

PRODUCTS AT WORK

BREAKTHROUGH TECHNOLOGY • WET DUST COLLECTOR

Hydro-Lance™ Wet Dust Collector Tested on Pharmaceutical Dust

Background

On February 4, 1999, one of Europe's largest pharmaceutical firms funded an independent third party test on Duall's Hydro-Lance™ Wet Dust Collector for mass removal efficiency of a pharmaceutical powder. The powder, the anti-inflammatory drug Napraxen Sodium, is soluble in water, creating a solution of increasing viscosity up to the solubility limit. The specific gravity of a significant fraction of the powder is less than 1.0, as evidenced by its tendency to float in the sump liquor once saturation is reached.

Particle size distribution data for the bulk powder indicated that a considerable percentage of the mass of powder has a small micron size. For example, nearly 7% was in the range of 1.9 micron and smaller, and nearly 20% of the mass volume was less than 5 micron diameter.

Testing

Three one-hour runs were conducted during which the powder was dispersed into the inlet air stream by sparging the samples with compressed air. Inlet and outlet samples were collected isokinetically in filters per U.S. EPA Reference Method 17 for total particulate. The filters were then weighed in a laboratory.

Results

These tests demonstrated the exceptional performance of the Hydro-Lance™ Wet Dust Collector, especially with regard to possible PM-2.5 regulations for very light, low specific gravity particles. These

particles are traditionally difficult to remove with mechanical dust collectors previously available to industry. Mass removal efficiencies for each test run were as follows:

Hydro-Lance™ Testing				
Run	Grains/DFSC Dust Concentration	ΔP	DSCFM	Removal Efficiency
1	0.155	9.5-10.5	230	98.33%
2	1.319	9.5-10.5	230	99.72%
3	1.155	14.5-15.5	320	99.61%

Present Status

In November, 1999, the pharmaceutical firm ordered its first full scale Hydro-Lance™ for a manufacturing facility in Ireland. The 7,000 CFM wet collector is designed to treat dusts and powders generated from nine (9) granulators. The Hydro-Lance™ system, which included exhaust fans and a NEMA 4X control center also provided by Duall Division, shipped in January 2000. The project management contractor and Duall engineer commissioned and tested the Hydro-Lance™ in early April 2000. The Environmental Facility Manager for the pharmaceutical firm confirms that the system is performing better than designed and that air quality within the granulation room has improved immensely. Most importantly, Irish Environmental Quality Authorities are extremely pleased with the significant reduction of dust and particulate emissions.



Application: Powder Granulator Dust

End User: European Pharmaceutical Co.

Reference: 1076-00

**Hydro-Lance™ Removes
Fine Particulate Below
Proposed PM-2.5 Standards**



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