

Stripping e-coat and powder from racks in-plant

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This article is an overview of the three most common stripping methods used by finishers to clean hooks, racks, and part rejects. The article points out the major benefits and concerns of each method with users of electrodeposition coating (e-coating) and powder coating in mind.

Many methods are available for removing powder coating and electrodeposition coating (e-coating) from production hooks, racks, and fixtures. The most beneficial means available can be the same for both coating processes. Before you can fully measure the benefits of chemical stripping (Figure 1), you must first understand the common practices used to clean racks.

The finishing industry rack cleaning practice has been to use burn-off ovens or abrasive-media blasting to remove e-coat and powder, either by doing it in-plant or by sending the racks out to stripping services.

Burn-off ovens

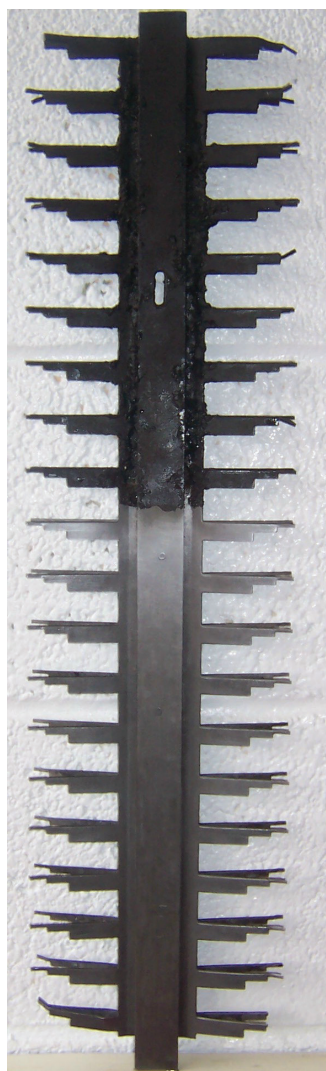
Benefits. The burn-off oven method provides adequate results for coating removal. The benefit of the burn-off oven is the coating buildup on the rack can accumulate from 3 mils to more than 50 mils in some cases, and the burn-off oven continues to provide adequate cleaning results.

Concerns. Burn-off ovens operate at temperatures up to 1,000°F for durations of 1 to 8 hours. These temperatures and cycles over time can cause

stress, brittleness, and metal fatigue on the steel rack substrate. In addition, residual coating ash is left behind on the rack surface after burning and must be removed by pressure water rinse or acid chemical pickle to prevent dirt contamination. The cost of gas (energy) to operate a burn-off oven must also be absorbed by the end user.

FIGURE 1

E-coated fixture chemically stripped on the lower end



Before

After

Abrasive-media blasting

Benefits. Abrasive-media blasting is another common method used in the finishing industry to clean e-coat and powder coating deposits from racks. Abrasive-media blasting provides adequate cleaning and coating removal. One of the benefits of rack cleaning with abrasive media is any rust or oxidation that may be present is removed with the coating, and this is accomplished at ambient, or room, temperature.

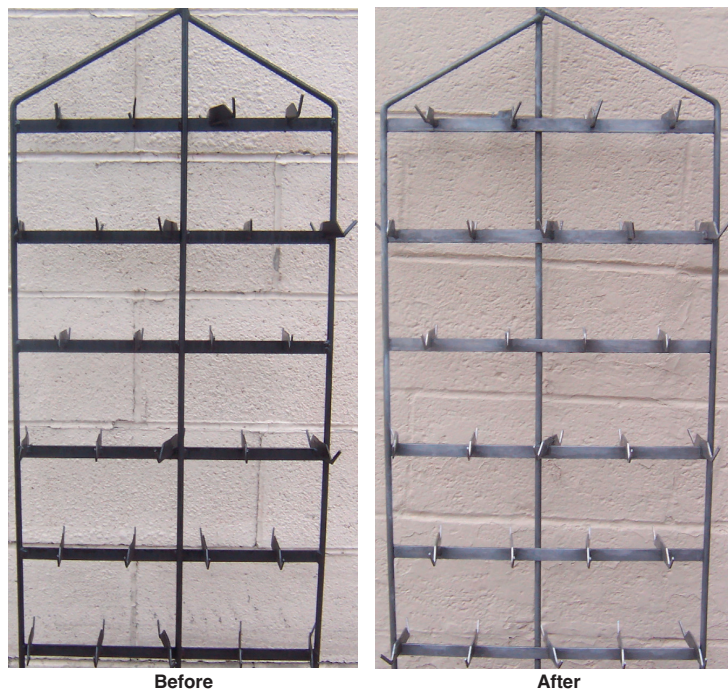
Concerns. Using abrasive media to clean racks on a regular basis results in loss of metal. This means that over time the racks must be completely replaced. Another concern associated with this method, is the residual blasting media, if not completely removed from the racks can create dirt contamination upon subsequent use. In addition, abrasive media is often carried out with the racks and distributed on the plant floors, creating safety concerns. The cost of abrasive-media replacement must be absorbed by the end user.

Chemical stripping solutions

Benefits. A chemical stripping process can be done in-plant at considerably

FIGURE 2

An e-coated rack chemically stripped



less expense than the burn-off and the abrasive-media blasting methods, which require higher equipment, energy, and media costs than chemical stripping requires. Chemical stripping operates at moderate temperatures, usually 150°F to 200°F, which keeps energy costs down. Chemical stripping also leaves the original surface of the racks intact and very clean after a freshwater rinse. See Figure 2.

Chemically stripping e-coating from parts is also easy and quick because of the low film build created during the first

pass through the e-coat tank. First-pass film build is usually about 1 mil. As a result, strip time is normally 20 to 30 minutes. In less than an hour, the racks are ready to be returned to the coating line.

E-coated and powder-coated rework parts can also be recycled and restored to their original surface quality, and reprocessed through the coating lines in less than an hour. Powder coating racks can also be chemically stripped, as long as the racks have fewer than 10 mils of powder buildup and are cleaned daily.

Concerns. Common questions concerning chemical stripping for racks and coating rework involve the proper training and knowledge associated with environmental and operator handling. The latest chemical stripping solutions are more environmentally and operator friendly than those in the past. Powder coating and e-coating sludge must be removed regularly, either by filtration equipment or by decanting on an as-required basis. The cost of chemical replenishment must be absorbed by the end user.

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Suggested reading

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