

**SPONSORED CONTENT****Using Blast Pressure to Achieve Optimal Anchor Profile**

TUESDAY, DECEMBER 19, 2023

*Looking for the best way to control air blast anchor patterns on carbon steel and other substrate materials? Using a precision-engineered blasting and reclaim machine presents the most efficient, cost-effective solution.*

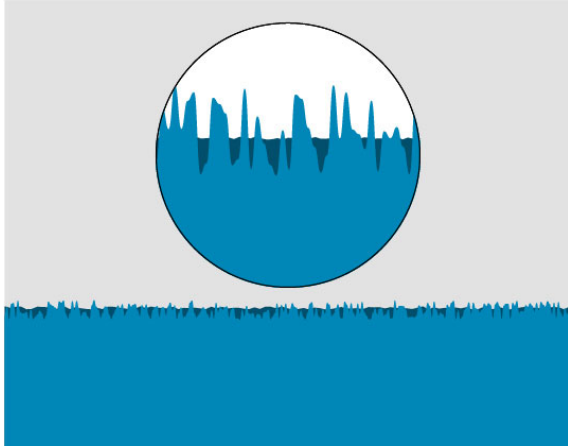


**A precision-engineered blasting and reclaim machine reduces anchor patterns by controlling blasting pressure. ALL PHOTOS © ATLANTIC DESIGN, INC.**

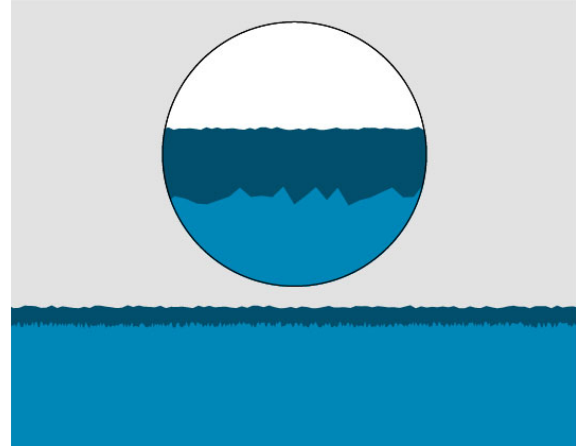
Most contractors understand the need to control air blast anchor patterns—the microscopic “peaks and valleys” on blasted substrate that allow for coating adhesion—in order to achieve optimal results. But a popular misconception is that changing the abrasive size will directly change the anchor profile. While it may hold true that different-sized abrasives produce different performance characteristics, simply changing the abrasive size will not always deliver more optimal anchor profiles—especially without additional costs.

Abrasive air blasting is fundamentally a destructive process between the abrasive and the impacted substrate. Newton’s second law of motion ( $\text{force} = \text{mass} \times \text{acceleration}$ ) controls the energy transfer process supplied by compressed air, which is transferred into the abrasive through kinetic energy. As the compressed air expands and accelerates through the hose and nozzle, it transfers energy into the abrasive through the resistance, or drag, that the abrasive puts on the compressed air. This expansion accelerates the abrasive to high velocities, creating the kinetic energy that removes the coating or corrosion on the substrate. As the abrasive impacts and destroys a layer of the substrate, it creates the anchor pattern’s telltale peaks and valleys. So if the anchor pattern is too great, the force of the impacting abrasive must be reduced.

## Non-Optimal Anchor Profile



## Optimal Anchor Profile



Better pressure control results in a more optimal anchor profile as shown on the right.

### OPTIONS FOR REDUCING BLAST ANCHOR PATTERN SIZE

Suggested remedies typically include:

- 1. Reducing the pressure of the incoming air from the compressor.** While this method directly lowers the anchor pattern, energy production is reduced as well, so this option is not usually considered a desirable solution for contractors.
- 2. Adding more abrasive.** Opening the grit metering valve to add more abrasive reduces the energy per particle by adding more mass. But as more abrasive is added, the slower it accelerates—lowering its kinetic energy and producing smaller anchor patterns. So this option produces the desired reduction in anchor pattern but also reduces blast efficiency and production rates by effectively reducing individual abrasive particle energy.
- 3. Mixing round shot particles into the work mix.** Adding round shot achieves a similar result because the round abrasive doesn't cut the steel, meaning a smaller amount of the abrasive is doing the cutting work to make the anchor pattern. This reduces the effectiveness of the abrasive in order to achieve a smaller anchor pattern—but it also leads to lower production rates and higher operating costs.

### THE IDEAL SOLUTION

The techniques described above produce smaller anchor patterns at higher air pressure while sacrificing blast efficiency and more grit. That's why lowering the blast pressure remains the most efficient, cost-effective way to reduce anchor patterns. With a precision-engineered blasting and reclaim machine, such as Atlantic Design's popular BVR 5100 4- and 6-pot models, contractors can individually regulate air pressure at each nozzle—offering unrivaled control to provide the best anchor patterns at the lowest coating application costs without additional

material handling costs or production times.



Precision blasting is enabled using blast hopper regulators to control the pressure on each individual pot.

For more information on Atlantic Design’s industry-leading equipment, visit [AtlanticDesignInc.com](https://www.atlanticdesigninc.com) (https://www.atlanticdesigninc.com/) or call toll-free at **1.866.CALLADI** (tel:18662255234) (225.5234).

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