



REPORT - FLANGE ALIGNMENT with FA4TM - 52 INCH Reactor Head Install

Objective:

What was the objective of the job:

- 1) Using our flange alignment and spreaders to reduce the time to reconnect the reactor head inlet flange. The plant periodically stops production to recharge the catalyst in the reactor. Once stopped the reactor head is removed. The inlet is welded to the reactor head and is made up a 52" elbow, and flange that is unbolted to remove the reactor head. During the installation of the Reactor head the alignment of the 52" flange is difficult and time consuming to reconnect.

Data:

Flange: 52" ANSI 300 (Bolt hole size 1-1/8")

Misalignment: Centerline offset

What were the technical challenges?



Results:

Flange aligned in less than 12 minutes using the 2-4 Ton Mechanical flange alignment tools.



Discussion: Once the reactor head was set on the reactor the misalignment was readily visible. It was approximately 2.5" with the maximum misalignment occurring at approximately 12:00 position. With this size of flange it is also very common to have lateral movement.



The FA4 was first positioned at the point of greatest misalignment. The tool easily moved the flanges into position. As the top of the flanges moved into alignment we experienced some movement horizontally. In the interest of time, rather than inserting a bolt and repositioning the tool we installed a second tool at 3:00 position to bring the flanges into complete alignment. This allowed easy insertion of the bolts.





To separate the flange faces and insert the gasket a step wedge flange Spreader manufactured by Equalizer was used. Although standard procedure calls for the use of two spreaders, only one tool was required since the piping stress was directed down following the curvature of the reactor inlet.



The gasket was installed and the rest of the bolts inserted.

Conclusions:

Using ESI's flange tools the operator was able to reduce the time needed to complete the job and reduce the amount of equipment needed. Since this was the first use of the tools the crew was unfamiliar with the use. With some prior training and this experience we expect that the times saving will continue to increase. It would also be advantageous to write a procedure to be reviewed prior to the job.