



FIXED BED REFORMER OPERATIONAL REVIEW

GENERAL

The purpose of an Operational Review is to provide the customer with an independent external assessment of their Fixed Bed Reformer unit performance with the aim to identify options for improvement. Such review will typically consist of the following six elements:

1. ASSESSMENT OF CATALYST PERFORMANCE

The Reformer catalyst performance is the crucial factor determining the reactor temperatures, product yields, cycle length and achievable RON. It enables early identification of performance deterioration and optimisation of the cycle length in between catalyst regenerations. Assessment of the catalyst performance will be carried out using software which has proven its adequacy for all generations of UOP and Axens Reforming catalysts.

2. REVIEW OF UNIT OPERATIONAL AVAILABILITY

A typical target Operational Availability is 98-99% in between catalyst regenerations, a regeneration duration of maximum 7 days and only one planned maintenance shutdown once every 4-5 years. A review will be made of the planned and unplanned shutdown time during the last 5 years. The reasons for unplanned downtime will be reviewed, and whether corrective measures have been implemented in a sustainable manner.

3. HEALTH CHECK OF UNIT OPERATION

During a health check the main operating conditions will be reviewed such as:

- Feedstock quality and level of contaminants;
- Injection of water and chloride;
- Pressure drop over the reactor circuit;
- Occurrence of upsets;
- Fouling of the recycle gas compressor or stabiliser;
- Operating procedures to emergency situations such as loss of recycle gas flow.



4. UNIT OPTIMIZATION

Possible options for unit optimisation will be reviewed:

- Most Reforming catalysts allow a deactivation of 20-25°C during a cycle. If the catalyst life is not fully utilised, either the cycle duration can be extended, or the cycle can be made with a lower recycle gas ratio reducing the energy consumption;
- Benchmarking the operating conditions and cycle length;
- Review feedstock quality (presence of C5's, benzene precursors, contaminants)?;
- Review of capacity constraints and opportunities to eliminate them in a cost effective manner;
- Can energy consumption be reduced?

5. CATALYST REGENERATION AND DRY-OUT

Catalyst regeneration is an essential activity to restore near-fresh catalyst performance for the next cycle. The catalyst regeneration procedure will be reviewed with the aim to:

- Identify possible small deviations from the recommended procedure, which can have a large negative effect the regeneration results or serious corrosion of reactor effluent equipment;
- Reduce the duration of the catalyst regeneration to maximum 5 days, which is the industry best practice for modern Reforming catalysts;
- Apply industry proven methods to reduce the duration of the catalyst dry-out period and reduce the quantity of low octane reformat produced during this drying period.

6. CATALYST LOADING

The loading diagram will be reviewed including the critical dimensions for seal and slump catalyst, the use of ceramic material at the top and bottom of the catalyst bed. Modern, improved catalyst loading options will be evaluated.

BENEFITS FOR THE CUSTOMER FROM THIS REVIEW

The actual operation of the Reforming unit will be reviewed by an external world-class Reforming

expert against the most recent industry best practices, such that the customer can have the assurance that their operation will be “up to date”. It is very likely that improvements will be identified with a value greatly surpassing the costs of the review.

WHY SELECT EPS?

Reviews offered by catalyst vendors cover catalyst performance only. This EPS review will focus on all aspects of the Fixed Bed Reformer unit, and is carried out using a proven methodology by a true Reforming expert.

CONTACT

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