

## Trifecta of Advantages Gives Plunger Design The Edge

### Overview

Initially introduced to Dura-Bar as a cost saving alternative, a manufacturer of frac pump plungers sees trifecta of advantages and converts base material specs to Dura-Bar for their line of high-performance plungers.

### Challenge

A Dallas/Fort Worth-based oil and gas supply chain partner that serves the critical North American oil and gas OEM and distributor network, saw the need for a plunger product that would last longer and lower total operating costs for their customers. When their team of engineers embarked on the initial development phase, the first decision point was the selection of base materials.

Initially introduced to Dura-Bar as a cost saving alternative the product quickly proved out to be much more, offering a trifecta of advantages: faster machining and throughput, consistent metallurgical bonding of the coating, plus a reduction in fusing time, and equivalent (or better) mechanical properties.



### Solution

- advantage 1** The Dura-Bar material machined better and faster. Initial machining trials were completed using the same machining profile used on 1018 steel yielding a 30% reduction in cutting time which directly translated into to tangible cost per part savings and increased productivity/throughput.
- advantage 2** The coatings process is the most critical stage in the development of a plunger. It's what makes the product last or not. Dura-Bar was tested using several different coatings and showed consistently good bond strength, exceeding ASTM coatings requirements. Additionally, a reduction in fusing time is realized with the Dura-Bar material.
- advantage 3** Since Dura-bar has equivalent or in some cases, better mechanical properties compared to existing material specifications, there was no need for engineering design reviews or changes to drawings.

### Results

Designed to exceed OEM specifications, the innovative plunger product line developed using Dura-Bar as the base material, has proven to deliver robust cost savings by significantly extending operating life prior to wash-out and the company reports, has outperformed the competition by significant margins.