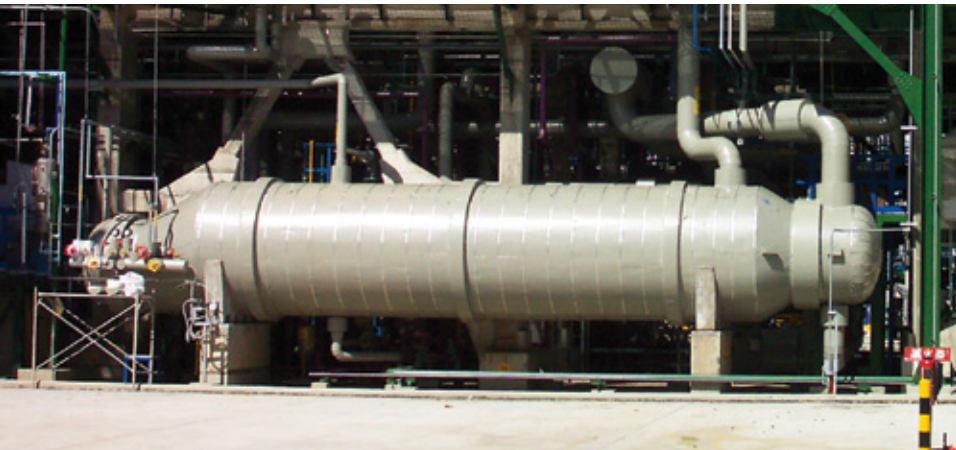
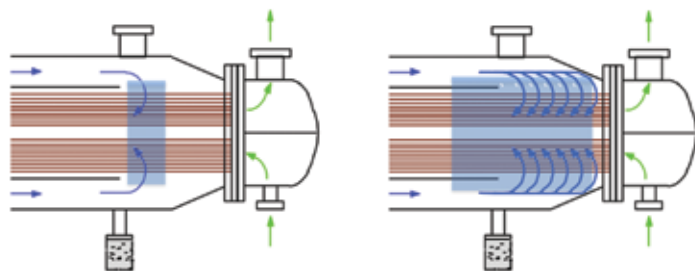


STRATCO® XP2 TECHNOLOGY FOR THE STRATCO® CONTACTOR™ REACTOR



IMPROVE THE RELIABILITY AND PERFORMANCE OF STRATCO® CONTACTOR™ REACTORS

The STRATCO® XP2 technology is a Contactor™ reactor enhancement developed to improve the acid/hydrocarbon emulsion flow path near the tube bundle end of the Contactor™.



Current Design

XP2 Design

In the current design, emulsion flow leaves the annulus between the Contactor™ shell wall and circulation tube, then immediately turns and enters the tube bundle.

In the XP2 design, the emulsion flow is extended further along the length of the tube bundle and preferentially distributed across the tube bundle. This enhancement allows for more effective use of the tube bundle heat transfer surface area and a decrease in tube bundle wear near the end of the circulation tube.

With XP2 technology, more heat of reaction can be removed allowing the reactor to operate at lower temperatures at a constant feed rate OR at a higher feed rate at a constant reaction temperature. The more uniform flow regime will reduce maintenance costs and increase reliability of the tube bundle. XP2 technology can be installed in new Contactor™ reactors or retrofitted in the field or shop to any existing Contactor™ reactors with minimal downtime.

FEATURES AND BENEFITS

- Effective surface area is increased due to better flow distribution towards the tubesheet and to the center of the bundle¹
- 1.5° to 3.5° F (0.8° to 1.9° C) reaction temperature drop at constant olefin feed rate or 3 to 12% olefin feed rate increase at constant reaction temperature²
- Tube wear at the circulation tube turnaround is reduced
- Better flow distribution to the center of the tube bundle may result in more uniform wear rates within bundle
- Reduced stagnant area near tubesheet minimizes negative side reactions
- Potential end point and acid consumption improvements

EXTEND FLOW
FURTHER BACK
IN REACTOR

PREFERENTIALLY
DISTRIBUTE FLOW

2 ELEMENTS WORKING
TOGETHER MAXIMIZE
HEAT TRANSFER AND
REDUCE BUNDLE WEAR

¹ Effective surface area of tube bundle is considered surface area where maximum velocity is achieved for optimum heat transfer

² Results may vary based on specific unit characteristics and operating conditions

