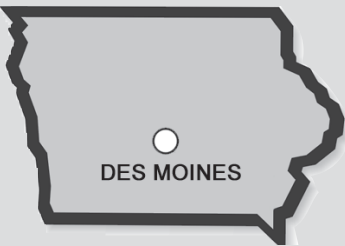


Titan Tire Corporation



Titan Tire is a subsidiary of Titan International Inc., and has become North America's third largest manufacturer of off highway tires. Titan is solely dedicated to the off-road customer markets and services agricultural, construction, industrial, military and specialty all terrain markets. There are more than 50 different tires supplied to these markets, the majority of which are agricultural tires.

Justin Clegg, Mechanical Engineering, Iowa State University

Project Background

The Des Moines Titan plant is ISO 9001 certified and is committed to the success of this program. The plant is under constant monitoring of production scrap and energy use to determine where improvements can be made. The company has established goals to reduce scrap product and reduce energy consumption by 10 percent.

Incentives to Change

Titan Tire wants to be environmentally conscious and is willing to take steps to reduce waste from production and reduce energy consumption throughout the plant. Current monitoring of the plant indicates that improvements will be needed to meet waste and energy goals. Some of the current issues are:

- Green waste
- Scrap beads
- Compressed air leaks
- Production floor lighting

With some planning, management believes major improvements can be made to reduce current waste streams and energy use.

Results

Green Waste Reduction

Green waste is any material that has not been through the curing process. Titan does not consistently meet their current goals and improvements in data collection were needed. The first part of the solution was to conduct random scrap sampling in different areas of the plant to find the true cause of the scrap. With the sampling data, additional employee training and some scheduling changes, scrap can be reduced by 140 tons per year. Another benefit would be reduced energy consumption, but currently the exact savings is not quantified.

Scrap Bead Recycling

Scrap beads are currently landfilled at a very high cost due to the rubber coating on the steel. This has been a hard item to find an outlet for and it is recommended that the beads be placed on the Iowa Waste Exchange. This would divert 119 tons of waste from the landfill every year and could potentially save \$6,500 in landfill fees.

Compressed Air Leaks

Eight compressors provide compressed air and have a capacity of 9,500 CFM. Current production requires seven compressors to meet demand. A leak detection study was performed and it was found that the system is leaking more than 63 percent of its production output accounting for 5,200 CFM of leaks. A leak detection and repair program should be started and a goal of only 10 percent leaks should be set. This would save 7.3 million kWh per year and 43.3 million gallons of single pass cooling water per year.

Production Floor Lighting

Currently, more than 3,500 462-watt HID fixtures are being used in the production floor area and are on 24 hours a day for production. An upgrade to T5HO fixtures is recommended. This would save 8.7 million kWh per year and reduce the number of fixtures to 1,900. The simple payback period for the production area is 8 months with current MidAmerican Energy rebates.

Wind Turbine Feasibility

The idea of wind power is very attractive to anyone who lives in Iowa and Titan Tire is no exception. They are interested in the feasibility of an onsite wind turbine. Information was gathered and it is estimated that a 2.5 MW turbine could produce 4.1 million kWh per year at the Titan site. More research is needed before a decision can be made regarding the feasibility of this idea.



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	2.59
CO	20.1
NOX	2.67
VOC	3.43
LEAD	0.0
PM	0.005

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	1,267.0
CH4	108.0
N2O	173.0
CFCS	37.7

Project	Environmental Results	Status
GREEN WASTE REDUCTION	140 tons of rubber scrap	In Progress
SCRAP BEAD RECYCLING	119 tons diverted from landfill	Recommended
COMPRESSED AIR LEAKS	7.3 million kWh 43.3 million gallons of water	Recommended
PRODUCTION FLOOR LIGHTING	8.7 million kWh	Recommended
WIND TURBINE FEASIBILITY	4.1 million kWh	More research needed

