

Maximizing coating use can attain top results

How to design for optimum return from your lineal finishing line

By Marv Cooley

With the ever increasing cost of coatings, and new and more stringent EPA requirements, it has become extremely important to design new finishing lines that maximize the utilization of the coatings being used. By following several basic design parameters, you will ensure the optimum return from your coating dollars.

The first step to ensure optimum return is to select the proper application equipment. Select the most efficient spray gun for the intended application. Selecting the proper spray gun that meets the finish requirements and has the highest transfer efficiency is important in optimizing material utilization.

The following must be considered to ensure optimum return:

- **Production requirements (total lineal footage)**

Throughput capacity requirements must be considered when choosing spray guns. HVLP guns typically deliver up to 10 oz. a minute, whereas an air-assisted airless gun may apply 40 oz. and up.

It does no good to use an HVLP gun if your production requirements exceed the capabilities of the guns you have selected. The point to emphasize here is the importance of selecting the right tool.

- **Appearance requirements (HVLP, air-assist airless)**

The appearance of the finish generally improves as the size of spray particles is reduced. Unfortunately, as the size of spray particles decreases so does transfer efficiency. Some of the smallest particle sizes are achieved with conventional air spray; however, this is the least efficient means of applying the coating. To meet finishing requirements, a compromise must be reached



HVLP Air Spray with remote fluid regulator — HVLP Air Spray Gun

Automatic stain color change manifold with circulating stain lines — Color Change Manifold





Overall typical lineal finishing line with transfer and combination oven — Lineal System Overall

between transfer efficiency and appearance in some cases.

• **Part width variation**

Appropriately size the spray fan pattern for the work. Review the broad spectrum of parts that need to be coated, and determine if a simple fan pattern and line speed adjustment will do the job when changing parts. If not, several dedicated guns may be needed to optimize transfer efficiency.

• **Automatic individual gun triggering**

Optimize transfer efficiency by minimizing triggering on leading and trailing edges. When painting small or medium-sized parts, even a small decrease in overspray on leading and trailing edges results in significant improvements in transfer efficiency. A PLC gun control system ensures the absolute minimum “on” time for each

individual gun. Individual gun control is a must.

With a PLC gun control system, special target area guns can be used to spray hard to get areas instead of flooding the part to ensure total coverage. An efficient gun does not necessarily mean good transfer efficiency. Applying excessive film thickness can drastically reduce your overall efficiency.

Up until now we have discussed ways to make the system as efficient as possible through proper selection of application equipment and controls. However, no matter how efficient your application system is you will still experience a certain percent of overspray that can be potentially collected and reused depending on the coatings characteristics. The second step therefore is to select the proper collection equipment for capturing the excess coatings for reuse.



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• **Booth design**

Booths can be designed using a stainless steel baffle system and a semi-downdraft spray booth to knock the material out of the air stream and deposit it in dedicated stainless steel or plastic capture tanks for reuse. In the baffle spray booth the stainless steel baffles run the height of the filtered area. The baffles overlap each other, forcing the air that passes through the booth to change direction in order to reach the filters in the back of the booth. With the change in air direction, the material falls out of suspension and is collected in the



Deimco pre-baffle style spray enclosure for product reclaim — Stainless Steel Baffle

stainless steel tray for filtering and reuse. Many users have dedicated stain reclaim tanks so material usage in the 90 percent-plus range can be achieved. Topcoat and sealers can be filtered and used in virgin sealer blends. Again, a 90 percent-plus usage can be attained. The



Stainless Steel capture tank with pump outlet for pumping reclaim material to filter — MFM Capture Tank

coatings used will dictate what reclaim system should be used.

• **Reclaim system**

For example, the Deimco lineal lines come standard with stainless steel capture tanks that are equipped with a bung to plumb transfer pumps. The pumps can be plumbed directly to fluid filters and normally to a day tank to blend virgin material or make solvent adjustments as needed.

Keeping the material supplier involved in design of the reclaim portion of the system is important since each material has its own characteristics.

• **Color change systems**

Color change systems can improve your efficiency as well as speed up your process tremendously. Automatic color change systems using an air/solvent chop minimize solvent usage and provide fast color changes. A 20-second color change is typical.

When following the above guidelines you will be assured you have designed your entire system to reduce waste and optimize your material returns. Remember to design to your specific needs and do not settle for a cookie-cutter approach that may not make sense for your production requirements. ●

Ed. note: Marv Cooley is a sales manager with Deimco Finishing Equipment.

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