

ROSENBOOM MACHINE AND TOOL

SHELDON AND SPIRIT LAKE



BRANDON HUTH
CHEMICAL ENGINEERING, IOWA STATE UNIVERSITY

COMPANY BACKGROUND

Rosenboom Machine & Tool manufactures custom hydraulic cylinders for a variety of markets. The Sheldon, Iowa, plant is home to the corporate headquarters and includes a 200,000-square-foot manufacturing plant. The company has added a 250,000-square-foot plant in Spirit Lake. These two plants operate 22 hours per day, six days per week. Raw material enters the plant and is turned, milled, welded, and assembled into cylinders. The cylinders are then pressure tested and painted per customer requirements.

PROJECT BACKGROUND

The intern conducted a waste audit of both Sheldon and Spirit Lake manufacturing facilities. Using this profile, the key contributors to the waste stream were identified and prioritized according to potential savings. After identifying the large contributors to the waste stream, the intern identified solutions that would reduce the amount of waste generated and increase the marketability of the scrap that is unable to be reduced.

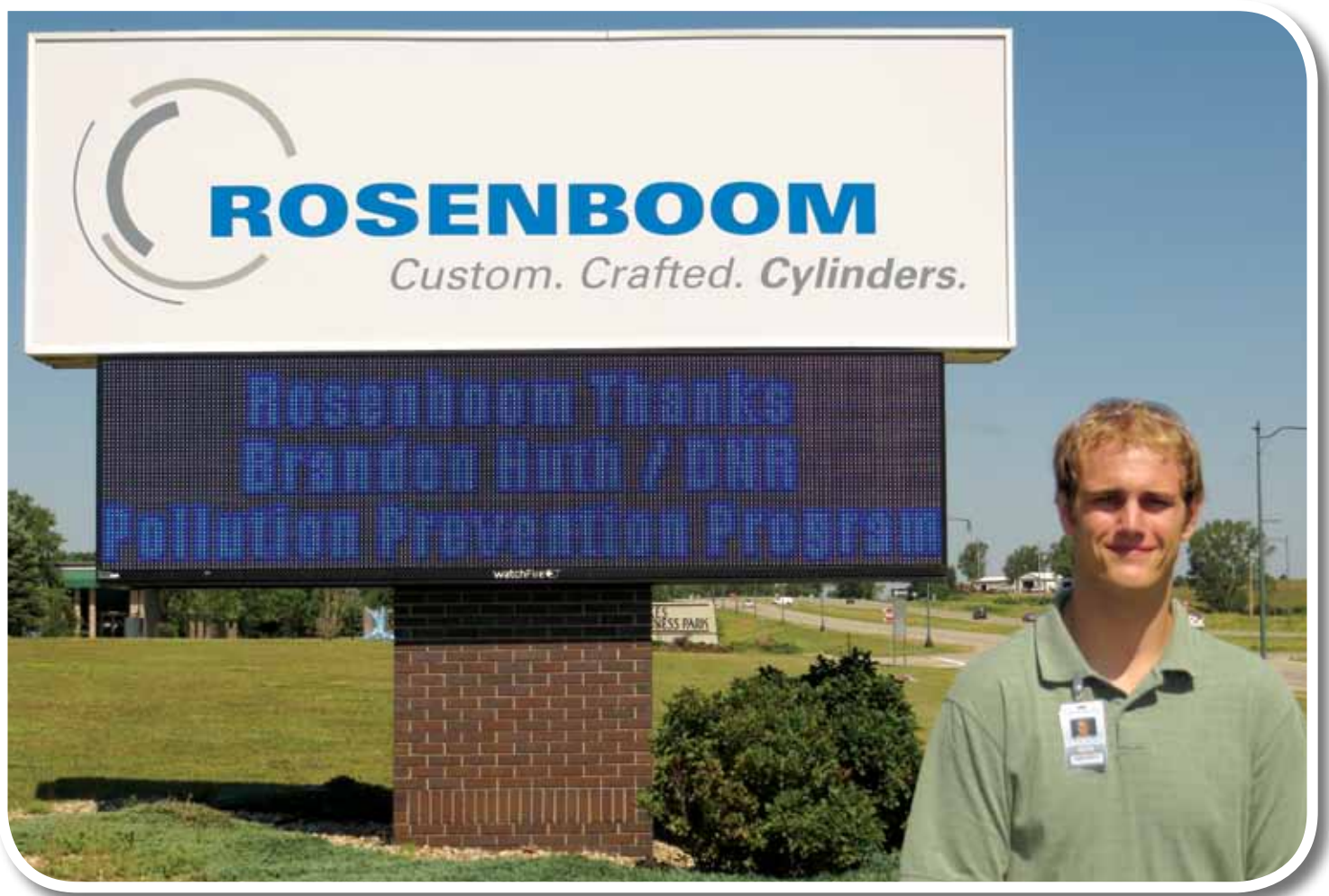
INCENTIVES TO CHANGE

Rosenboom Machine & Tool teamed with the Pollution Prevention Intern Program for 24 weeks to strengthen its environmental stewardship and to lower operating costs at its Spirit Lake and Sheldon facilities. Raw materials represent a large percentage of the total cost of a cylinder, so reducing the waste metal associated with production would make Rosenboom a more profitable company. Solid waste going to municipal landfills represents a large expenditure that could be reduced through a recycling program. With careful planning, 90 percent of the current trash volume could be diverted from the landfill.

RESULTS

Metal Shavings Processing: Metal shavings generated in the manufacturing process at Rosenboom are currently picked up by a local scrap hauler for recycling. Generation of the shavings cannot be reduced, so developing a process to increase marketability and reduce associated handling costs of the metal shavings is the most appealing option. Processing the shavings into a marketable form could allow Rosenboom to close the loop on the raw material providers and potentially generate additional revenue.





Cut Management: A large variety of rod and tube material are cut each day. Often, the entire stock length of material cannot be used, generating an unusable short end. This short end then becomes scrap since it is too short to reuse in a different cylinder. A computer program can be used to optimize cut lengths made from each full rod or tube and minimize remaining scrap.

Cardboard Recycling: Cardboard tubing, which protects the chrome plated rods during shipping, represents over 50 percent of the waste sent to the landfill. Baling the cardboard would allow it to be recycled, diverting 350 tons per year of cardboard and other recyclables from the landfill. The baler could also recycle white office paper and brown kraft paper. These items are not large contributors to the waste stream, accounting for less than 70 tons per year, but are easily recyclable commodities.

Pallet Diversion: When materials arrive at Rosenboom on wood pallets that are either damaged or do not meet Rosenboom's specifications for reuse, they are sent to the landfill. In the next 12 weeks, the intern will identify a suitable vendor capable of repairing or otherwise diverting these pallets from the landfill. The intern will also investigate the feasibility of reusing these pallets internally for other projects. The combination of recycling and pallet diversion will substantially reduce Rosenboom's solid waste disposal fees.

Hazardous Waste: In the next 12 weeks, the intern will work with the paint line in Spirit Lake to identify improvements for its solvent recovery and recycling systems. The intern will provide Rosenboom with several options for solvent recycling and reuse. Improvements could lower Rosenboom's solvent purchasing costs, hazardous waste disposal costs and regulatory burdens.