Special Applications for Small Vibratory Equipment by A F Kenton

As time progresses, we tend to know more and more about less and less. That is, people and industries are becoming more specialized in smaller areas of technology. This trend also carries over into the size of machined parts, components, and assemblies.

Design engineers are specifying tougher materials and closer machine tolerances that must fit, form, and function. Therefore, greater time and cost are associated with the more complicated machined or formed parts. These in turn normally require finer surface finishes. In some instances, we are talking about an almost mirror finish.

To accommodate these finish requirements, smaller equipment is more desirable for accountability sake. That is because a handful of parts can be a couple of thousand parts, or worth a couple thousand dollars. At the same time, you want an easy batching method to handle and keep track of production lots and/or parts. That's where we come in.

We make and sell small industrial vibratory deburring/polishing bowl type mills or tumblers. There is not major functional difference between small vibratory units and the big guys, except for the volume and /or size of the finished parts produced. Processing times maybe a little longer due to the weight factor and the size of the media normally required for smaller parts. On the other hand, there are a few advantages that smaller equipment has over its larger cousins.

One obvious advantage to small systems is the versatility and/or research and development. It doesn't take a lot of media and parts to fill, maintain, and empty these machines. Handling time is important and in our patent pending system, we can get complete part separation in less than one minute guaranteed.

Besides media costs and labor, there is the actual cost of the equipment to consider. For the average cost of one 0.5 cubic feet machine from the big guys, you can get five of our 1 cubic feet units or 12 or our ¼ cubic feet machines. That means that can run progressive operations or multiple parts at the same time. For that reason, you may want to place a machine at each work or machine center and have the machinist completely responsible for the part from start to finish.

Now all of this is interesting stuff that you probably have thought about before, but there is another advantage that you may not be aware of. 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 within the work chamber bowl and this has some interesting applications.

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 fed into the work chamber and drained out on a regular basis. This is the best process for deburring and keeping the parts and media clean. However, everyone also knows that chemical or liquids are more efficient as the temperature increases. With large equipment, the work chamber is open to ambient air and to heat and maintaining a heated solution is difficult and rarely done.

With our smaller vibratory batch systems, the work chamber bowl has a clear see through sound deadening cover that insulates the contents and allows friction energy to increase the temperature of the process if the drain is closed off. This is a modest temperature increase in a liquid system of maybe up to 110F degrees but may rise to 150 using dry organic materials. To increase the working temperature in liquid systems, you must start out with hot water solutions.

This temperature application has its greatest advantage in the longer time cycles associated with polishing using dry organic materials. Additional temperature or fast acceleration of temperature can be accomplished using liquid additives. Simple water will result in temperature increase; however, it will also deteriorate the mix faster. In any case, you know that buffing is the proper combination of heat and chemicals and that this can be speeded up using a closed loop system.

On the other side of the coin, by reducing the temperature of the work chamber, you may increase the efficiency of the deburring process. That is, by adding ice or dry ice C02, you can make softer more flexible materials more brittle or rigid which will aid in the removal of the burr by the media. In this latter situation, this process is good for shorter time cycles, because the friction and drag of the contents will eventually increase the temperature of the mix. However, because the closed system provides some insulation, this is not a major problem. Where this process works well is on nylons, synthetics, stainless steel and other soft materials.

A couple of words of caution maybe appropriate here. When using harsh chemicals in a strong solution, be aware of the possibility of fumes especially when you open the cover lid. You should also remember not to over fill your machine when using normal liquid ice.

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

- Nova Finishing Systems Inc., 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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