

Sturtevant

Case History

Golden Valley Electric Association (GVEA) owns and operates a 28 MW coal-fired power plant in Healy, Alaska. From 1999 to 2001, sulfur dioxide emissions were controlled using dry injection of limestone. In 2002, GVEA was notified by their coal supplier that future coal deliveries would contain significantly higher amounts of sulfur. GVEA converted the dry limestone injection (calcium based) to a dry sodium sesquicarbonate injection (sodium based) in response to this notification. The trade name for sodium sesquicarbonate is "Trona", and it is mined and processed in Wyoming. GVEA hired Flint Goodrich, a self-employed mechanical engineer, to assist them in the conversion from limestone injection for SO₂ control to Trona injection, and to investigate other options for removing SO₂ from the flue gas stream. From a technical aspect, Flint explains, the finer the Trona particle size at the injection point, along with proper mixing with the flue gas, the more the optimal capture of SO₂ this also minimizes the Trona utilization rate. Stated differently, additional grinding to increase surface area of the Trona particles combined with proper mixing are both important components for SO₂ removal; which leads to a better utilization rate of Trona.

The benefit of additional Trona grinding is how Sturtevant became involved with the project. GVEA leased several types of pulverizers to determine which would provide the best grind at different flow rates of Trona. By January of 2004, two model #6 Sturtevant Simpactor® Pin Mills was chosen for yielding the smallest particle size consistently over the range of Trona flow rates considered necessary to allow the plant to operate in compliance for SO₂ emissions.

Listed below are Golden Valley comments about what they like regarding Sturtevant and their model #6 Simpactor® Mills:

Reliable- both mills are in operation 24 hours/day, 7 days/week, 350 days/year. Since commissioning in 2004, they have proven to be very reliable

Less Maintenance than Expected- this has led to a longer maintenance interval, freeing mechanics to work on other equipment

High-quality Lube Oil System- the system lubricates the bearings very well, the system is well designed with an easy-to-see visual return line

Sturtevant Response to Problems- Sturtevant has been very responsive to GVEA when problems occurred; as an example, shortly after the commissioning of the mills, it was discovered the life of the internal mill pins were greatly reduced due to the abrasive properties of Trona. Sturtevant worked with GVEA to evaluate options for cost-effectively replacing the standard pins with case hardened pins, which solved the problem.

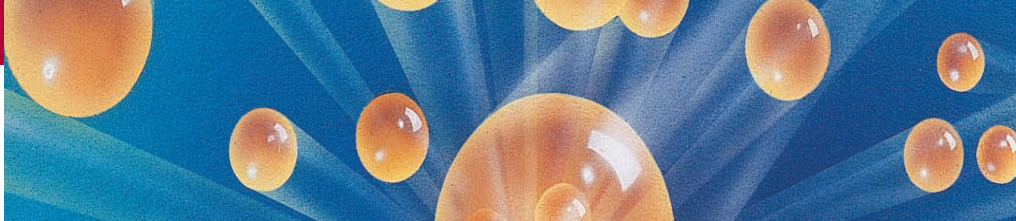


Reliable Mill for Trona

The Sturtevant Simpactor® line, being a vertical shaft mill has the added advantage of allowing a more even dispersion of product feed into the grinder with gravity working with it, not against it as with horizontal mills. This allows for a more consistent grind with less use of power. The other advantage of the vertical Simpactor® mill is that less material gets hung up inside due to the open vertical orientation for the material to flow through. Other features are the optional hardened grinding pins that can be used to combat abrasive materials and the fact that no high maintenance screens are used as with other grinding methods. The capitol cost is also lower than a horizontal pin mill to top all this off.

Visit the Sturtevant web site at www.Sturtevantinc.com to see all of their products; Whirlwind®, Superfine® and Sidedraft® Classifiers, Simpactor® Pin Mill grinders, Powderizer™ classifying mills, Micronizer® jet mills and various Hammer mills and other crushers. Sturtevant is headquartered at 348 Circuit St. in Hanover, MA 02339 and can be reached by phone at 1-800-992-0209.

For additional or more detailed information on the SO₂ removal project mentioned in this Case Study, please call Steve Coulombe at the 800- number referenced above.

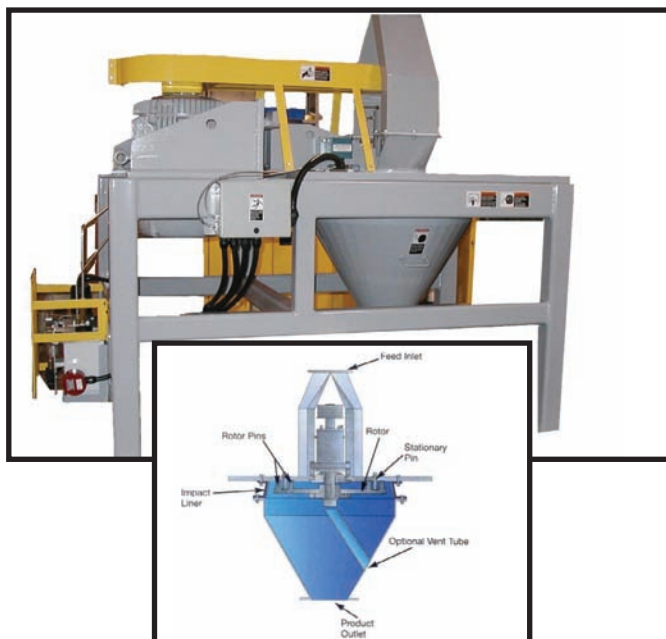


FLUE GAS DESULPHURIZATION

Trona 20 um

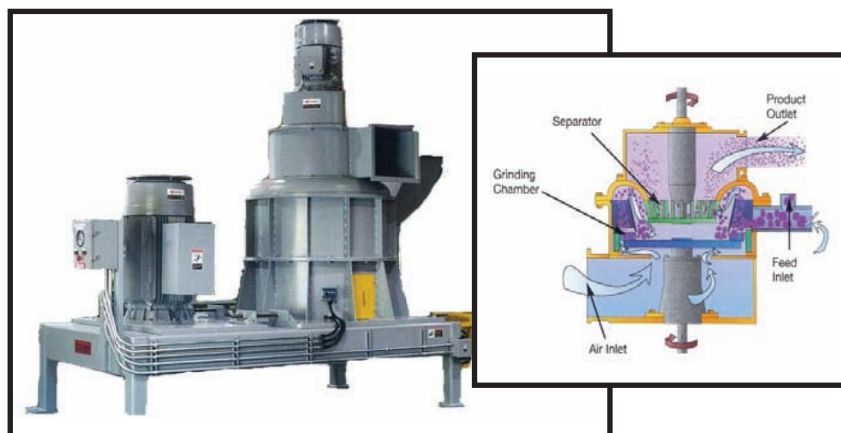
Reducing Trona to 20 um increases the Trona's surface area thereby allowing less Trona to be used to remove SO₂ flue gas emissions

Simpactor[®] #6 Pin Mill



Trona 7-10 um

NSP[®] 4 Powderizer



To arrange for a technical review session with one of our product specialists, receive a quotation on Sturtevant equipment or pursue testing at the Sturtevant Laboratory, please contact **STURTEVANT** at:

■ **PHONE:** 781 829-6501 ■ **FAX:** 781-829-6515 ■ **TOLL FREE:** 800-992-0209 ■ **EMAIL:** sales@sturtevantinc.com

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