



## Harbor Steel, Inc.

Daniel Carnes, Sr. Chemical Engineering Student

University of Michigan

Project Title:

Daniel Carnes, a chemical engineering student at the University of Michigan, was the 2002 Pollution Prevention (P2) Intern at Harbor Steel, Inc., located in Spring Lake, Michigan. Daniel projects involved water usage reduction and improved energy efficiency. Daniel started his internship with an investigation of the company's paint line to reduce the water usage in the three-stage washer. The tanks were using 525 gallons of water per day, and once every two weeks the tanks were emptied as a preventive maintenance measure. Conductivity meters were used to determine when to overflow the tanks to remove contaminants from the rinse bath. Lower contaminants in the rinse bath will ensure a cleaner surface on the part to assure proper adhesion, and lower the number of rejected coated parts. The conductivity limits are set at 800 $\mu$ m for Tank 2 and 500 $\mu$ m for Tank 3; the volume of each tank is 500 gallons. Tank 1 is 1,700 gallons and it is cleaned by an outside contractor. After several weeks of monitoring it was determined that the sprayer heads needed adjusting. This discovery reduced the need to add water between the tank cleanings. This has resulted in a savings of almost 400 gallons of water per day; over the course of a year it should save 100,000 gallons and almost \$4,000. .

