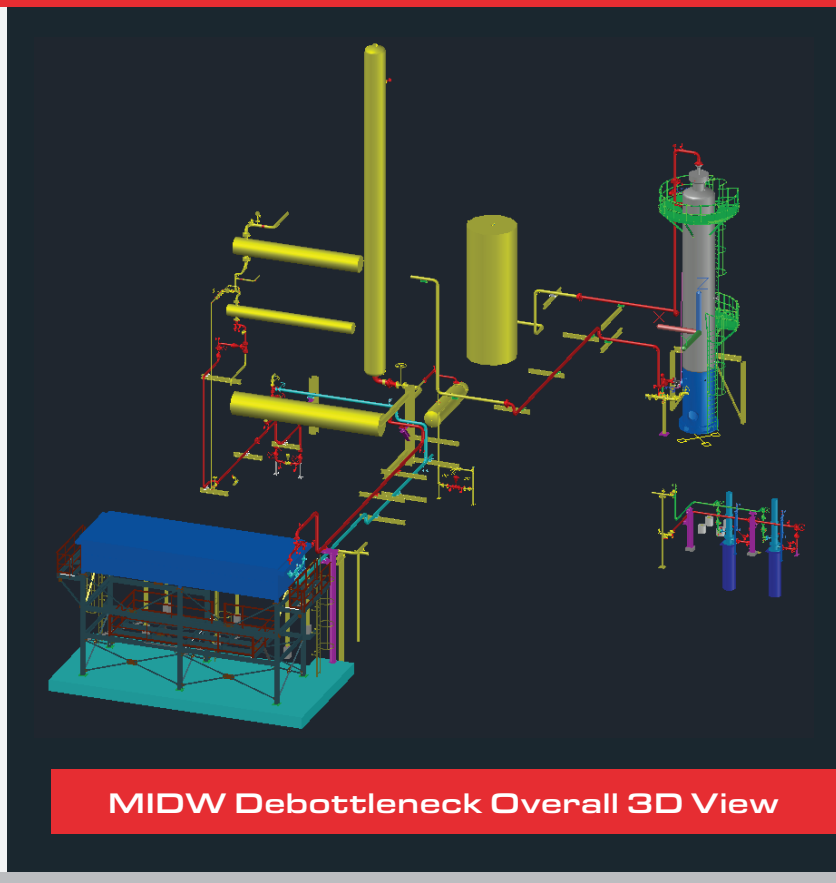
CASE STUDY
MIDW-HDS DEBOTTLENECK

OVERVIEW

A refinery had contracted EIS to perform a debottleneck study, including FEED and detailed design, of their current operation to increase distillate rate in their MIDW unit from 3TBD to 3.5TBD. In addition, they wanted to improve reliability by going from a two feed pump operation with no spare to using one feed pump with an online spare. EIS was selected by the refinery based on our expertise and cost. In the end, the project was installed on time and within budget.

PROJECT APPROACH

1. PERFORM HYSYS MODELING TO DETERMINE MODIFICATIONS
2. WORK WITH PERSONNEL TO PROVIDE OPTIMAL SOLUTIONS
3. DEVELOP FEED WITH +/- 10% ESTIMATE
4. PERFORM DETAILED DESIGN



MIDW Debottleneck Overall 3D View

CLIENT TESTIMONIAL

EIS was very accommodating to our needs. They were available to answer questions and fulfill information requests at all times, including weekends and while on vacation. Someone was always made available to provide an answer. Weekly meetings were held to provide project updates and discuss and assign future tasks. This ensured that nothing was left hanging. Overall, it was a great working relationship, and I certainly intend to use them for future projects.

1 PERFORMED HYSYS MODELING TO DETERMINE MODIFICATIONS

A. Replaced Exchanger Bundles
- › *Provided data sheets and bid specifications*

B. Exchanger Rerates

C. PSV Modifications
- › *Data sheets and verifying upstream/downstream equipment design*

D. New pumps
- › *Provided bid specifications and worked with supplier for data sheet*

E. Piping Modifications
- › *New product rundown fin fans*
- › *Larger bore piping*

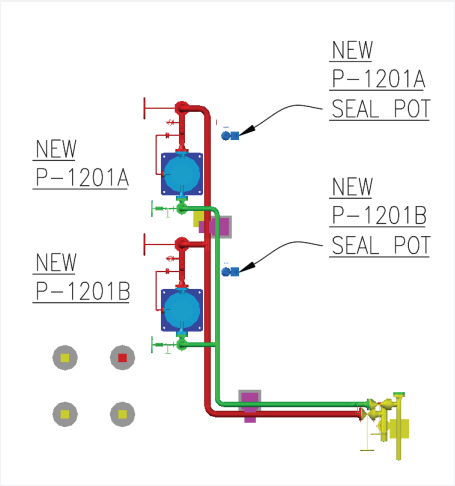
F. Vessel modifications
- › *Larger outlet piping*
- › *Overhead inlet modifications for improved separation*
- › *Tower tray modifications (provided bid specifications and worked with vendor for data sheets)*

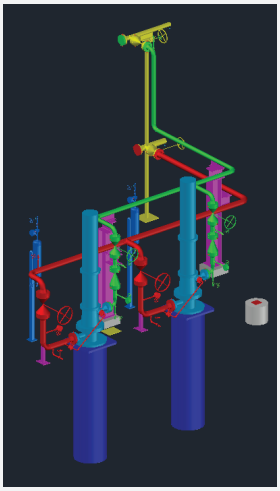
G. I/E Modifications
- › *Provided data sheets (control valve, thermowell and orifice plate modifications, fin fan motor vibration switches)*

H. Electrical Modifications
- › *New fin fans, larger charge pump motors*
- › *Demo drawings*

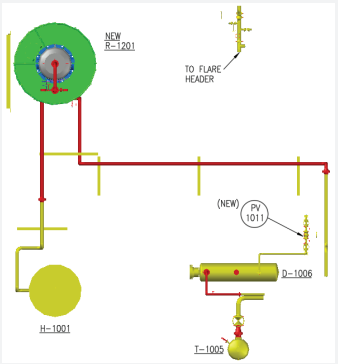
I. Installed Larger Reactor
- › *Modified piping in foundation to accomodate larger reactor*

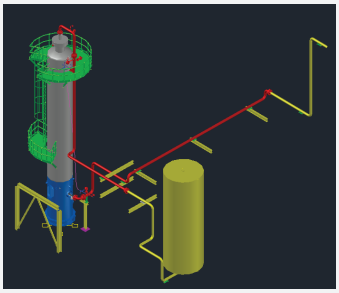
Feed Pumps





Reactor





2 WORKED WITH PERSONNEL TO PROVIDE OPTIMAL SOLUTIONS

3 DEVELOPED FEED WITH +/- 10% ESTIMATE

4 PERFORMED DETAILED DESIGN

A. Performed Model Reviews

B. Performed Constructability Review

C. Implemented Recommendations

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