



# The Dixie Group - Candlewick Yarns

## Measurement and Verification Services

### About the Facility:

The Dixie Group's Candlewick Yarns manufacturing facility primarily produces yarn for the company's carpet business, selling to independent carpet manufacturers. Sain Engineering Associates, Inc. (SEA) was contracted by The Dixie Group to perform Measurement and Verification (M&V) of five energy conservation measures. The deliverable included five annual reports that summarized the measurement and verification baseline detailing the testing and quantification for the validity of energy conservation measures.

Overall, the project achieved energy and cost savings through retrofit of the lighting system and replacement of the boiler, air compressor, unit heater and power-heat-set heat treating tunnel.

### Methodology

**Baseline Year:** The M&V baseline was determined to test and quantify the validity of energy conservation measures that were to be implemented in the Candlewick Yarn's manufacturing facility. The baseline was developed for natural gas consumption and electricity usage. A baseline equation was found for both electric and natural gas consumption with determination coefficients of 77.48% and 75.28%, respectively. These coefficients indicated considerable correlation between the consumption and the criteria against which they were judged.

**Year 1:** According to facility personnel, the overall output of the plan has increased over the study period. Increased product led to more run-hours for the significant energy users of the plan, such as air compressors and cabling motors, which will result in a higher billed kWh usage. While replacing the heat-set machine and air compressor did save energy, the changes in production resulting in higher electrical usage for all other machines and the variability of the chiller made it impossible to verify the savings associated with replacing the compressor and heat-set machine without some sort of metering.

### Technologies Evaluated and Upgraded:

- **Boiler**
- **Lighting retrofits**
- **Air Compressor**
- **Unit Heaters**
- **Power-heat set heat treating tunnels**



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**Year 2:** The implemented ECMs have saved money and decreased consumption of electricity and natural gas compared to the base line year resulting with increased energy efficiency.

**Years 3 and 4:** Reports outlined savings generated from the ECMs.