# Green Foundry Project 2205-02

Project Title: **"Smart" Exhaust Fans**

☒ Full Scale Implementation OR ☐ Pilot Scale/Study

**1. Description of the project: What is the issue and how did you fix it?**

Within the facility's sand mulling and molding departments, six legacy roof-mounted exhaust fans assisted with removal of heat and workplace air turnover in the summer months. These 10 hp exhaust fans ran continuously, which depending upon the season would result in the work area being too cold and/or the utilization of nearby make-up air fans to replace the air volume and heat.

The existing fans were automated with temperature and carbon monoxide sensors to provide inputs to control the utilization of the fans. With the sensor connected automation, the fans became a "smart" system which targeted fan "On" time only when needed, defined as when workplace temperatures were elevated and/or carbon monoxide levels requiring dissipation were experienced. These modifications resulted in significant energy savings with no loss in fan performance.

**2. Environmental Benefits: Conservation of raw materials or energy, reduction or elimination of emissions, wastes, toxics, water discharges, etc.**

Significant energy savings was realized by this modification to existing equipment. Compared to the prior operation mode, the added controls resulted in a reduction of approximately 275,000 kwh (electric) and 28,000 dkt (natural gas) use annually.

**3. Other Benefits: Productivity, health and safety, employee morale, etc.**

An improvement in workplace ventilation balance and comfort was achieved. The carbon monoxide automation control also represented a workplace safety improvement to ensure that carbon monoxide levels were actively monitored and subject to an appropriate ventilation control.

**4. Cost Savings: Capital cost, operating cost, ROI or other pertinent cost information.**

Due to low implementation costs (approximately $7,000) and significant annual energy savings (approximately $124,000), project payback occurred in less than one month!

**5. Applicability to other foundries and additional Comments**

This project holds a high applicability to other companies/facilities and is an example of significant gains which can be achieved on existing equipment in lieu of a full (and more costly) replacement.

**6. Applicable Environmental Categories and Foundry Processes. Select all that apply.**

**Environmental Categories**

☒ Carbon (GHG) Emissions Measurement and Reduction

☒ Air Quality ☐ Water Use and Discharge ☐ Waste Management

☐ Beneficial Use ☐ Stormwater ☒ Material and Resource Conservation

☐ Community Engagement

**Foundry Process(es) Impacted**

☐ Melt ☐ Pour ☐ Mold ☐ Core ☐ sand system/reclaim

☐ Shakeout ☐ Heat Treat ☐ Quench ☐ Finishing ☐Shipping

☐ Maintenance ☐ Pattern Shop ☐ Casting Design

☐ Management Systems and Metrics

☒ Other, explain: Indoor Air Quality and Comfort

**7. Add photos to enhance your application, if applicable.**