

Profits Follow Productivity

By Peter Haugen

In our challenging and competitive marketplace, a commercial air duct cleaning contractor needs every advantage he or she can find to help insure successful and profitable operations. **Since 90% to 95% of the cost of commercial air duct cleaning is labor, the most effective and profit producing efforts a contractor can make are investments to improve labor productivity.**

If you can improve your productivity by just 5%, the profits of the entire 5% will fall right to your bottom line. Improving labor productivity delivers several benefits for the contractor:

1. You become more profitable on every project because you complete the project sooner.
2. By finishing projects sooner you have more time available to complete additional projects.
3. If you are more productive than your competitors you will have an advantage when bidding projects because your production rates per man-hour will be better. This means that your bids will be more competitive and you should win more projects.

Lets look closer at how to measure productivity so we can develop a better feel for the economic benefit of improving productivity. Then we can look at some new and existing air duct cleaning technology that is available today that can deliver significant improve in productivity.

Measuring the benefit of improved productivity:

Measuring the benefit of improved productivity is not an easy task but the following example will illustrate the type and size of benefits that you can expect:

Initial Situation:

- A two-person crew.
- This crew generates \$200,000 per year in revenue:
 - Working 48 weeks in a year (52 weeks in a year less 2 weeks for vacation and 2 weeks down time).
 - Yielding 3,840 man-hours per year (48 weeks x 40 hours per week = 1,920 hours x 2 person crew).
 - And generating \$200,000.00 in revenues per year (3,840 man hours times your bill out rate of \$55.00 per man-hour = \$211,200 annual revenue. For this example we rounded this down to \$200,000 for simplicity and to be conservative).
- If gross profit are 40%, your gross profit on \$200,000 in revenue = \$80,000 (40% x \$200,000).
- The remaining 60% represents the cost of labor and materials = \$120,000 (60% x \$200,000).
- Of that 60%, materials and supplies typically average 5% = \$6,000 (5% x \$120,000).
- The other 95% is the cost of labor = \$114,000 (95% x \$120,000).

Results of a 5% increase in productivity:

- Labor cost is lowered by 5% to \$108,300 (from \$114,000).
- Add this new labor cost (\$108,300) to existing material cost (\$6,000) = \$114,300 total labor and materials cost for this crew.
- The current \$200,000 annual revenues less the new labor and materials cost of \$114,300 = a new gross profit of \$85,700 (increase of \$5,700).
- This improves your gross profit margin from the original 40% (\$80,000) to 42.9% (\$85,700) a 7.1 % increase.
- In addition to the 7% better gross profit on the original \$200,000 revenue, you now also have 5% more man-hours = 192 man-hours (3,840 man

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To summarize: a 5% productivity increase will generate two additions to gross profits:

1. \$5,700 on the original \$200,000
2. And an additional \$4,530 in gross profits on the additional \$10,560 in revenue from new jobs.

This means a total increase in gross profit of \$10,230.00 – **an impressive 13.2% gain!**

Using the same type of calculations, the chart below illustrates the additional gross

	(1) Two Person Crew	(2) Two Person Crews	(3) Two Person Crews	
Productivity Increase	Additional Gross Profits	Additional Gross Profits	Additional Gross Profits	Gross Profit Increase
5%	\$10,230.00	\$20,460.00	\$30,690.00	13.20%
7.50%	\$15,257.00	\$30,514.00	\$45,771.00	19.10%
10%	\$20,761.00	\$41,522.00	\$62,283.00	26.00%

The Benefits of productivity improvements are clearly substantial. Our challenge now is to determine how to achieve these outstanding productivity and profit improvements.

How to generate a 5% to 10% productivity improvement in productivity:

While there are no side-by-side time studies that measure specific productivity improvements of one piece of equipment versus another we can make some educated estimates based on our experience. Think about the commercial air duct cleaning projects that you have done. Have you ever said?

“I wish I had more suction from my portable vacuum collection system so I could isolate and clean longer runs per hook-up.” Or

“I wish my brushing or air washing or spraying system had more reach so I wouldn’t have to cut so many access openings.” Or

“I wish my brushing or air wash or my spraying system had more reach so I can clean those hard to reach areas with limited access.”

The performance (suction) of your portable vacuum collection systems and the reach of your brushing, air washing and spraying equipment are the most obvious areas that can affect productivity. There are equipment choices available in the marketplace today that can have a significant positive effect on your productivity.

First, let's look at portable vacuum collection systems that are commonly used, their performance and how they can affect productivity. Unfortunately there are no comparable (apples to apples) performance test data from the manufacturers. Some manufacturers even engage in specmanship (claims that sound too good to be true).* To get a true picture you need to look inside the units and compare the characteristics/features that affect performance, which in turn affects your productivity.

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hours x 5%) available to do additional projects and generate additional revenue and profits.

- Using the \$55.00 per man-hour bill out rate x 192 extra man-hours that is now available = an extra \$10,560 in revenues.
- Applying the 42.9% gross profit to this new revenue = an additional \$4,530 in gross profits.

The following four characteristics/features of portable vacuum collection systems are critical to productivity and should be examined and compared:

Horsepower:

Horsepower is the most reliable way to measure performance (suction):

In today's marketplace you see portable vacuum collectors with one 1.5 hp motor, two 1.5 hp motors, one 2 hp motor, one 5 hp motor, and one 7.5 hp motor.

