# Maytag- Amana

CASE SUMMARY 10

## MAYTAG APPLIANCES
## AMANA REFRIGERATION PRODUCTS

Amana, Iowa
Iowa County
Intern: Christopher Weber
Major: Civil and Environmental Engineering
School: The University of Iowa


### The Company

Amana Appliances was founded in 1934 and has produced refrigeration equipment in Amana, Iowa for over 65 years. The plant has grown substantially in that time and experienced numerous ownership changes to its current state of ownership by Maytag Corporation. The Amana plant now contains over 2 million square feet of floor space and employs over 2,600 people.

### Project Background

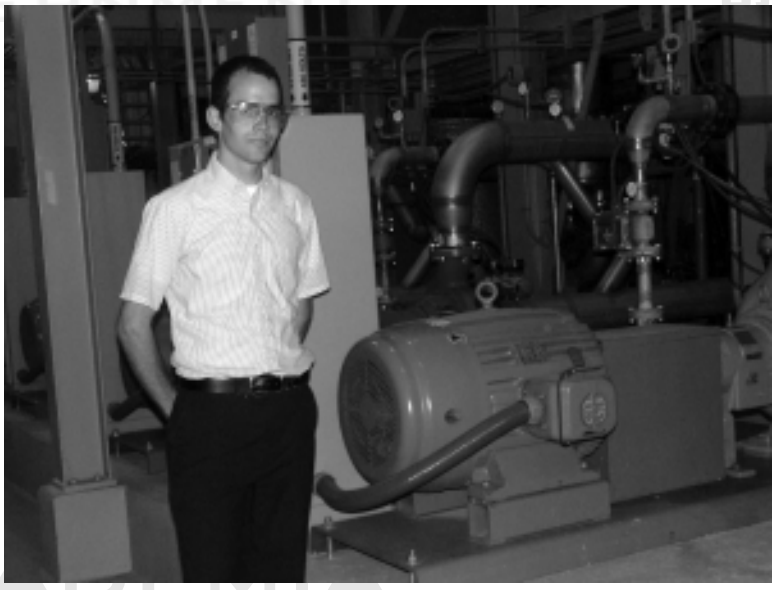
Maytag-Amana has experienced difficulty with the water quality of process water and closed loop cooling water streams for several years. The intern worked to determine causes of several water quality-related problems and to research potential solutions for these problems.

### Incentives to Change

Maytag-Amana is committed to reducing waste and scrap in all of its operations. Several effects of poor water quality have been observed over time, including decreased efficiency of cooling, machine downtime, and scrap production due to wide temperature variations during operation.

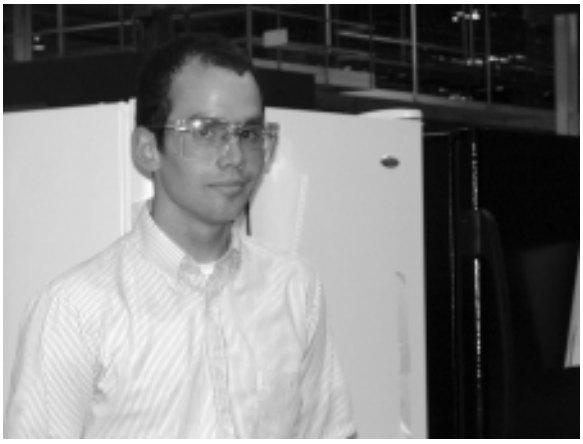
### Results

Two major projects were investigated and suggested for implementation. Each project dealt with similar issues, but provided different ways to accomplish water quality improvements.



1. **Pretreatment of cooling tower, boiler and closed loop cooling water**

The reverse osmosis (RO) equipment previously used for pretreatment of boiler water had been locked out due to membrane failure at the time of the intern's arrival. The machine had the capacity to treat much more water than the boiler



needed when put in tandem with a dual tank-softening unit. Repair of the RO unit was suggested, allowing its use for pretreatment for several water quality-sensitive areas—the boilers, the closed loop and the closed loop cooling towers. Pretreating the water for each of these uses has many positive gains, including the elimination of acid feed to the cooling towers, extended cycles of concentration on the towers and the boilers, and the elimination of several of the production problems caused by closed loop water quality problems.

2. **New filtration plant**

Because the current filter house was beyond its useful life and significant amounts of mineral pollution were entering the plant, construction of an entirely new automated filter plant to treat all process water for the plant was suggested. The new plant would virtually eliminate all iron and manganese problems from the incoming water, improve distribution line corrosion and deposition problems, and ease the mineral load on the several water softeners located around the plant. A summary of all the benefits obtained from the purchase of a new filtration plant are listed below in the project summary table.

GOVERNMENT

BUSINESS

Project Summary Table

| Impact | Annual P2/ Time Savings | Annual Savings |
|---|---|---|
| Extruder scrap (internal) | 324,000 pounds | $162,000 |
| Avoided downtime | 60 hours | $30,000 |
| Maintenance/tool time | 3,220 hours | $53,000 |
| Water/ treatment savings | 776,000 gallons 86 drums | $27,400 |
| Electricity reduction | 53,000 kWh | $2,900 |
| Filter media waste | 5.2 ton | $1,800 |
| TOTAL | | $277,100 |

ACADEMIA