

## Application**brief**

**Eclipse Product:** Minnox Burner

**Submitted by:** Jaime Hague and Joe Kovacs, BDC, Inc.

**Application:** Low NOx spray dryer

**Description:**

A Midwest refinery is a global supplier of a variety of Soy products along with numerous other food products and additives. BDC, Inc. has been maintaining and servicing the combustion equipment at the refinery for several years. This report deals with the Functional Concentrate Spray Dryer. The dryer was approximately 8 to 10 years old, but a fairly typical system. There are two 4" valve trains, two profiled AHMA burners and a combustion control panel. However, I would consider the two 50 MMBTU/hr duct burners slightly larger than typical a job.

In 2001 we received a call from the refinery requesting info on low NOx equipment. During the next trip to the customer we were invited into a discussion about the need to produce a low NOx product, actually a low Nitrate and Nitride product was their concern. As time passed, ideas were discussed, literature was sent and eventually a budget proposal was created. To close the sale the following month required several sight visits and numerous phone calls. They felt a little hesitant, after all, this was a main production dryer and it had to run. Further meetings lead to the creation of their first system, the research spray dryer. This system would replace a small 6" Maxon NP I burner. We used a Minnox 125, 6" long burner. Although additional equipment and duct changes had to be made, the cost was minimal and production loses were eliminated. Several months later, all of our anticipations were satisfied, the product test results returned with exceptionally low concentrations of the Nitrides and Nitrates. This opened the door for a bigger project that would make it all worthwhile.

The spray dryer sequence consists of: two inlet filter banks, two supply fans at 60,000 scfm each and 5 to 6"wc static pressure, two burner duct sections 50mmbtu/hr each, the dryer chamber and four exhaust fans pulling from the bottom of the dryer. The existing valve train and gas flow metering was to remain. The gas pressure available was 50 psig.

The quality of the soy product is excellent and the level of Nitrides and Nitrates is extremely low.



---

**Eclipse Combustion**

[www.eclipsenet.com](http://www.eclipsenet.com)