

# CASE STUDIES

## Power Generation: Silo Cleaning With Sonic Horns

### A Sound Solution to Material Flow

#### Introduction

This job story focuses on the benefits of using acoustic sound generators in clean clinging bulk solid materials from silos at a power generating station located in the Middle Atlantic States. The facility suffered from caked material (similar to coal fly ash) clinging to the walls of three silos. The build-up in the silos needed to be removed in order to meet safety and liability requirements of the plant's decommissioning standards.

#### Problem in more detail

Each of the three silos had a capacity of about 3,600 tons. Two of the silos contained a byproduct of the SO<sub>2</sub> scrubbing process known as MgSO<sub>3</sub>/SO<sub>4</sub> (density ≈ 50 pcf), while the third contained a high-grade, pozzolanic, coal fly ash (density ≈ 90-100 pcf). The thickness of the build-up ranged from a dusting to more than about 2 inches in isolated spots; there were no large masses.

#### Solution

The original plan was to mechanically scrub the silo walls with a boom mounted bin whip system; however, the location and configuration of silo roof openings would have limited the effectiveness of this method. As a result, it was decided to employ acoustic cleaning with MARTIN® air-driven, high-energy sonic horns. Acoustic cleaning works by generating powerful sound waves that shake particulates loose, eliminating the need for wet or dry manual cleaning. The sonic horns immediately dislodged an impressive amount of the material clinging to the inner surfaces of the silos. After the initial surge, product continued to fall over the entire period of application. The resulting debris was loaded out by gravity feed for disposal. It amounted to an additional 5-6 tons of material extracted from each silo.



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## Conclusion

As this case study shows, results were immediately apparent upon start-up of the sonic horn. All three silos were cleaned within three days and all the work was done without personnel entering the vessels. Since the sonic horn was simply lowered into each silo, we speculated that providing some means of aiming the sonic horn's energy waves directly onto the silo walls may improve its effectiveness even more.

If your silos could benefit from acoustic cleaning, call us at AIRMATIC. We'll Handle It.