

VIBRA SCREW

# CASE HISTORY



C-264

## Loss-In-Weight Feeder Aids Sulphur Dioxide Emission Research.

### Customer

The Babcock & Wilcox, Contract Research Division, provides research and development in areas of combustion fuels in Alliance, Ohio.

### Problem

Different contracts require different material feed situations at Babcock & Wilcox's boiler test center. Recently, a series of tests required injecting finely pulverized limestone into the upper end of a pilot boiler at  $\pm 1\%$  accuracy. This project was intended to demonstrate the reduction of sulfur dioxide emission from its boilers, which are sold worldwide for power generation. Sulfur dioxide is thought to be one of the precursors to acid rain.

Babcock & Wilcox needed to deliver limestone to the boiler continuously, 24 hours per day, during two, 2-week test periods. But, the limestone was pulverized to average six microns, so it packed easily, especially in the hot, humid conditions created by the boiler's 2300°F upper end. Consistent feed was essential for test accuracy and repeatability. Engineers there had previously used a variable speed volumetric screw feeder, but the unit lacked accuracy and consistent results.

After these pilot tests had been completed, Babcock & Wilcox wanted to use the feeder in a wide variety of future tests, whenever the need arose for high accuracy and continuous feed.

### Solution

Vibra Screw recommended a 1½" Loss-In-Weight Screw Feeder feeding a pneumatic eductor piped directly into the boiler. A conditioning screw around the feed screw insures against packing or tunneling of the fine powder.

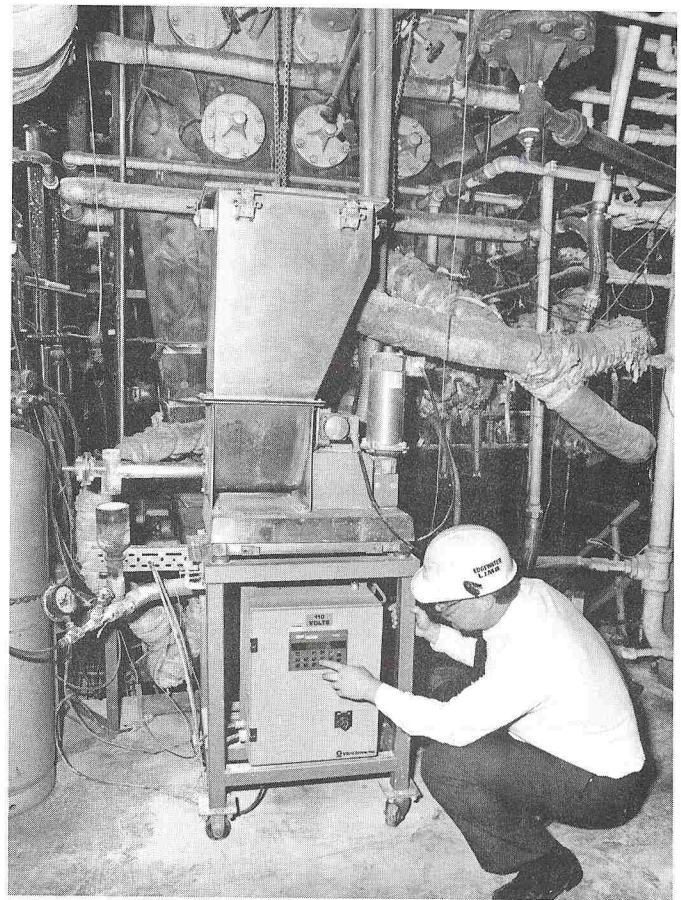
The Loss-In-Weight Feeder includes controlled vibration of the supply hopper and the screw to provide flow of even the toughest future materials.

Vibra Screw mounted the unit on a portable cart, an unusual installation, which gives Babcock & Wilcox the flexibility necessary to use the unit on future projects and in other test facilities.

### Results

Babcock & Wilcox purchased limestone in 80lb bags for this pilot project. The Vibra Screw cart-mounted Loss-In-Weight feeder audited and delivered a consistent and continuous flow of 90lb per hour set rate to the one megawatt pilot boiler. And Babcock & Wilcox was confident its test data could be used to predict performance in full size utility boilers.

The feeder has already been used on other tests because of its portability and, except for tuning the electronics for a particular test, has delivered maintenance-free performance.



A Vibra Screw Loss-In-Weight Screw Feeder solved the packing problem of finely ground limestone in Babcock & Wilcox's pilot boiler tests. Mounting it on a cart provided the flexibility needed by this research laboratory.