

THILMONY, PARKER J, and BRENT A. MUEHLBERG, Minn-Dak Farmers Cooperative, 7525 Red River Road, Wahpeton, ND 58075. **Steam drying of sugar beet pulp at Minn-Dak Farmers Cooperative.**

As the slicing capacity of the Minn-Dak Farmers Cooperative sugar beet plant has increased from 4,500 tons per day to 10,000 tons per day, the factory can no longer dry all the pulp produced. The amount of coal burned in the rotary drum dryer was limited due to emissions, therefore natural gas was required to achieve maximum capacity. The installation of a steam dryer for beet pulp was studied, and found to be an attractive method to increase revenue to the shareholders. Minn-Dak ordered a size H steam dryer from Enerdry in April of 2002, to be operational September of 2003. Minn-Dak staff did all engineering, with the exception of the building, with assistance from Enerdry. Since Minn-Dak does not produce electric power, a steam turbine using 250 psig steam was used to drive the 2000 hp main fan instead of an electric motor, reducing electrical operating costs. The steam dryer was started September 12th, 2003. After several modifications, the steam dryer was operational at approximately 80% capacity. The gearbox for the main fan failed due to low quality gears. The gears were replaced with ground gears after 7 days. The dryer was started and continued to operate around 80%, with pulp plugging problems until a major modification was done in February, 2004. After the modification, the dryer achieved the performance guarantee, and tested to approximately 110% capacity. During the off-season, the evaporator was found to have significant damage that has yet to be explained. As of November 4, 2004, the steam dryer has operated at 99% availability for the 2004 campaign. The total budget for the project was around 9 million dollars including evaporator and pelletizing equipment. The steam dryer project has achieved the goals of reducing emissions, increased dry pulp production and virtually eliminating natural gas expense with a project payback of approximately 3 years.