



A Challenge Led to Product Innovation at Port Arthur Refinery

PROJECT WINS

In order to keep up with in influx of crude from Canada, the Port Arthur refinery, already exporting 275,000 barrels a day, had a goal of 600,000 barrels a day. Jacobs Engineering Group Inc. partnered with Bechtel to manage engineering, procurement, and construction for the \$7 billion crude expansion project. Vibration was causing breakage of the bolts holding the clamps together, adding extra delays to a project that was rushing to expand. Jacobs Engineering Group, Motiva, and Bechtel worked with APP to design an entirely new approach to clamp liners—one that solved major time challenges and represented a significant reduction in vibration-related breakage in the piping system.

THE BIG PICTURE

CLIENT	Motiva
INDUSTRY	Refining
PRODUCT	VibraTek Hold Down Clamps

- » The expansion made Motiva Port Arthur not only the largest refinery in the nation, but one of the top ten largest in the world.
- » The refinery has flexibility to switch between primarily producing gasoline and diesel to adapt to varying market conditions.
- » APP's VibraTek Hold Down Clamps were selected as the sole support for all reciprocating processor piping.

TRUE COLLABORATION AROUND A CHALLENGE LED TO THE INNOVATIVE VIBRATEK HOLD DOWN CLAMP LINER

As the refinery expansion progressed, a recurring problem around clamp breakage was putting significant stress on the project timeline. The hold down clamps being used were held in place with a combination of a bolt and square washer—the bolts were breaking, requiring shutdown of the compressor to allow for replacement of the clamps and causing a significant setback.

Jacobs had a hunch that rigid clamp liners were contributing to the problem. From there, APP's idea of a poured elastomer clamp liner came into being—and the VibraTek Hold Down Clamp and Liner were born.

THE APP ANSWER

- » APP looked beyond the broken bolt to the rigid clamp liner, working to counteract fit and delamination problems by creating a strong-yet-flexible approach to the liner itself. Motiva's pain point became a moment of collaborative innovation, resulting in the custom (now standard) APP VibraTek Hold Down Clamp and Liner.
- » The liner's difference begins with a poured elastomer, which is molded to the inner diameter of the clamp for a consistent thickness and precise fit.
- » APP HB-Teflon has glass fibers embedded on the bonding side, which eliminates the problems traditionally associated with adhering Teflon.
- » Because of this project, APP became the Type 139 standard in hold down clamps for Jacobs Houston.



SOURCE: Motiva

800+
VIBRATEK HOLD
DOWN CLAMPS AND
LINERS INSTALLED

0
BROKEN APP
VIBRATEK HOLD
DOWN CLAMPS

0
ADDITIONAL SHUT
DOWNS DUE TO VIBRATION-
RELATED CLAMP FAILURE