

## Applications for small vibratory equipment

by A F Kenton

First, this is a biased report, because we make and sell small vibratory deburring/polishing bowl type mills or tumblers. Consequently, we have some strong feelings about this equipment. Before we get into some special applications, let's set the record straight. There is no major functional difference between our small vibratory units and the big guys, except for the volume of finished parts produced. Our equipment is just as rugged, durable, and reliable with a 1-year warranty to back that up. Machine processing times are about the same as are the end results.

Why this article was written was to tell you a few advantages that our smaller equipment has over its large cousins. Normally, one thinks in terms of size of parts as the main advantage of our equipment. That is, as technology becomes more sophisticated and parts become smaller and smaller it becomes easier to process these in smaller machines. Today, a handful of parts can be a couple of thousands of parts or worth a couple of thousand dollars.

Therefore, accountability is very important.

Another obvious advantage to small systems is versatility and/or research and development. It doesn't take a lot of media and parts to fill, maintain, and empty our equipment. Handling time is important and with small machines there is little indirect or direct costs in labor and as stated, little material is involved; therefore, new processes using small amounts of media are more economical to run than 200 plus pounds of the larger machines.

When talking about versatility, we should also bring up another advantage of our small equipment. For the price of one 2.5 cubic foot unit from the big guys, you can get five of our 1 cu. ft. units or 12 of our small 1/4 cu. ft. machines. That means that you can run progressive processes or multiple parts at the same time. For that matter, you may want to place a machine at each work or machine center and have a machinist completely responsible for the part from start to finish.

Now, all of this is interesting stuff that you have thought about before, but there is one other advantage that you may not have thought about and that advantage can be summed up in one word, "temperature". Because of the small size of our equipment and its construction, it is much easier and more efficient to increase or decrease the temperature of the work load or batch of parts.

All vibratory systems normally use a combination of media, water and chemical to deburr and polish parts. Nearly everyone in the business recommends a good flow through system where the liquid is feed in and drained out on a regular controlled basis. This is the best process for deburring and keeping the parts and media clean. However, everyone also knows that chemicals or liquids are more efficient as the temperature increases. With larger equipment, the only control you have is by adding a heated solution, and this is rarely done.

With our small vibratory batch systems this temperature can be substantially increased up to 100 or 110 degrees F. in a dry organic media mix over a 24-hour period by simply closing off the drain system and securing the lid. A good example of this is in the longer time cycles used in polishing with dry medias. In wet processes, it is better to start off with hot water. Because of the energy or drag co-efficient the heat will only increase the temperature about 5 degrees over ambient.

As mentioned, where this application has its greatest advantage is in the longer time cycles associated with polishing using dry media's. In most cases, by adding a little water to the dry mix you will drastically increase the drag and temperature of the work batch, and as you know buffing is a combination of heat and chemicals.

On the other side of the coin, by reducing the temperature of the work chamber, you may also increase the efficiency of deburring processes. That is, by adding ice or dry ice CO<sub>2</sub>, you can make softer more flexible materials more brittle or rigid, which will aid in the removal of the burring by the media. In this latter situation, this process is good only for shorter time cycles. Where this works well is on nylon, glass, fill synthetics, platinum, and stainless steel. However, remember, even though the closed off system provides some insulation to this latter processing, you also have the drag factor to consider and the temperature will increase.

A couple of words of caution may be appropriate here. Increased temperatures, using harsh chemicals in a strong solution, be aware of the possibility of fumes especially when you open the lid. You may also be affected by pressure; however, this would only be noticeable as you begin to loosen the hold-down knob. When using ice, remember the amount of volume so you do not over flow the bowl as the ice melts. Dry ice should dissipate, but you may experience pressure initially.

A word of warning DO NOT TRY ANY OF THESE PROCESSES in any of the larger machines or in machines with two-piece bowl construction. All larger equipment is made from metal and polyurethane. These materials will expand and contract at different rates and may cause this composite construction to separate one from the other, resulting in premature failure of the liner. On our one-piece bowl construction, this temperature change is not a problem.

- Nova Finishing Systems manufactures small, heavy-duty bowl finishers that stack up to most of the big equipment on the market, but cost much less. Nova series vibratory equipment also comes with the same warranties of the larger machines.

For more information on this equipment line, contact:

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