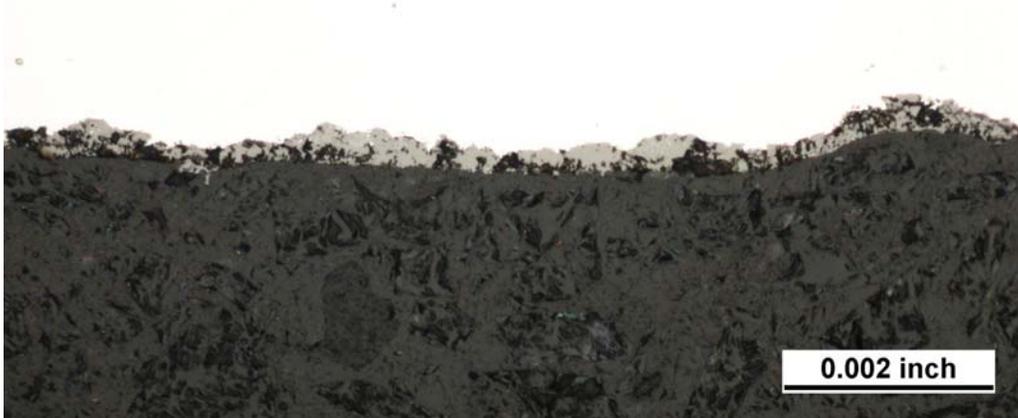


ADVANTAGES OF EPS SLURRY BLASTING OVER CONVENTIONAL DRY SHOT BLASTING

1. **More thorough removal of Iron Oxide:**

Dry shot blasting cannot approach scale removal levels of acid pickling or EPS. The below picture is taken from an inline dry shot blasted carbon steel sample.



2. **EPS Is Dustless:**

Dry shot blasting removes material from the skin of the metal being processed. The waste material removed includes mill scale, metal substrate and rust which results in a dusty environment. Dust laden air leaks from any dry shot blast machine into the surrounding environment and coats everything in the plant with a fine metallic particulate residue from the blasting operation.

Also, this dust is electrostatically charged as a result of the shot striking the metal. The charged dust will stick to everything within the blast machine including the work piece. Blow off systems are ineffective because the charged dust gets re-deposited on the work piece. The only way to remove the dust is to use an in-line wash system.

With slurry blasting, all of the dust is washed away by the carrier liquid and is easily collected by the magnetic separator and filtration system. Slurry blasting, being a wet process will neutralize any static charges and the carrier liquid will wash away all contaminants from the work piece, resulting in a dust free surface and work environment.

3. **So No Dust Collector Is Required:**

The dust collection system required for a dry shot blast system is very large, generating excessive noise, depositing fine particulates around the plant (if exhausted within the plant), and requiring constant maintenance. Also, the blast machine has to be shut down during dust collector maintenance.

Exhausting the dust outside the facility creates another set of problems because the particulates settle on the facility and surrounding area and create a rust staining problem. If a spark reaches the dust collector exhaust, a fire is possible.

4. **Blasting of Wet Steel:**

A conventional dry shot blast machine relies on gravity fed, free flowing abrasive to supply the blast wheels and to classify and reclaim the blast media. If any water is introduced into the dry shot blast machine, such as moisture on the steel, this abrasive media rusts and hardens into clumps as hard as concrete. This can impede the flow of abrasive to one or more blast wheels, damage internal components or harden all of the media in the machine.

By contrast, EPS is a wet process with the abrasive media suspended in water, so there are no detriments to processing wet steel.

5. **Cleaner Blast Media:**

The dry blasting process re-uses blast media covered in fine dust and oils. Blasting with this dirty media re-deposits the dirt and oils back onto the metal surface.

Slurry blasting completely avoids this problem, because the blast media in the EPS slurry environment is constantly being cleaned during the blasting and classification process.

6. **Less Heat Generated On The Metal Surface:**

In any shot blasting operation, part of the kinetic energy of the shot striking the work piece is converted into heat. In high horsepower blasting systems, this effect gets amplified in the "hot spot" region of the blast pattern. This causes uneven warming of the metal, resulting in distortion.

With EPS slurry blasting, the carrier liquid removes heat from the metal surface thereby reducing uneven heating and any tendency to distort. This is especially important to lighter gauge strip.

7. **EPS Is Rust Inhibiting:**

Dry shot blasted steel will begin to rust within a day, depending on humidity levels.

EPS' slurry carrier liquid contains a rust inhibitor which passivates the skin metal, providing interim rust protection. The rust inhibitor enhances the carrier liquid by raising the Ph, removing free oxygen and neutralizing any acids. The inhibitor also evaporates at a slower rate than water, so it remains on the metal longer, further eliminating the possibility of flash rusting.

8. **Reduced Maintenance and Machine Wear:**

Since dry blasting does not wash the work piece, oils and other contaminants can be trapped under the surface of the metal by the dry shot blasting mechanism. To achieve a scale free steel surface, 100% saturation needs to be reached. Since residual dust remains on the skin of the metal, some of the dust, oils, mill scale and rust will be peened over by the blasting process (see the illustrations below). Paint will draw the oils out of the metal and create a weak spot in the coating. This weak spot will fail over time and cause a coating failure or premature rusting.

9. **No Trapping Contaminants Under the Substrate Surface:**

To achieve a scale-free surface, 100% saturation needs to be reached when using dry shot blasting. But dry shot blasting does not wash the work piece, so oils, residual dust and other contaminants can be trapped under the surface of the metal.

How? As shown in the illustration below, areas of the surface become "peened over" by the blasting process, and residual dust, oil and contaminants can become trapped in these areas. Subsequent painting can draw the oils out of the metal and create a weak spot in the coating. This weak spot will fail over time and cause a coating failure or premature rusting.

