AGA UPDATE

Question of the Month

Q: Does stripping and re-dipping galvanized steel damage the steel?

A: Hot-dip galvanized steel is stripped and re-dipped for several reasons. When galvanized steel comes out of the kettle with bare areas exceeding the limits listed in ASTM A123/A123M (1/2 of 1% of the total surface area), the steel must be stripped and re-dipped.

On steel with reactive chemistry, the coating can grow to excessive levels (greater than 10 mils) and then flake off the steel. The hope is stripping and re-dipping these kinds of steel will create a thinner galvanized coating the second time through the galvanizing process, as some of the silicon in the steel (a catalyst in the galvanizing reaction) is partially consumed the first time through the process.

If the galvanized coating is still excessively thick after galvanizing it a second time, rather than simply stripping and re-dipping it a third time, blast the steel after stripping it the second time. This is a worst case scenario, however. If you know you are dealing with reactive steel that develops an excessively thick coating, blasting the steel prior to going through the galvanizing process can save you from having to strip and re-dip the steel.

Lastly, sometimes galvanized steel is stripped and re-dipped when it has been in service for some time and its galvanized coating has been nearly consumed. When this type of steel is stripped and re-dipped, it is important to look at its condition. Some galvanizing customers mistakenly believe the galvanizing process will fill in dimples and holes in the steel, which is not the case. Rather, the galvanized coating will follow the shape of steel and reveal what the steel surface looked like before galvanizing.

To answer the question of whether stripping and re-dipping damages steel, stripping and re-dipping galvanized steel does not damage the steel in terms of mechanical properties (see March/April 2011 Dr. Galv article). Sometimes customers are concerned that pickling the steel a second time increases the chances for hydrogen embrittlement. This is not a concern for steel that has a tensile strength under 150 ksi.

Hopefully you don't have to do a lot of stripping and re-dipping, since it costs you time and money. But for those rare occasions when you do, you'll know it doesn't hurt your customer's steel.