable operation. Copes well with changes in feed conditions including varying hydrogen sources.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Green oil</strong></td>
<td>No green oil observed at start of run. Some green oil collected towards end of cycle.</td>
<td>No measurable green oil seen.</td>
<td>Normal amount of green oil seen.</td>
</tr>
<tr>
<td><strong>Regeneration</strong></td>
<td>Catalyst was successfully regenerated at the end of the cycle using standard procedures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technical service</strong></td>
<td>Technical support provided throughout operation.</td>
<td>Collaboration to demonstrate improved selectivity via optimisation.</td>
<td>Fortnightly optimization correspondence to tune selectivity performance.</td>
</tr>
</tbody>
</table>
Ethylene gain

PRICAT PD 608/1 plant performance

Ethylene gain

Cycle 1
- Selective operation not targeted

Cycle 2
- Selective operation targeted

Cycle 3
- Further process optimisation

19% improvement
343% improvement
Summary

- **PRICAT PD** 608 series developed from core science and advance screening to deliver a robust formulation
- Catalyst has been demonstrated at a laboratory and industrial scale
- Cycle on cycle improvements in ethylene gain have been realised through close collaboration with the customer by a dedicated technical service team
- Second installation of **PRICAT PD** 608 is due to start-up in 2018
- Dedicated R&D continues to innovate to deliver market driven solutions to meet expectations for the next generation of catalyst
- Find out what Johnson Matthey can do for you

Contact us at chemcat@matthey.com