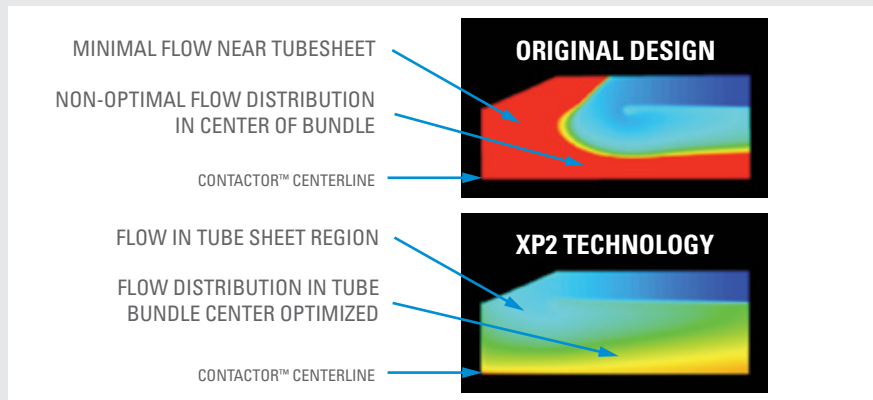
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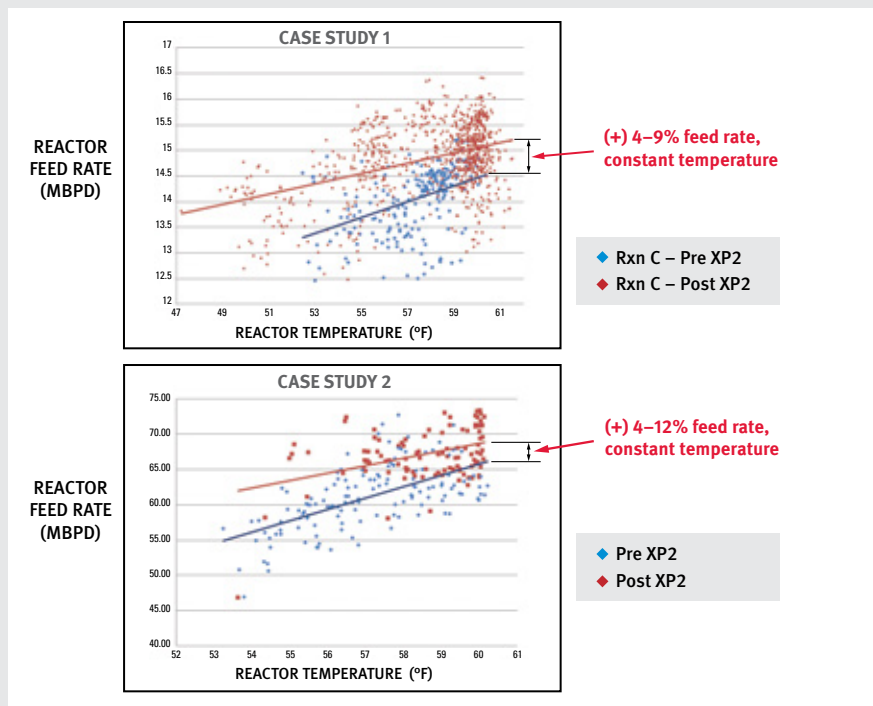
ORIGINAL DESIGN VS. XP2 TECHNOLOGY

CFD MEAN AGE PLOT – TRACKS PARTICLE TRAVEL TIME THROUGH THE CONTACTOR™



CASE STUDIES – BEFORE AND AFTER XP2

THE STRATCO® XP2 TECHNOLOGY



Due to the high value of alkylate in the marketplace, most refiners choose to increase olefin charge rate to the alkylation unit, if additional feed is available. If an increase in the olefin charge rate is not possible, a lower reaction temperature can be realized resulting in reduced acid consumption and improved alkylate quality. As reaction temperature drops, a reduction in Contactor™ reactor corrosion will also be seen. These results confirm that the addition of the XP2 technology improves the overall performance of the STRATCO® Contactor™.



As the recognized global leader in sulfuric acid alkylation technology, DuPont brings innovative technology to refiners around the world.

For more information, please contact one of the following DuPont representatives:

MARK PUETT

Tel: +1-913-327 3520
mark.c.puett@dupont.com

JG HITCHENS

Tel: +1-913-327 3524
j.g.hitchens@dupont.com

DuPont
Sustainable Solutions
CLEAN TECHNOLOGIES

STRATCO ALKYLATION
TECHNOLOGY

6363 College Boulevard, Suite 300
Overland Park, KS 66211 USA

www.cleantechnologies.dupont.com