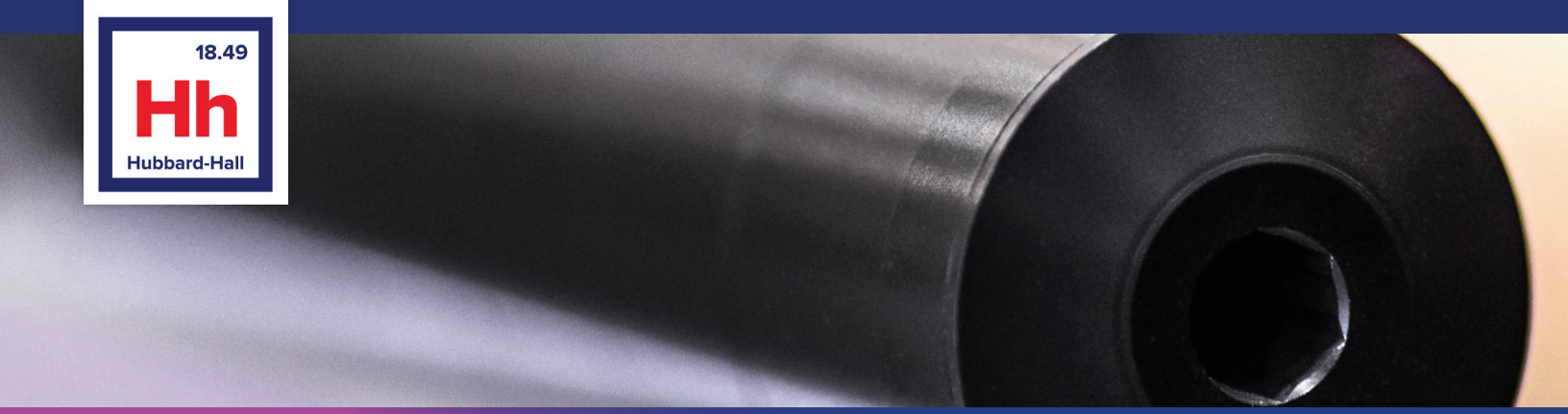


Taking Aim at Fixing a Black Oxide Coating Issue

The Challenge

A manufacturer of rifles and firearms began having issues with the quality of parts coated on its black oxide line and needed help correcting its aim. They were also looking to upgrade their equipment and called Hubbard-Hall in as a fresh set of eyes to solve the coating problem and consult on new equipment.

"One might not judge a book by its cover, but in the shooting sports industry, they will judge your product on how it looks," the Plating Manager said.

It turns out that the manufacturer was having issues with employee turnover, which led to regular care and maintenance of the line in question. Hubbard-Hall's Business Development Manager, Tom Salvino, saw that the chemistry in the tanks was not being maintained correctly and that a competitor supplier was also not maintaining quality controls with the chemistry. The goal was to get the equipment, tanks, and chemistry in tune with the line and improve quality while reducing rejects, including unsightly spots on rifle barrels.

The Approach

A Hubbard-Hall team led by Salvino started by dumping the chemistry on the black oxide line and then cleaning the tank walls of the acid activate line to remove oils and other contaminants adhering to the parts before going into the Black Oxide.

Executive Summary

After all of the efforts to understand the customer's needs, design a plan, and fine-tune the processes, we achieved:

- Improved control procedures to eliminate Black Oxide rejects by 80%
- Dramatically improved plating finish
- Decreased Black Oxide oil usage by 75%
- Reduced usage of Black Oxide chemistry by 25%

"There were a lot of oils coming down the line, and over the years, the acid tank activating the parts before they went into black oxide was just so filthy and bubbling up," Salvino says.

Hubbard-Hall was also converting over the plating line, so Salvino and his team jumped into the empty tanks and pressure-washed the walls to clean them thoroughly before making up the baths with the new chemistry.

Hubbard-Hall also investigated the facility's wastewater treatment system and found it needed some adjustments, which they made before returning to the plating line to finish converting the new chemistry.

The team used **Aquaease EL 44**, a liquid highly-alkaline product developed for electro-cleaning ferrous metals. It contains a stable wetting system in this high caustic-containing product. In addition, it has high conductivity that minimizes scale build-up on plate coils and contains no chelating agents.

They also instituted **Aquaease SL 150**, a heavy-duty liquid emulsifying soak cleaner often used in immersion applications for ferrous metals and brass. It is formulated to maintain effective soil removal over a long operating life while removing drawing compounds, quench, rolling oils, greases, and lubricants from various heat-treated fasteners, stampings, and castings. It is particularly effective at removing stearate-based lubes.

For the black oxide coating, Hubbard-Hall installed its **Black-Magic** product, an innovative single-bath steel blackening process. As a true conversion coating, Black-Magic yields an attractive, long-lasting decorative finish that won't peel, flake, or chip.

The Outcome

The change eliminated rejects on the black oxide line by 80%, and the plating finish dramatically improved. In addition, it decreased black oxide oil usage by 75% and reduced usage of black oxide chemistry by 25%.

CS-0125

> "We've never experienced this level of service and support from our previous vendor. This has been a true collaboration, not simply a change in chemistry."
>
> **The Plating Manager**

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