



# North American Stainless (NAS)

## Slag dust control

Material efficiency

Safety

### Challenge

Typically, slag is transferred to slag pots from both the electric arc furnaces (EAF) and argon oxygen decarburisation (AOD) process. The slag pots are moved using a pot carrier to an enclosed slag building where the slag is dumped and allowed to cool in the air. It is then placed in a pit where it is quenched with water.

For certain grades of stainless steel, the slag is dumped in the melt shop. The slag is then moved directly to the quench pits in the slag building.

When the slag was dumped and moved, extreme amounts of dust were generated. This affected the air quality in both the melt shop and slag dump building. The dust was bad for human health, required constant cleaning, and damaged equipment over time. When the slag was quenched, vast amounts of dust-laden steam were generated. The steam was extremely dense and impaired visibility. This caused accidents in the slag dump which damaged equipment, and the building structure.

## Action

During 2011, North American Stainless (NAS) addressed the slag management problems by modifying the morphology of the slag, and installing a wet scrubber in the slag building to remove the steam and dust.

The morphology of the slag was modified by reducing the quantity of lime used. In addition, the ratio of lime to dolomite lime was adjusted based on the type of stainless steel being produced.

A large wet scrubber was installed to evacuate the steam from the slag building. The slag building enclosure was also modified to include a 'doghouse' over the quench pit area which collects the steam and dust. To further improve dust-capture efficiency, most of the openings in the building were closed and doors installed.

## Outcome

NAS has been able to modify the morphology of all the slag generated by the EAF and AOD. The change in morphology has greatly reduced the quantity of dust generated when the slag is moved and quenched.

A steam evacuation system consisting of a scrubber and a series of water recirculation ponds was installed. The scrubber quickly captures and treats the dirty steam. In the past, visibility inside the slag barn was impaired for 20 to 25 minutes. With the new scrubber, the steam is collected and removed within 10 minutes. About 20 kg of particulate matter is removed from the slag building per hour. The dust that used to escape the building is now collected by the scrubber and beneficially reused.