

CASE STUDY

Steel: Cleaning

QUAKERCLEAN® 4659

The Challenge

A major North American steel producer of flat rolled, zinc/zinc alloy coated substrate was using a KOH-based (potassium hydroxide) cleaner on their hot dipped galvanize/galvalume line. After installing a new cleaning system, they began experiencing high operating costs and a lack of support from the incumbent cleaner supplier in addressing this issue.

The company was looking to change suppliers with the priorities of:

- Maintained or improved quality
- Meaningful cost reduction
- Excellent support service

The Solution

In a trial opportunity, Quaker Houghton proposed the cleaner, QUAKERCLEAN® 4659, since the product had previously demonstrated performance benefits on the galvanize line at this steel producer's sister plant.

To further enhance the product performance, several continuous improvement projects were initiated:

- Adding a remote level sensor to bulk tank to monitor the remaining neat cleaner level, which enabled a more accurate tracking of inventory and timely re-order system
- Evaluating potential additives to make high pressure/hot water stage more robust
- Installing an auto-defoamer system which:
 - Eliminated the need to make manual defoamer addition to the cleaner tanks
 - Encouraged cost savings with the detection of foam buildup leading to reduced defoamer consumption
 - Introduced defoamer at the liquid/air interface resulting in an improved approach to breaking down the surface foam

The Benefits

Upon implementation, the long term benefits achieved with QUAKERCLEAN® 4659:

- Lowered average monthly cost per ton of production by 45%
- Demonstrated a 12% improvement in cleaning efficiency based on pre- and post-cleaning wipe test in assessing strip surface irons
- Decreased number of rejects with zero issues traced to cleaner product performance
- Reduced line downtime and cleaner consumption due to the decreased tank draining and cleaning needed
- Introduced a new cleaner test method and tighter process control to improve system cleanliness
- Improved overall strip quality
- Expanded service commitment significantly with weekly line audits and cleaner solution testing

The Product

QUAKERCLEAN® 4569 is a mid-alkaline, high surfactant, liquid cleaner designed for use in non-electrolytic cleaning lines. It is specially formulated for complete removal of lubricants, iron soaps, and metallic smut on various steel substrates. The high surfactant content provides greater detergency and improved rinsability while being low foaming in nature. In addition, chelating agents are present for sequestering metal particles and softening water to maximize surfactant efficiency. The reduced alkalinity provides decreased rinse water contamination, increased surfactant solubility, improved fluidity, and decreased freezing temperature. This allows it to be clear and infinitely stable. QUAKERCLEAN® 4569 has proven field performance maintaining superior cleaning even under heavily soiled conditions.