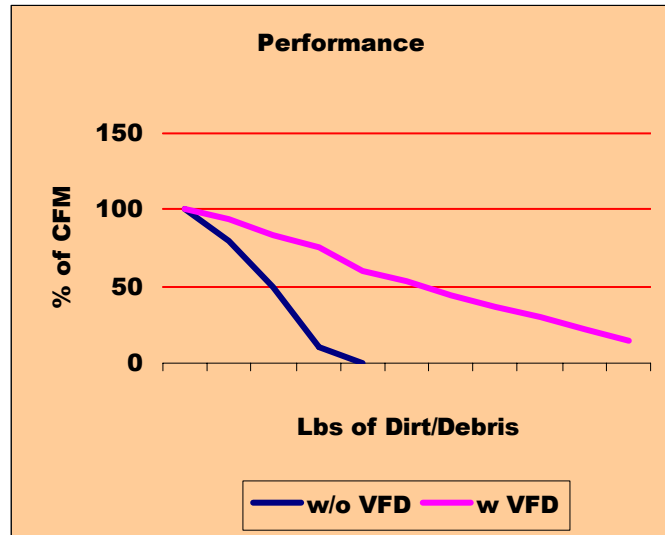
In general more horsepower means more performance (suction).

More performance means you can isolate longer duct runs with fewer hook-ups resulting in increased productivity.

Variable frequency drive:

Variable frequency drive (vfd) is available on some portable vacuum collection systems. This effectively increases horsepower. For example a 2 hp motor with variable frequency drive delivers the performance of a 3 to 4 hp motor.

On units without vfd, collected dirt and debris face loads (covers and clogs) the pre-filters that reduce air flow, which then reduces fan rpm, which then reduces performance (suction).



Pre filter surface area: Collected dirt and debris is spread over the surface area of the pre-filters. The larger the pre-filter surface area the better, because if collected dirt and debris is spread over a larger surface area, it restricts the airflow less, reduces the rpm of the fan less and reduces performance less.

Portable vacuum collection systems that have two sets of pre-filters (a screen or fabric bag and then a pleated bag filter), you need to look at the surface area of the smallest pre-filter. If you have a 2' x 2' screen, for example (= 4 sq. ft. of pre-filter surface area) all collected dirt and debris must pass through this 4 sq ft pre-filter surface area before it gets to the pleated bag filter (which has a lot more surface area). When the first pre-filter becomes clogged it doesn't allow the pleated bag filter to come into play.

Portable vacuum collection systems that have one set of pre-filters (flow through sock type) that offer a very large pre-filter surface area for dirt and debris to face load tend to be superior because they do not have a smaller pre-filter in front (or up stream) to restrict the benefit of this large pre-filter surface area.

Collection capacity: The more dirt and debris a vacuum collection system can hold the less down (non-productive) time you will have. To maximize productivity look for vacuum collection systems that hold more dirt and debris. In addition you should look

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On units with vfd, collected dirt and debris still face loads the pre-filters but the vfd keeps the fan rotating at its maximum rpm no matter how loaded the pre-filters become. The suction does go down but at a much slower rate resulting in both greater and longer lasting performance (suction). Both of which increase your crew's productivity!

The graph below illustrates the benefit of the superior performance (suction) of portable vacuum collection systems with vfd. Lets now look at power brushing, air washing, and spraying systems, which also can affect productivity. In today's marketplace there is a wide variety of systems available including:

Brushing Systems:

Flexible cable brushing systems	15' and 25' lengths
Solid core cable brushing systems	20' and 33' lengths
Pneumatic powered brushing systems	23' length
Robotic systems with brushing option	100' length
Long reach brushing systems	65', 98' and 130' lengths

Air Washing Systems:

Forward skipper lines	25' length
Reverse skipper lines	25' length
Whip systems	25' to 55' lengths
Long reach air washing systems	98' length
Robotic systems with air washing/whip option	100' length

Spraying Systems:

Airless sprayer with extension wands	10'
Cart spray systems	33' length
Long reach spraying systems	98' length
Robotic systems with spraying option	100' length

No one system is going to satisfy every air duct cleaning need but to maximize your productivity, systems with the longest reach will have the biggest impact. Longer reach means fewer access openings are needed, plus they provide great capability to clean those hard to reach areas that have limited accessibility.

Summary:

Improving productivity can have a significant effect on the success and profitability of your business. It allows you to make more money on your existing projects, it gives you more time to do additional projects and it gives you a competitive advantage over your competitors.

In today's marketplace there are air duct cleaning tools that will allow you to achieve 5% to 10% productivity gains. Some of these products are new and offer an exciting new technology while others have already proven themselves. They are available to help you improve your productivity, which can translate into additional gross profits ranging from 13% and 26%. The increased profits should quickly more than cover the cost of the portable vacuum collection system and cleaning tools that can take you to the next level of productivity and profits!

For question about this article and how to achieve productivity gains contact Peter Haugen, President of Vac System International, at 800-597-3955 or 952-808-1616 and phaugen@vacsysint.com.

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