HBS Bulletin
by POSTLE Industries

Edition:
September 2020

Upcoming Webinar

Postle Industries Online Webinar:
Hardbanding Essentials
North & South America

After overwhelming response to our past webinar presentations of Hardbanding Essentials, we have decided to schedule another viewing for those that have missed the past offerings.

Next Hardbanding Essentials Presentation:
Wednesday, October 21st,
10:00 a.m. US Central Time

Brief Agenda:

- Purpose of Drill Pipe Hardbanding
- Anatomy of a Hardbanding Weld
- What is a Good Candidate for Hardbanding
- Overview of the Hardbanding Process
- What a Good Hardband Looks Like

This presentation will be delivered via Zoom Video Communications.

E-Mail Mike Huber: mhuber@postle.com to receive details, login invitation, and a password for the presentation.

A Case Study:
Utilize a hardbanding product which is designed to be reapplied indefinitely as compared to a hardbanding product which periodically requires removal.

At Hardbanding Solutions, we believe the removal of previous worn hardbanding is unnecessary and should already have been left in the past. There are few reasons a worn hardband cannot be reapplied over directly, and by far the most common is the chemistry of the product which was applied. Certain elements which can be used to facilitate wear resistance and hardness can also cause stress cracking and defects. This is especially true after reapplication when the percentage of 'hard' material increases. This is unnecessary because the chemical composition of Duraband NC means it can be applied and reapplied without ever having to be removed.

When a previous hardband does have to be removed, the tool joint is damaged and must be repaired before a new hardband can be applied. This process significantly increases costs for the drill pipe owner, and as we found in our **attached case study**, it also makes bad business sense for the applicator who must carry out the work. In fact, we found direct reapplication of Duraband NC is at least 6 times more efficient. We are making it our mission to end the need for removal of hardbanding, please see attached for more details.

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Hardbanding Applicator Case Study:

Direct Reapplication of hardbanding is at least 6 times more efficient than remove and repair work.

Introduction:

The days of hardbanding removal and the consequent repair of the tool joint before reapplication should be behind us. Duraband® NC is formulated in a way that allows it to be applied and reapplied safely and without removal for the life of the drill string. Some hardbanding materials, particularly those which contain Boron, may need to be removed each time the hardband is reapplied, or at least after the 2nd or 3rd application.

The drill pipe owner will expect to pay more for this time-consuming repair, but we have found the service company carrying out the work is rarely compensated for the true increase in work hours, so both the owner and the applicator lose out.

Case Study:

The goal of this study was to compare the difference in time between a job that requires removal of the previous hardband, and a job that is directly reapplied over the previous hardband without removal. The tables represent data accumulated for one tool joint with real time production rates of an application using one operator and a helper.

Each process was timed as it would normally be performed, i.e. hardband removal, repair, and hardband application were processed in batches, as this is the most time-efficient method.

Parameters for the study:

6” tool joint, 1/8” depth removal by industrial grinder or lathe, 3” wide hardbanding.

Time Study in Hardbanding Operations per Tool Joint			
Step of the Process	**Remove/Repair/Reapply**	**VS**	**Reapply Only**
Remove, Prep, Inspection	20 minutes		0
Rebuild, Dress, Inspection	17.5 minutes		0
Hardband Reapplication	7.5 minutes		7.5 minutes
TOTAL TIME	**45 minutes**		**7.5 minutes**

Results:

The difference in time of removing, repairing and reapplying a hardband on a tool joint compared to direct reapplication is 37.5 minutes (45 minutes versus 7.5 minutes)

Summary Comparison of Time per Tool Joint				
Step of the Process	**Remove/Repair/Reapply**	**VS**	**Reapply Only**	**Difference**
TOTAL TIME	**45 minutes**		**7.5 minutes**	**37.5 minutes**

Time difference over a 500 joint drill string:

Comparison of Time for a Drill String (500 Tool Joints)			
	Difference	Drill String	Total Difference
TOTAL TIME	37.5 minutes per Tool Joint	500 Joints	18,750 minutes (312.5 hours)

The results show a significant additional 312.5 hours, or 625 man-hours (1 operator and a helper) for a 500 joint drill string.

There are various other disadvantages in dealing with hardbanding products which may require removal:

- Increased number of heat cycles for all unnecessary removal and build up procedures can be detrimental to tool joint base material if not properly managed.
- Eccentrically worn hardbands must always be removed. Duraband partial bands offer a quick and cost-effective repair.
- Space required to perform additional work can cause congestion.
- Pipe handling on location is increased; bottlenecking operations and creating delays.
- Transporting pipe off location to pipe yards provides a solution to location congestion. However, relief strings are necessary to provide drilling rigs with assets for drilling operations until hardbanding removal and repair work is completed which again raises cost drastically for operators.
- Trucking required for two drill strings also increases costs significantly.

Conclusion:

Hardband applicators rightly charge their customer more per tool joint when removal of the previous hardbanding is required. However, we have found the added charge does not properly reflect the significant increase in cost and time associated with this process.

In our case study, we discovered a hardbanding unit working solely with direct reapplication of Duraband® NC over one shift is far more efficient and profitable than a shop working to remove, repair, and then finally reapply.

So, not only is a hardband material which requires removal both costly and inconvenient to the owner of the drill pipe, it is also less profitable for applicators.
At Hardbanding Solutions, we believe hardband removal should be left in the past. A consistent crack-free product like Duraband® NC brings advantages across our industry.